Evaluating the impacts of damming and water level drawdowns: a paleolimnological study of long-term water quality trends in reservoirs

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Thesis Abstract

Freshwater resources are experiencing many broad-scale anthropogenic pressures that overlap in space and time. Hydrological modifications from damming and subsequent reservoir operation, such as winter water-level drawdowns, have become a major anthropogenic disturbance across temperate and boreal aquatic ecosystems. Although drawdown has widely been recognized to impair littoral and shallow ecosystem structure and functioning, there has been little investigation of the long-term implications on water quality in deep aquatic systems. I used a paleolimnological "snapshot" technique (i.e. a top-bottom design) to investigate the pre-dam to contemporary trends of water quality across 12 temperate reservoirs experiencing annual winter drawdown. In addition, I conducted detailed analyses of sediment cores from Grand Lac Saint-François (Québec, Canada) to draw further insight into how changes in hydrology could alter the dynamics of reservoir water quality. Based on correlative and multivariate analyses, I did not find strong evidence for drawdown as the primary driver of water quality change in our regional survey. Instead, reservoir morphometry and watershed characteristics (i.e. geography, maximum depth, and cropland areas) appeared to be stronger drivers of long-term water quality trends than drawdown amplitudes. Based on the higher resolution analyses of biological proxies at Grand Lac Saint-François (i.e. sedimentary pigments and diatom metrics), I detected significant trends over the last century, which is indicative of declining water quality conditions. These trajectories in water quality, as well as an observed increase in variability, coincided with dam construction and the onset of water level drawdown. However, due to the high ecological variability and the limited time frame of monitoring data, I was unable to conclusively associate drawdown levels with the declining water quality trends at Grand Lac Saint-François. In contrast, watershed nutrient surpluses and warming temperatures were identified as significant explanatory variables of the water quality metrics. This work highlights the need for long-term and/or high-resolution data in order to better interpret ecological change amongst multiple stressors. Water quality management can be complicated due to the diverse functions and operational strategies across reservoirs, as well as the persistence of increasing anthropogenic stressors. As such, paleolimnology can be a powerful tool in addressing the many ecological concerns in contemporary reservoir management. Understanding water quality dynamics in reservoirs with different functions, and identifying how these operations may exacerbate (or mitigate) declining water quality conditions is crucial to safeguarding freshwater resources in this era of multiple stressors.

Résumé de thèse

Plusieurs pressions anthropogéniques peuvent avoir des effets considérables sur la qualité des ressources d'eau douce. En effet, les modifications hydrologiques causées par la construction de barrage et les opérations subséquentes de maintenance des réservoirs, telles que le marnage hivernal, sont devenues des perturbations anthropogéniques majeures au niveau des écosystèmes aquatiques tempérés et boréaux. Bien que le marnage soit largement reconnu pour altérer la structure et le fonctionnement des écosystèmes littoraux et peu profonds, peu de recherches ont examiné les implications à long terme du marnage sur la qualité de l'eau des systèmes aquatiques pélagiques. Afin d'évaluer les tendances à long terme du marnage hivernal sur la qualité de l'eau, des échantillons de sédiments de surface et de fond, correspondant à l'ère contemporaine et préindustrielle respectivement, ont été prélevés dans 12 réservoirs tempérés où le marnage hivernal est pratiqué. De plus, des analyses plus détaillées des carottes de sédiments du Grand Lac Saint-François ont été réalisées pour approfondir les connaissances sur les changements hydrologiques pouvant altérer la qualité d'eau des réservoirs. Des analyses corrélatives et multivariées ont seulement permis de déceler de faibles évidences de l'effet du marnage sur les changements de la qualité d'eau dans les réservoirs échantillonnés. La morphométrie du réservoir et les caractéristiques du bassin versant (i.e. géographie, profondeur maximum et aires agricoles) semblent être des variables plus importantes que l'amplitude du marnage pour expliquer les tendances à long terme de la qualité de l'eau. Les analyses de hautes résolutions utilisant des indicateurs biologiques (i.e. pigments sédimentaires et diatomées) au Grand Lac Saint-François ont permis de montrer une tendance significative de la dégradation de la qualité de l'eau au cours du dernier siècle. Les changements de la qualité d'eau ainsi qu'une augmentation de la variabilité coïncident avec la construction du barrage et le début de la régulation des niveaux d'eau dans le Grand Lac Saint-François. Cependant, à cause d'une grande variabilité écologique et d'une courte période des données contemporaines, le niveau de marnage au Grand Lac Saint-François n'a pu être associé significativement à la tendance de dégradation de la qualité d'eau. Contrairement, le surplus de nutriments en provenance du bassin versant et les températures plus chaudes ont significativement été identifiés comme variables explicatives des changements de la qualité d'eau. Ce travail souligne le besoin de longues séries temporelles et/ou de données de haute résolution afin de mieux interpréter les changements écologiques dus à plusieurs facteurs de stress environnementaux. La gestion de la qualité d'eau peut être complexe, d'une part, puisqu'il existe diverses fonctions et stratégies opérationnelles au niveau des réservoirs, et d'autre part, à cause d'une persistance de l'augmentation des stress environnementaux. La paléolimnologie peut donc être un outil puissant pouvant adresser plusieurs inquiétudes écologiques dans la gestion contemporaine des réservoirs. Comprendre la dynamique de la qualité d'eau sous les différentes fonctions des réservoirs et comment les opérations peuvent détériorer (ou réduire) la qualité d'eau dans ces systèmes est cruciale pour la conservation de l'eau douce dans cette ère de multiples facteurs de stress environnementaux.

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Contribution of Authors

Leanne Elchyshyn – She was the lead author of the thesis and manuscript enclosed. She also conducted the associated field sampling, laboratory, and statistical analyses.

Jean-Olivier Goyette – He performed the NAPI calculations and provided critical reviews of the manuscript.

Émilie Saulnier-Talbot – She assisted in the enumeration, statistics and interpretation of the diatom analyses. She also provided critical reviews of the manuscript.

Roxane Maranger – She provided critical reviews of the manuscript.

Christian Nozais – He also helped with field logistics, as well as study design, and provided critical reviews of the manuscript.

Christopher T. Solomon – He also helped with field logistics, as well as study design, and provided feedback on the project throughout its development and critical reviews of the manuscript.

Irene Gregory-Eaves – She provided guidance with fieldwork logistics, study design and statistical analysis. She also provided feedback on this project throughout its development, and critical reviews of the manuscript and thesis throughout the writing process.

General Introduction

Freshwater is an invaluable natural resource that has been increasingly exploited and managed in this era of anthropogenically-driven environmental changes (Steffen et al. 2007; Heathwaite 2010). Dams have long been a fundamental part of exploiting water resources in order to facilitate development around the world. With a global estimate of 800 000 small dams and over 45 000 large dams built in the last century (WCD 2000), dams have been prevalent across the landscape for such a long time that often many of us perceive them as part of the natural landscape. Natural lakes and rivers are dammed to form reservoirs for a number of social and economical reasons such as: navigation, recreation, industrial tailings, water supply, hydroelectric power generation, and flood control (Marttunen et al. 2006). Due to the inherent coupling of reservoirs with human development, reservoir water quality is experiencing many increasingly threatening environmental stressors. Some persistent anthropogenic pressures on freshwater ecosystems include: climate change (e.g. Yasarer and Sturm 2016), land use changes (e.g. Keatley et al. 2011), hydrological modification (e.g. Zohary and Ostrovsky 2011), biological invasions (e.g. Johnson et al. 2008), accumulation of pollutants (e.g. Sorensen et al. 2005), and over-exploitation of water resources (e.g. household and industrial water demands, recreation and commercial fisheries; Vörösmarty et al. 2000; Allan et al. 2005). Below, I outline a few anthropogenically-driven stressors in reservoirs that are of particular concern because of their broad scale impacts.

Global growth and development of the human population has led to widespread eutrophication of surface waters. Exponentially increasing resource demand has resulted in extensive land use changes for agriculture and urban development around the globe, these are major sources of nutrients to aquatic ecosystems (Smith et al. 1999; Foley et al. 2005). Nutrients,

namely phosphorus, entering surface water through point (e.g. sewage effluent) and non-point sources (e.g. agriculture runoff) are key drivers of eutrophication (Carpenter et al. 1998). Phosphorus loading is of particular concern as it is generally the limiting nutrient in freshwater aquatic systems. That is, under typically occurring low-to-moderate concentrations of phosphorus, phytoplankton growth is limited. Phosphorus enrichment causes increased algal productivity that can lead to algal blooms causing shading and competition with macrophytes, as well as increased anoxia in the hypolimnion as phytoplankton sinks and degrades (Schindler and Fee 1974). These nuisance algal blooms pose a significant threat to reservoir water quality as they may impair the taste and odour of the water, and are often composed of potentially toxic cyanobacteria, which diminish drinking water and irrigation resources (Paerl and Huisman 2009). Remediation of eutrophied waters generally involves management of nutrient sources. Point sources of nutrients (e.g. sewage effluent) are typically easier to identify and control but mitigation of these sources alone is often not enough. With the expansion and intensification of agricultural land use, non-point sources of nutrients have become significant and substantial due to excessive fertilizer application and livestock manure (Carpenter et al. 1998). These agriculture land-use trends and surface-water nutrient enrichment have been linked at both watershed and regional scales (Taranu and Gregory-Eaves 2008). Therefore, many efforts in nutrient management are applied to the landscape in order to reduce not only their application to the watershed, but also reduce nutrient-rich runoff from reaching surface waters (Carpenter et al. 1998; Paerl and Huisman 2009). Further, nutrient legacies from cumulative surpluses of nutrients within watersheds for agriculture practices over the past decades-to-century suggest that nutrient accumulation in watersheds may continue, and can contribute substantial loads of nutrients to surface waters over time, making eutrophication management an ongoing, broad-scale, and long-

term concern in aquatic systems (Carpenter 2005; MacDonald and Bennett 2009; Keatley et al. 2011).

Climate change is already having significant effects on the quality of surface waters (Murdoch et al. 2000; Rühland et al. 2010). In consequence of recent climactic warming, lakes and reservoirs are experiencing warmer temperatures, more stable thermal stratification, and longer growing seasons; all of these factors in turn alter productivity and can have cascading effects across trophic linkages (Winder and Schindler 2004; Rühland et al. 2008). Climate change is also highly favourable for the formation of cyanobacteria blooms in many areas, an increasingly persistent and global symptom of water quality degradation (Paerl and Huisman 2009; Carvalho et al. 2011; Taranu et al. 2015). Climate change will also continue to exacerbate water demands, magnifying both lake and reservoir water level fluctuations (Yasarer and Sturm 2016). Droughts can reduce water levels, potentially concentrating available nutrients and increasing primary productivity (Baldwin et al. 2008; Bakker and Hilt 2015). In cold-temperate regions where the winter season precipitation is dominated by snow, and lakes and reservoirs are covered with ice, warming atmospheric temperatures will alter the annual hydrological cycle; we are already seeing earlier ice off dates and thus, longer growing seasons (Rühland et al. 2010). In addition, warmer winter temperatures will reduce the amount of frozen precipitation, ultimately altering seasonal inputs and dampening the spring pulse signal that is typical of this region's hydrology (Barnett et al. 2005). Climate change is forecasted to continue to alter water supply and further increase global temperatures. As a result, increasingly severe droughts and extreme storm events (i.e. precipitation intensity) are becoming a major challenge for water management (Schindler 2001). Paerl and Huisman (2009) described climate changes as a catalyst for cyanobacteria as it is associated with increasing growth rates, dominance, persistence, and

distribution. All together, the greatest threat of climate change is thought to be its role as a 'big threat-multiplier' and the interaction and effects it will have on other anthropogenic stressors (Schindler 2001; Smol 2010).

Management of water quality in reservoirs has long been recognized as complicated due to diverse methods of reservoir formation, the oftentimes multi-functional purpose, and the highly engineered operating procedures (Kimmel and Groeger 1986; Kennedy 2005). Altered hydrological regimes are a key distinguishing characteristic of many reservoirs in contrast to natural lakes and is recognized as possibly one of the greatest threats to the integrity of aquatic ecosystems (Straškraba et al. 1993; Kennedy 2005; Zohary and Ostrovsky 201). Following dam construction, reservoirs undergo ontogenic processes that play out over years or decades. The trophic surge hypothesis is a widely accepted paradigm that describes a series of trophic phases including: a post-damming upsurge of productivity as nutrient-rich, terrestrial lands are innundated; a rapid trophic depression as novel nutrients are depleted or eroded; and finally, a trophic re-equilibrium phase (Ostrofsky and Duthie 1978; Kimmel and Groeger 1986; Hall et al. 1999b). Long-term water quality trends may vary amongst reservoirs due to site-specific factors (e.g. reservoir formation, morphometry, watershed land use) and diverse hydrological management across the landscape (Ostrofsky 1978; Kimmel and Groeger 1986; Hall et al. 1999b; Kennedy 2005). Although natural water level fluctuations are known to be essential to structuring littoral ecosystems and services (White et al. 2010; White et al. 2011; Zohary and Ostrovsky 2011; Evtimova and Donohue 2015), water level regimes in reservoirs typically experience exaggerated and prolonged water level changes that do not reflect the amplitudes, duration, timing or frequencies naturally observed. Prolonged lowering of the water level in a reservoir is known as drawdown and depending on the reservoir function can be resultant of:

downstream water demand, local resource extraction (e.g. drinking water, irrigation), seasonal flood control, drought, and/or hydroelectricity generation. Winter drawdown is common across the temperate and boreal region for seasonal flood control and hydropower generation. During winter in these reservoirs, increased discharge leads to minimum water levels just before spring melt when, melting snow and spring precipitation return water levels back to the maximum. Winter drawdown regimes typically reach a maximum water level by early June and maintain this throughout the summer into the late fall and early winter when levels decline again. Annual maximum drawdown amplitude at each reservoir is relative to the spring melt capacity (i.e. snow pack load, precipitation forecasts and historical models) in order to restore to full pool. Considerable attention has been directed to the implications of such hydrological modification in shallow and littoral ecosystems; where even small water level changes can rapidly expose large areas of habitat, making littoral flora and fauna especially vulnerable (Leira and Cantonati 2008; Zohary and Ostrovsky 2011). As such, numerous studies have demonstrated macrophyte and macroinvertebrate communities inhabiting the littoral zone show strong negative effects to prolonged water level drawdowns (Turner et al. 2005; Aroviita and Hämäläinen 2008; Cooley and Franzin 2008; White et al. 2011; Trottier 2015). In contrast, the effects of such exaggerated and prolonged hydrological changes, or the implications of such drastic littoral loss, on pelagic water quality indicators and phytoplankton communities in deep, stratifying waters have been particularly understudied, despite the presence across the landscape (Turner et al. 2005; Leira and Cantonati 2008; Zohary and Ostrovsky 2011).

Not only are reservoirs under pressure from many simultaneous stressors, many have persisted over timescales spanning decades to centuries, which well exceed most contemporary monitoring efforts. Given the lack of long-term monitoring and poor knowledge of baseline

conditions in these systems, management recommendations for declining water quality in reservoirs, especially in terms of remediation goals, can be difficult. Paleolimnology is the study of historical ecological and environmental conditions using preserved physical, chemical, and biological indicators in the sediment record, and can be instrumental in addressing many contemporary ecosystem health concerns (Smol 2008). Common paleolimnological indicators, like subfossil diatom assemblages and sedimentary pigments from photosynthetic organisms (i.e. plants, algae, some bacteria), can be used to infer and reconstruct ecological conditions through time, allowing us to identify the rate and magnitude of change in response to anthropogenic disturbances. Multiple ecological proxies in addition to physical sedimentological variables (i.e. organic and inorganic composition, accumulation rates, magnetic susceptibility) are used to provide a record of the ecological history of the study lake and it's watershed.

Declining water quality, and the unknown association with excessive winter drawdown amplitudes, has a passionate community in southeastern Québec concerned for the health of their local reservoir. Both local interests and recognition that there is insufficient knowledge about how winter water level drawdown affects water quality in reservoirs motivated this project. Thus, the objectives of my thesis research were to quantify the effects of long-term annual winter water level drawdown on water quality across the landscape, as well as to draw further insight into the dynamics of water quality change at Grand Lac Saint-François (Québec, Canada). As many dams across the region were constructed over the past century, including at Grand Lac Saint-François, there is little or no historical knowledge of conditions "pre-impact" or pre-dam. In addition to damming, Grand Lac Saint-François has a long history of anthropogenic stressors (e.g. climate change and land use changes). Thus, paleolimnological techniques can be particularly useful in identifying long-term changes and guiding development of realistic lake

management goals with respect to water quality. This work was completed to not only contribute to the limited knowledge of winter drawdown impacts on water quality in the literature but to gain insight and scientifically sound data to address local concerns and guide the development and implementation of a sustainable watershed management plan for Grand Lac Saint-François.

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Manuscript

Quantifying the effects of hydrological changes on long-term water quality trends in temperate reservoirs: insights from a multi-scale, paleolimnological study

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Key words: water quality, cyanobacteria, drawdown, water level fluctuations (WLF), reservoirs, diatoms, sedimentary pigments, land use, climate change

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Abstract

Declining water quality in reservoirs is becoming a growing concern for water resource management. Across the landscape, reservoirs have diverse origins, functions, and operational strategies. In temperate environments, winter water level drawdown in reservoirs is a common operational practice but the long-term impacts of this hydrological modification have not been extensively studied. We paired a comparative pre-dam- to- contemporary study (i.e. a top-bottom design) of 12 reservoirs with a detailed paleolimnological study of one focal site to generate quantitative insights into the relative effect of hydrological changes vs. landscape and climatic drivers on water quality. The focal reservoir, Grand Lac Saint François, is similar in morphometry, geography, and limnology to other sites, and has experienced annual winter drawdown of ~5 m since it was dammed approximately 100 years ago. Based on our top-bottom analysis, we did not find strong correlations between long-term changes in water quality (i.e. diatom-inferred TP concentrations (DI-TP) and winter drawdown amplitudes. Instead, reservoir morphometry and watershed characteristics (i.e. geography, maximum depth, and cropland areas) appeared to be stronger drivers of trends across the region. From the detailed paleolimnological analysis, we found that sedimentary pigments and DI-TP significantly increased over the last century based on Mann-Kendall trend analyses. Breakpoint analyses showed that changes in biological proxies, as well as the sedimentology (lithology and accumulations rates), coincided with dam construction and the onset of water level regulation. Given the high variability in metrics and the extent of water level monitoring records, we were unable to quantitatively associate the impacts of drawdown with water quality trends at GLSF. However, we did found that watershed nutrient surpluses from livestock farming, and warming temperatures were significant explanatory variables of the water quality metrics.

Introduction

Dam construction and operations have been proposed to be one of the greatest disturbances, in both pervasiveness and impact, to aquatic ecosystems globally (Turner et al. 2005; Wantzen et al. 2008; Evtimova and Donohue 2016). Altered hydrological regimes are among the key characteristics distinguishing reservoirs and natural lakes (Straškraba et al. 1993; Kennedy 2005; Zohary and Ostrovsky 2011). Although water levels can fluctuate substantially under natural phenomena, reservoirs with anthropogenic regulation typically experience exaggerated and prolonged water level changes that do not reflect the amplitudes, duration, timing, or frequencies naturally observed (Straškraba et al. 1993; Zohary and Ostrovsky 2011). Such alteration of natural hydrological patterns can have profound effects on aquatic ecosystem health and integrity (Leira and Cantonati 2008; Wantzen et al. 2008; Zohary and Ostrovsky 2011; Evtimova and Donohue 2016). However, much of the literature examining water-level fluctuations focuses on wetland degradation, and/or losses and changes in shallow and littoral systems (Leira and Cantonati 2008). This bias is likely driven by small water level changes resulting in evident shoreline displacement; exposing vast littoral areas, and causing habitat and biota loss in these systems (Turner et al. 2005; Evtimova and Donohue 2016). In comparison, relatively little is known about how water level regulation affects pelagic water quality of deep reservoirs (Leira and Cantonati 2008; Zohary and Ostrovsky 2011). Despite the extensive occurrence and dependence on winter water level drawdown for seasonal flood control and hydropower generation across the temperate and boreal reservoirs, its impacts on water quality are particularly understudied.

Following the construction of a dam, basic reservoir ontogeny is often described as following a succession of trophic phases including: a post-damming eutrophication, a rapid

trophic depression as newly inundated nutrients decline, and finally, a trophic re-equilibrium phase (Ostrofsky and Duthie 1978; Kimmel and Groeger 1986; Hall et al. 1999b). Despite being widely cited, this basic succession model is acknowledged to vary across the landscape. There is great variation observed in long-term reservoir responses, likely a result of differences in: reservoir formation and morphometry, watershed land use, and the rates and magnitudes of the operational water level regimes (Ostrofsky 1978; Kimmel and Groeger 1986; Hall et al. 1999b; Kennedy 2005). Some variation in water quality trajectories in reservoirs has been explored using paleolimnological analyses, where proximate ecosystems that differ in hydrological management have been compared. For example, Hall et al. (1999b) showed that the long-term trophic state trajectories varied since damming between two prairie grassland reservoirs with contrasting histories of formation and subsequent hydrological management. In a reservoir with a large area of inundated soil and experiencing exaggerated winter water level drawdown they observed: extensive littoral habitat erosion, increasingly pelagic diatom communities, and a more recent increases in eutrophic symptoms. Whereas, in a reservoir with minimal inundation and highly stabilized water levels, overall littoral production remained high. Differences in trophic trajectories observed following reservoir formation in these systems were a result of land inundated (i.e. area) and contrasting drawdown regimes. Likewise, Serieyssol et al. (2009) contrasted the long-term changes in trophic indicators from a regulated reservoir with a proximate, natural lake and observed much more ecological variability in the reservoir time series. In particular, damming and drawdown operations were attributed to decreased diatom species richness, and increased total phosphorus. Paleolimnology can be insightful in understanding long-term trends in reservoirs but complementary information can be gained through whole-lake experimentation. To date, only one whole-lake experiment has been

conducted to look at impacts of winter water level drawdown on water quality in a deep lake ecosystem (Turner et al. 2005). Initial impacts of winter water level drawdown were quantified over three consecutive winters and, despite seeing a significant decline in phytoplankton diversity, only muted changes in nutrient concentrations and phytoplankton biomass were associated with drawdown. Overall, there are only a handful of studies that have quantified how winter water level drawdowns affect water quality and they are limited to one or two proximate lakes. We have little understanding of the long-term implications of winter drawdown on water quality, particularly on a regional scale.

We aimed to evaluate how the creation of dams and associated winter water level drawdowns affect temperate reservoirs in eastern North America. In particular, the objectives of this study were two-fold: 1) to determine whether regional patterns of water quality are related to winter water level drawdown amplitudes, or are driven by alternative environmental stressors; and 2) to quantify long-term changes in water quality at a focal reservoir and explore whether observed changes are coincident with dam construction and/or correlated annual water level drawdown, as well as other potential drivers of water quality change (e.g. watershed nutrient budgets, climate). To address our first objective we conducted a "top-bottom" paleolimnological analysis (Smol 2008), with a focus on diatoms as water quality indicators. The top-bottom approach allowed us to compare snapshots of the ecological conditions from the same reservoir at two points in its ecological history: a "top" sample from the core reflects the most recently deposited sediments and its diatom assemblage, and the "bottom" sample from a depth in the core that was deposited prior to the construction of the dam. This "snapshot" approach allows us to effectively quantify the degree of change in diatom assemblages, and draw inferences about changes in water quality before and after dam construction. To address our second objective, we

conducted a detailed paleolimnological analysis to investigate the timing and rate of change of numerous water quality proxies (including diatom assemblages and pigment concentrations) preserved in sediment cores collected from one selected reservoir, Grand Lac Saint-François.

Study sites

Twelve north-temperate reservoirs presenting similarities in water chemistry and morphometry, but spanning a gradient of winter water level drawdown (< 1 m to ~7 m) were pre-selected for the top-bottom paleolimnological analysis. The 12 reservoirs are located in Québec (Canada), New Hampshire (USA), and Maine (USA; Fig. 1). The majority of reservoirs are located in the Northern Appalachian and Atlantic Maritime Highlands Ecological Region (North American Atlas, Level 2), which is mix of sedimentary and igneous bedrock. However, two (Poisson-Blanc and Trente-et-un-milles) are located in the Algonquin/Southern Laurentians region of the Canadian Shield (CEC 2009). All watersheds in this study are located in rural areas, and the majority drain undeveloped mixed forests (temperate broadleaf and needleleaf forest; CCRS 2013). Further details on reservoir-specific characteristics are outlined in Table 1.

Grand Lac Saint-François, located in southeastern Québec, was selected for the detailed paleolimnological study. Locals have expressed growing concerns of a decline in water quality and uncertainty about whether these potential changes may be related to the winter water level drawdowns. Water levels have been manipulated at Grand Lac Saint-François for more than 125 years, when the lake was initially dammed for the local log drive (Daoudi and Charest 2008). For nearly a century, Grand Lac Saint-François has experienced an annual winter water level drawdown primarily for spring flood control and hydroelectricity generation with average amplitudes of ~5 m. Grand Lac Saint-François has a long history of multiple stressors; the main historical and current events of ecological relevance in the region are outlined in Table 2.

Currently, Grand Lac Saint-François is a relatively large (SA = 51 km^2 at full pool), and deep (Z_{max} = 40.2 m; Z_{mean} = 15.6 m at full pool; Poulin and Charest 2008), oligo-mesotrophic reservoir ($TP_{(avg)}$ = 10 µg/l, chl-$a_{(avg)}$ = 4.0 µg/l, $Z_{secchi(avg)}$ = 2.3 m; values are 2009-2013 growing season averages as shown by MDELCC (2009-2013) and data collected in this study).

Materials and methods

Sediment sampling

Sediment cores were collected from 11 reservoirs in the summers of 2013 and 2014 from the deepest point of a basin using a modified KB gravity corer (Glew 1989). The top and bottom sample of each core was extruded on shore using a vertical extruder (Glew 1988). Top samples (0- 0.5 cm) were taken to represent modern conditions and diatom assemblages and 0.5 cm thick bottom samples were taken from an interval estimated to have been deposited pre-disturbance (i.e. dam construction). In particular, we applied the Brothers et al. (2008) predictive model to estimate the approximate depth of dam construction in each reservoir to identify the adequate length of each core. After extruding, samples were stored in airtight bags, and kept in the dark and on ice until frozen as soon as possible.

A sediment core was collected from each of Grand Lac Saint-François's two basins (South (SB) and North (NB)) during the summer of 2013. Cores were extruded in their entirety (SB = 45.5 cm; NB = 35.5 cm), at a resolution of 0.5 cm and samples were placed in airtight bags, and stored frozen and dark until analysis in the lab. The corresponding top and bottom samples from Grand Lac Saint-François were incorporated in the top-bottom dataset.

Chronology and sedimentology

To generate a chronology for the observed ecological changes in the sediment records of Grand Lac Saint-François, a subset of samples from both cores were sent to Le GEOTOP (Montreal, Québec) for radioisotope dating using gamma spectroscopy of ^{210}Pb, ^{226}Ra, and ^{137}Cs. Chronologies were based on the application of the constant-rate-of-supply (CRS) model, as outlined by Sanchez-Cabeza and Ruiz-Fernández (2012). The CRS age model is commonly applied in paleolimnology, especially at sites where it is expected *a priori* that sedimentation rates have changed over time (in this case, dam construction was expected to alter sedimentation rates). Ages of intervals that fall beyond the reliable time limit of ^{210}Pb (~150 years) were linearly extrapolated as per Binford (1990). ^{137}Cs was used as an independent control marker for the reliability of the applied dating model as peak global fallout is known to coincide with 1964 AD (Appleby et al. 1993).

To track changes in sedimentological indicators through time at Grand Lac Saint-François, loss-on-ignition (LOI) and magnetic susceptibility (MS) were measured for every interval of the SB core (resolution = 0.5 cm), and every second sample of the NB core (resolution = 1 cm). We followed the LOI protocol standardized by Heiri et al. (2001); this protocol uses a mass-loss method where sediments are sequentially ignited at 550°C and 950°C to quantify relative amount of organic matter and carbonate throughout the core. Magnetic susceptibility was used to quantify the relative abundance of magnetizable materials (e.g. iron and manganese compounds) present in the sediments. These magnetic materials are of interest as they are often transported to the lake from allochthonous sources and thus, MS can be used as an indicator of catchment erosion through time (Sandgren and Snowball 2001).

Sedimentary Pigments

Immediately after freeze-drying, sedimentary pigments were extracted from both Grand Lac Saint-François cores (resolution: SB = 0.5 cm, NB = 1 cm) in pure acetone for 24 hours, after thorough mixing and sonication. Extracts were centrifuged, decanted, and filtered before separation of pigments using reversed-phase high performance liquid chromatography (HPLC) techniques, adapted from Zapata et al. (2000). Pigment extracts were injected into the HPLC system (Waters: 600s Controller, 626 Pump, 717 Plus refrigerated Autosampler, 2996 Photodiode Array Detector (PDA), 2475 Multi Wavelength Fluorescence Detector (UV); equipped with a 4 μm pore size Symmetry C18 column). Isolated pigments were identified using spectrograms, elution order, and retention time in comparison with external DHI laboratory standards, and a phytoplankton pigment key (Jeffrey et al. 1997). Pigment concentrations were quantified using the resultant PDA and UV chromatograms along with a standard calibration curve for each pigment. Pigment concentrations are expressed as: mass normalized to sample organic matter (ng/μg OM). Samples were handled and stored under argon gas, ice, and green-filtered light. Three pigments were selected for analyses based on their stability and representation of algal groups of interest: diatoxanthin (diatoms, dinoflagellates, and chrysophytes), β-carotene (most algae), and echinenone (cyanobacteria). The chlorophyll-*a* to phaeophythin-*a* ratio was also calculated as a conservative proxy for pigment preservation throughout the core (Leavitt and Hodgson 2001).

Diatoms

Homogenized subsamples from all the top and bottom intervals, as well as subset of intervals from the Grand Lac Saint-François SB core (n = 17) were prepared for diatom subfossil analysis. Preparation of diatom slides followed standard protocol as outlined by Battarbee et al. (2001). This procedure first treats samples with 10% hydrochloric acid to oxidize carbonates. After

rinsing samples several times with deionized water, organic matter is then digested with heated 30% hydrogen peroxide, and samples were washed numerous times with deionized water to reach neutral pH. Resultant slurries were plated onto coverslips, and mounted onto slides with Zrax (r.i. = 1.74). Using a Leica DM2500 compound microscope (×1500 magnification), a minimum of 400 diatoms valves were identified primarily following the taxonomy outlined in Fallu et al. (2000), Lavoie et al. (2008), and Krammer and Lange-Bertalot (1986- 1991), as well as photomicrographs provided by Roxane Tremblay whose total-phosphorus calibration set we applied (Tremblay et al. 2014). For several of the challenging *Cyclotella* taxa, we sent samples to Dr. Paul Hamilton (Canadian Museum of Nature) to confirm their identity using scanning electron micrographs.

Historical and ancillary data collection

Daily water levels (from which drawdown amplitudes were calculated) for Grand Lac Saint-François, as well as all other Québec reservoirs in this study were obtained from the Centre d'Expertise Hydrique Québec (CEHQ; https://www.cehq.gouv.qc.ca), which is responsible for monitoring and making these data publically available. Over 40 years of daily water level data were available for Grand Lac Saint-François (1972- 2013). Water level data from recent years were provided, upon request, from the dam operator (TransCanada) for the reservoir situated in New Hampshire. However, water level data were not so readily accessed for the remaining US reservoirs. As such, we deployed pressure transducer water level loggers (Solinst Levelogger® Junior Edge) overwinter in the remaining reservoirs in order to monitor the complete range of water level change across one winter season (September 2014- June 2015). In general, drawdown amplitudes were calculated using the difference between the June-July median level (as full pool indicator) and the minimum winter water level observed. However, in reservoirs

where we deployed level loggers, the water level difference was taken between the average of available data after May 31st as the full pool indicator (i.e. when most of the reservoirs with a complete annual time series of data had reached or nearly reached full pool) and the minimum winter level observed reached or nearly reached full pool) and the minimum winter level observed. Water level drawdown amplitudes calculated using the loggers were compared to available current and historical rule-curves to ensure the observed amplitude appropriately reflected long-term trends.

Annual mean growing season temperature (May- October inclusive) was calculated from historical temperature data from Government of Canada's historical climate database (http://climate.weather.gc.ca/). Records of the most proximate station to Grand Lac Saint-François (Saint-Éphrem de-Beauce, QC, 1949- 2013) were extended using correlative relationship with a regionally proximate station that had a longer historical record (Sherbrooke, QC, 1904- 2013) on the basis that overlapping data showed different absolute temperatures but statistically equivalent trends across years ($r = 0.90$, $n = 20$). Unfortunately, precipitation data in the region was not consistent enough to build reliable long-term records.

Modern watershed land use estimates for all top-bottom watersheds were calculated using ArcGIS (ESRI). Watersheds were delineated using high-resolution (~30 m) digital elevation model from the USGS database (https://lta.cr.usgs.gov/SRTM1Arc). Land use rasters were downloaded from the updated North American Environmental Atlas's 2005 North American Land Cover dataset (http://www.cec.org/) and the relative proportions of the various land use categories were calculated for each watershed in the top-bottom dataset. We also calculated historical phosphorus budgets for the watershed of Grand Lac Saint-François on a decadal scale from 1901 to 2011 using a surface balance modeling approach known as NAPI (net

anthropogenic phosphorus inputs). This method has been applied on a county scale by Goyette et al. (2016) for the Saint Lawrence River basin and its sub-watersheds; herein we have used datasets collected at a finer scale (i.e. at the municipal scale of inputs and outputs) to account for the smaller size of our watershed. In cases where data were not available at the municipal scale, relative area proportions were taken from the respective county scale data (i.e. fertilizer tonnage sales, crop and livestock inventories). In summary, NAPI uses the net balance of all known anthropogenic, both human and agriculture sources, phosphorus inputs (detergent, food and feed imports, fertilizer) and outputs (food and feed exports, crop production; Howarth et al. 1996). Municipal data were collected from each decadal agricultural census and population census (CDBS 1901-2012).

Data analysis

We applied several different multivariate analytical techniques to the diatom assemblage data. Major patterns of variation in both diatom assemblage and pigment datasets (i.e. top-bottom and/or Grand Lac Saint-François) were assessed using principal components analysis (PCA). This multivariate ordination technique condenses assemblage data into fewer dimensions known as principal components (PCs) that sequentially explain differing degrees of variability. We also calculated Bray-Curtis (BC) dissimilarity as a metric of change between recent and pre-disturbance diatom assemblages, where samples closer to 0 are more similar. Both PCA and BC dissimilarity were calculated using the 'vegan' package in R (Oksanen et al. 2015). Diatom biostratigraphic zones in the Grand Lac Saint-François core were determined using constrained hierarchical clustering techniques, particularly: constrained incremental sum of squares (CONISS) and assessed using the broken-stick model within the 'rioja' package in R (Bennett

1996; Juggins 2015). Clustering was performed on BC dissimilarity calculated between intervals. For all of these multivariate analyses, each diatom dataset was screened to only include taxa that occurred at least once at > 1%. Diatom communities were also Hellinger transformed prior to analyses as this transformation reduces the importance of very abundant taxa that are extremely dominant during a bloom, while increasing importance of rare taxa (Legendre and Legendre 2012; Tremblay et al. 2014).

To quantify historical trends and changes in total phosphorus concentrations, a transfer function using a calibration dataset from 55 lakes across southern Québec (Tremblay et al. 2014) was applied to the diatom assemblages across the top-bottom dataset, as well as the subset of enumerated samples of the Grand Lac Saint-François core. We applied the classical weighted-average diatom-inferred total phosphorus (DI-TP) model from the calibration set (which included taxa with greater than four occurrences) as it was the model reported to have the greatest fit, was the most parsimonious, and had the lowest error (Tremblay et al. 2014). We also applied an analog test using the Orlóci's chord distance and average dissimilarity across the calibration lakes to determine if the DI-TP model was a good fit to our enumerated diatom samples (following approach adopted by Tremblay et al. 2014). To quantify relationships with potential drivers of variation (i.e. drawdown amplitude, watershed land use, reservoir age) in our diatom response metrics derived for all 12 reservoirs (i.e. BC dissimilarity, PC1, and DI-TP), we applied nonparametric correlation analysis (Spearman rank).

We also conducted a series of analyses to infer the timing of key changes, as well as identify potential drivers of change in the suite of indicators measured in the cores from Grand Lac Saint-François (i.e. pigment concentration, PC 1 of the diatom and pigment assemblages, LOI, and MS). To estimate the threshold of change (a.k.a. breakpoint) in the water quality trends

we quantified at Grand Lac Saint-François, we fit piecewise linear regressions using the R package 'segmented' (Muggeo 2015). Non-parametric Mann-Kendall (MK) tests were also used to quantify the monotonic trends of water quality proxies, as well as environmental variables, through time using the R 'Kendall' package (McLeod 2011). Variability was estimated for the pigment concentrations across different periods of time by calculating a coefficient of variation (CV = standard deviation/mean × 100). Finally, we performed simple and multiple linear regressions to assess strength of the relationship between key water quality indicators measured from the sediment core analyses (i.e. pigment or DI-TP values) and potential historical drivers of change (i.e. time series for watershed nutrient budgets (NAPI), mean growing season temperature, and annual drawdown amplitudes). As the environmental variables were available across different time scales and data resolutions, analyses were tailored to length and resolution of each dataset (see Table 4 for summary of data availability and resolutions). Pigment concentrations of each core were standardized (mean = 0, sd = 1) before analysis to correct for potential differential preservation in each basin (Leavitt and Hodgson 2001). Log (x + 1) transformations were performed, where necessary, to normalize response distributions. Simple and multiple linear regressions were completed using the base 'stats' package in R (R Core Team 2014). To account for artificially low *p*-values as a product of temporal autocorrelation, *p*-values were adjusted using 'permute' package in R (Simpson 2015), which performs a chronologically-restricted permutation.

Results

Regional trends

We did not observe strong relationships between our diatom metrics and the magnitude of reservoir drawdown in our top-bottom analysis. Across the region, the degree of diatom

assemblage change from pre-dam conditions was modest. Average BC dissimilarity between the top-bottom assemblages for the 12 reservoirs was 0.41 and ranged from 0.26 to 0.63. Dissimilarity was not correlated with current drawdown amplitudes but was significantly correlated with geography (i.e. latitude and longitude), dam age, and maximum depth (Table 3). The greatest diatom dissimilarities were evident in newer, deeper, and more northern reservoirs. Similar inferences could be drawn from the PCA, where only a small subset of reservoirs showed notable deviation from their pre-dam assemblages and contrasting drawdown regimes (high: > 3 m, moderate: 1.5- 3 m, and low: < 1.5 m) amongst recent assemblages showed no distinction across reservoir site scores (Fig. 2). We found that PC1 scores of the contemporary samples were significantly correlated with geography (i.e. latitude and longitude), dam age, maximum depth, as well as DI-TP (Table 3). Overall, the first two axes of the PCA explained approximately 40% of the variation observed across the region's past and present diatom assemblages.

Reconstructions of total phosphorus in contemporary and pre-dam conditions showed that all reservoirs have remained oligotrophic or oligo-mesotrophic. However, three of them showed significant (i.e. exceeding the 2x RMSEP model threshold) increases in recent DI-TP estimates: Massawippi (ΔDI-TP = 11 µg/l), Aylmer (ΔDI-TP = 10 µg/l), and Grand Lac Saint-François (ΔDI-TP = 5 µg/l; Fig. 3). No significant relationships were observed between potential environmental drivers and the long-term changes in DI-TP measured across these 11 reservoirs. The 31-Milles reservoir was excluded from the DI-TP analysis as we detected a weak analog and less than 40% of this site's diatom assemblage was represented by the flora present in the model dataset. Although the bottom Massawippi sample also indicated a weak analog, it was included in the analysis as over 80% of the diatom assemblage was represented by taxa present in training set (Appendix 10).

Grand Lac Saint-François

Analyses of environmental variables that could be considered as potential drivers of water quality trends provided insight into the historical context of the multiple stressors acting on Grand Lac Saint-François. However, these drivers needed to be interpreted in the context of the extent of the time series and its resolution (summarized in Table 4). Consistent record keeping of water levels have spanned the last 41 years, and our trend analysis of these data showed that drawdown amplitudes have not increased (MKτ = 0.16, p = 0.14; Appendix 2). In contrast, the mean growing season temperature record spans over 100 years and with these data we detected a significant increase over time (MKτ = 0.59, p = 0.008; Appendix 3). Based on the slope of the linear trend apparent in the record, there has been a 1.7 °C increase in average growing season temperature in the region over the last 113 years. Using decadal census records of the area, we calculated watershed nutrient budgets (NAPI) and observed there has been a consistent surplus of phosphorus (P) in the watershed at Grand Lac Saint-François since the 1900s (Fig. 4). NAPI steadily increased until 1971 to 248 kg P/km^2, which is five times greater than the load calculated for 1901 (42 kg P/km^2). Increasing animal feed imports drove NAPI trends until the 1940s when feed imports stabilized and commercial P fertilizer application began to steadily increase (data not shown). The decline of NAPI from its peak load in 1971 to recent loads of approximately 170 kg P/km^2 is a result of both reduced feed import and P fertilizer application. Agricultural land-use in the watershed was around 30% in 1901 and peaked briefly at 35% in the 1940s and 1950s, before declining rapidly to modern proportions (13%; Fig. 4). Human population in the watershed has been entirely rural and remained quite stable through time (~9000 inhabitants).

The sedimentation rates and sedimentology of the Grand Lac Saint-François cores

showed substantial changes throughout the past ~200 years. Both the NB and SB cores showed an exponential decay of unsupported ^{210}Pb activity with core depth (Appendix 1). The estimated age of ^{137}Cs peaks (based on the application of the CRS model to the unsupported ^{210}Pb activity) concurred with timing of peak ^{137}Cs global fallout. Based on the chronology developed for the NB, we found that sedimentation rates almost doubled between 1870 and 1905 AD (around the time of the first dam construction, 1888), and have continued to increase to rates three times the estimated pre-dam sedimentation rate (Fig. 4). Unfortunately the temporal record for the SB core was not as long, and therefore it is more difficult to draw a clear interpretation of how sedimentation rates changed around the dam construction periods in this basin. In both cores, we observed relatively high levels of organic matter content (~20%) in the older portions of the record, until declining trends onset in the early 1900s, and then stabilized around 13% in the 1950s/1960s (Fig. 4, Table 4). In contrast, carbonate content remained relatively unchanged throughout both cores (~2- 3%; Fig. 4). The MS stratigraphies showed a pattern of increasing magnetisable content from the late 1800s onward, and then decreasing after the 1960s (Fig. 4, Table 4).

Pigment stratigraphies of both cores showed relatively stable pigment concentrations in the pre-dam era, with observable increases in both concentrations and variability in the post-dam era (Fig. 5). The Mann-Kendall tests detected significant and positive trends in all pigments over time (Table 4). Comparison of the coefficient of variation (CV) for the pigment profiles clearly showed that the variation in concentrations has increased since construction of the major dam (JA dam), with the exception of β-carotene in the NB that was more coarsely resolved and relatively more variable throughout (Table 4). The breakpoint analyses showed that for all pigments, indicators measured in the NB core typically changed earlier than those in the SB core.

For example, the pigment concentrations measured in the NB core changed concurrently with the construction of the first dam on Grand Lac Saint-François (circa 1888 AD) whereas the breakpoints identified for the SB concur with the construction of the second, larger dam (circa 1916 AD; Table 4). PC1 represent the community trajectory through time, and appear to be telling of the same general patterns of individual pigments in each basin as described (Fig. 5). Correlative analyses of Grand Lac Saint-François pigments profiles with the long term, high-resolution temperature record showed that mean-growing season temperature was a strong, positive, and significant predictor of diatoxanthin ($R^2 = 0.44$, $p_{adj} = 0.03$) and moderate positive predictor of echinenone concentrations, however the relationship with echinenone was not significant after accounting for temporal autocorrelation (($R^2 = 0.22$, $p_{adj} = 0.06$; Table 5). With the long-term decadal time series, we found that temperature consistently explained ~40% of the variation in diatoxanthin, but watershed nutrients (i.e. NAPI) could also explain a comparable amount of variation (~34%). Echinenone only showed a significant relationship with NAPI ($R^2 = 0.34$, $p_{adj} = 0.04$). Neither temperature nor NAPI were significant predictors of β-carotene dynamics when the decadal time series were considered (Table 5). Although we attempted correlation analyses of datasets that began after 1972 AD, to include the high-resolution water level time series, we failed to detect any significant relationships.

The stratigraphies of the dominant diatom taxa showed increasing presence of mesotrophic and eutrophic indicators through time (Fig. 6). PCA of the downcore diatom assemblages explained approximately 60% of variation in the first two axes (Fig. 7). Apparent in the PCA, three potential biostratigraphic zones (although insignificant in CONISS, potentially due to sample resolution) appear within the diatom stratigraphies: 1) pre-JA dam (< 1916 AD); 2) post-damming (1917-1970s); and 3) modern era (post-1980s). The transition among zones is

apparent along PC 1; the pre-JA dam assemblages (Zone 1) are distinctly separated from recent flora (Zone 3) by a more variable and transitional cluster (Zone 2). Pre-JA dam assemblages were dominated by mostly oligo- to moderately mesotrophic taxa: *Discostella stelligera* Cleve and Gunrow (in Van Heurck) 1882, *Cyclotella bodanica var. lemanica* (O. Müller dans Schröter) Bachmann 1903, *and Aulacoseira tenella* (Nygaard) Simonsen. Currently, Grand Lac Saint-François is still dominated by oligo-mesotrophic taxa but with increasing presence of more mesotrophic indicators such as: small *Aulacoseira pusilla* (Meister) A. Tuji & A. Houki 2004, *Fragilaria crotonensis* Kitton 1869, and *Tabellaria floculosa* (Roth) Kützing 1844. Prior to the JA dam, diatom assemblages were on average only ~47% planktonic, which has increased up to 75% in recent years.

The DI-TP estimates showed a significantly increasing trend ($MK\tau = 0.65$, $p < 0.001$), with rising concentrations since the early 1900s. There was a brief peak in 1942 when concentrations reached nearly 10 µg/l that was driven by a brief occurrence of *Aulacoseira granulata* (Ehrenberg) Simonsen 1979. Correlative analyses showed that DI-TP was marginally explained by temperature when corrected for temporal autocorrelation ($R^2 = 0.40$, $p_{adj} = 0.08$; Table 5). NAPI was a significant and moderate predictor of DI-TP ($R^2 = 0.36$, $p_{adj} = 0.04$).

Discussion

Damming and associated reservoir management is an issue that influences many aquatic ecosystems and is of considerable importance in many regions due to deteriorating water quality and concurrent growing demands on water resources (Kennedy 2005). Winter water-level drawdown in dammed reservoirs is prevalent across temperate and boreal regions. However, there has been very little assessment of the long-term water quality trends under such hydrological management. Here we have applied paleolimnological techniques to a dozen

reservoirs and showed that long-term trends of water quality metrics were variable across reservoirs and potential drivers were difficult to isolate in the presence of multiple environmental factors. Detailed analysis of one reservoir, Grand Lac Saint-François, showed significant changes in sediment lithology, sediment accumulation rates, and multiple biological proxies around the time of dam construction. However, variation in our water quality metrics over the last 200 years in the Grand Lac Saint-François records were best explained by changes in watershed nutrient loads and climate. The magnitude of water level drawdown was not a strong predictor of either local or regional water quality trends. Overall, our findings generally agree with earlier work (Serieyssol et al. 2009) that reported changes in sedimentology following damming, but only a weak to moderate response of water quality metrics to water level drawdown in winter.

Due to the common coupling of reservoirs and human development, there is often a mix of multiple stressors present across temperate landscapes. We found that many of the watersheds in which our reservoirs are located had a long history of logging and agriculture in addition to water level manipulation. Despite our attempts to isolate the effect of water level drawdown (by minimizing gradients in landscape and morphometric features across reservoirs), we did not find strong support for the hypothesis that the magnitude of annual winter drawdown is the primary driver of water quality change in these relatively large and deep ecosystems. Diatom assemblage trends appeared to be driven more by geographical and morphometric characteristics of the reservoirs, as well as time since impoundment; unfortunately we are unable to tease apart the effect of these drivers as they were all significantly correlated. The reservoirs with the greatest assemblage dissimilarity between historical and contemporary samples (i.e. Poisson-Blanc, 31-Milles and, Massawippi) are all sites currently dominated by the small centric diatoms (e.g. *Cyclotella atomus* Hustedt, *Cyclotella comensis* Grunow in Van Heurck 1882 and,

Stephanodiscus parvus/minutulus (Kutzing) Cleve & Moller 1882 /Stoermer et Håkansson 1984). Several of these small planktonic centric taxa are thought to be indicative of stable water columns and have repeatedly been associated with climate warming trends in lakes (Rühland et al. 2008). Furthermore, *C. atomus* as seen in contemporary samples of 31-Milles and Poisson Blanc has been linked with higher nutrient concentrations and more turbid waters in many regions; first appearances have been used as an early warning sign for deteriorating water quality (Mills et al. 1993; Yang et al. 2005; Weckström and Juggins 2006). These results suggest that more regional-scale drivers are influencing the diatom assemblages within our dataset, more so than altered hydrology that varies strongly between lakes. Although changes in total phosphorus reconstructions were not significantly explained by any of the environmental variables tested, there was a suggestive positive relationship between the change in DI-TP and the current proportion of cropland in the watershed. This relationship is intuitive as watershed agriculture activity has long been associated with nutrient loading in lakes and reservoirs (Hall et al. 1999a; Taranu and Gregory-Eaves 2008), but may be complicated by the climatic and morphometric context, as well as land-use legacies (Keatley et al. 2011).

From the detailed study at Grand Lac Saint-François, it is evident that the watershed has, and continues, to experience multiple stressors. However, the first notable changes in the ~200 year sediment record coincided with the timing of the dam construction. Interestingly, we did not observe changes in the sedimentology and water quality proxy trajectories prior to the first dam's construction, despite the presence of ongoing settlement, agriculture, and early logging practices. Post-damming, it is difficult to differentiate the impacts of the drawdown from watershed nutrient loading or the changing climate as they all occurred simultaneously. However, correlation analyses of long-term records suggested that NAPI and temperature are key variables

in explaining changes in cyanobacteria and algal proxies, as well total phosphorus indicators. Unfortunately, due to the high variability of the water quality proxies post-damming and to the limited time-span of water level data available (i.e. a 41 year record), we did not have enough power to tease out relationships of the drawdown amplitude and water quality. Damming and subsequent hydrological modification likely played a role in altering the water quality trajectory of Grand Lac Saint-François but it does not appear to have an overarching effect in the presence of warming atmospheric temperatures and watershed nutrients.

Insignificant responses in water quality to altered hydrological regimes may be an inherent characteristic of deep reservoirs. Reservoirs are typically known to become eutrophic through time, much more rapidly than natural lakes due to higher retention of sediments and nutrients (Thornton et al. 1980; Kimmel and Groeger 1986). However, it has long been acknowledged that watershed topography, size, and land use, as well as reservoir morphology, hydrology, and regional climate can all be key characteristics in influencing processes driving the aging of reservoirs (Kimmel and Groeger 1986; Straškraba et al. 1993; Kennedy 2005). Across 1022 reservoirs in the continental United States, Miranda and Krogman (2015) evaluated a multimetric indicator of functional age of reservoirs (i.e. its relative position along the ecosystem's life span since formation) to better track senescence. Across all reservoirs, time since damming (chronological age) was not correlated to the estimated functional age of the reservoirs studied, and it appeared that depth of the reservoirs limited functional age. Meaning, deeper reservoirs were relatively young compared to the high range of functional ages found in shallow systems. Generally, deeper reservoirs appeared to be more resilient to the "symptoms" of impoundment, which may further buffer some effects of drawdown on water quality. In contrast to our findings from deep reservoirs (all greater than 15 m at full pool; Table 1), shallow reservoirs experiencing

excess water level drawdown may experience a regime shift from a clear-macrophyte dominated system to turbid and pelagically-productive systems (Cooke 1980; Nõges and Nõges 1999; Coops et al. 2003; Zohary and Ostrovsky 2011).

Although to date pelagic and littoral habitats have generally been studied independently, it is important to consider the interconnectedness of these sites within the same larger ecosystem, and the potential for littoral changes to cascade to the pelagic zone. Evident losses of littoral habitat and biota (e.g. macrophytes and macroinvertebrates) have been widely reported across a range of drawdown amplitudes in both deep and shallow lakes (Turner et al. 2005; Aroviita and Hämäläinen 2008; White et al. 2011; Trottier 2015; Evtimova and Donohue 2016). Sediment deposition boundaries were also shown to respond rapidly and distinctly to minimal water levels in a lake with an experimental winter drawdown treatment. With drawdown, Cooley and Franzin (2008) observed that the deposition of fine organic matter was refocused below the drawdown limit and the exposure zone consisted of homogenized substratum, creating simplified or barren littoral habitat. These erosional processes along with direct desiccation/freezing leads to macrophyte loss in the exposure zone. Macrophyte beds themselves act as sediment traps and lead to the long-term sequestration of nutrients (Rooney et al. 2003). Given that average drawdown amplitudes at Grand Lac Saint-François expose all littoral area (A.W. Latzka, pers. commun.) and that we observed minimal to bare macrophyte coverage along various reaches of shoreline (personal observ.), nutrients from the watershed are unlikely to be retained within the littoral zone for long. We infer that persistent littoral erosion, together with the loss of habitat features in the littoral zone that might have absorbed allochthonous matter (at least temporarily) may have influenced water quality trends at Grand Lac Saint-François, but this signal was obscured by changes in land-use, climate, and other factors. In Grand Lac Saint-François, the

tea-coloured waters ($colour_{(AVG)}$ = 62.7 Pt, mg/l; $Z_{secchi(AVG)}$ = 2.3 m; Poulin and Charest 2008) due to the presence of humo-ferric soils in the watershed may further contributed to the disconnect between nutrient supply and phytoplankton production as phytoplankton could have be light limited at times of high watershed/shoreline erosion (Schroeder et al. 2016).

At present, there are few long-term water quality time series to evaluate the robustness of the trophic surge model under repeated water level drawdowns, but one observation that has been reported in several studies is the appearance of greater ecological variability. Certainly, a striking finding in the Grand Lac Saint-François analysis is the greater variability in numerous sedimentology and water quality metrics post-damming. Pigment profiles indicated both increasing concentrations and greater variability while diatom assemblages showed a relative increasing distance in ordination space with onset of drawdown within the PCA (suggesting greater ecological variability). Increased ecological variability post-damming has also been observed in another relatively large, deep reservoir. At Namakan reservoir (a site that spans the Minnesota (USA)/Ontario (CAN) border and currently experiences a winter drawdown of ~2 m), Serieyssol et al. (2009) noted greater sample-to-sample variation and species turnover in diatom assemblages post-damming, as well as increasing and more variable total phosphorus concentrations. Likewise, Rolland et al. (2005) reported high inter-annual variability of phytoplankton abundances and composition as a general feature in their reservoirs. Furthermore, empirical cyanobacteria biomass models of reservoirs were found to be weaker (less predictive) than those in natural lakes when using classical limnological variables such as total nitrogen, total phosphorus, and water temperature (Beaulieu et al. 2013).

In contrast to the relatively muted pelagic water quality impacts associated with winter drawdown in deep reservoirs, there appears to be a much more drastic response to summer water

level changes. From what we can glean from the literature, low water levels associated with over-exploitation, hydrological forcing, or drought during the summer season have been associated with large algal blooms, in some cases potentially toxic-cyanobacteria blooms (Naselli-Flores and Barone 2005; Sánchez-Carrillo et al. 2007; Baldwin et al. 2008; Hambright et al. 2008). This has been shown to be a result of weakened thermal stratification and mixing of epilimnion with nutrient rich hypolimnetic waters, thus sustaining large phytoplanton blooms. Many examples of cyanobacteria blooms as a response to untimely water level fluctuations are outlined by Bakker and Hilt (2015). In Zohary and Ostrofsky's (2008) review of the impacts of water level fluctuations on thermally-stratifying ecosystems, they conceptualized a framework, whereby numerous changes would be expected to occur as a function of increasing water level fluctuations. In particular, they outlined that water level fluctuations could ultimately result in eutrophication due to increased contributions of internal loading. In addition, they predicted that with increasing water level fluctuations, there would be a loss of littoral resources and native/keystone species, and an increased propensity for invasive species to establish and proliferate. However, the timing of the water level fluctuations was not highlighted in this review and case studies of winter drawdown were lacking. Nonetheless, based on existing experimental and paleolimnological studies (including this one) it appears the impacts of winter water level drawdowns on water quality in comparison are muted. As far as we know from the literature, winter drawdown has not yet been associated with long-term and profound impairments of water quality in temperate reservoirs.

Conclusions

Given the widespread presence of dams and associated hydrological modifications in north temperate reservoirs, there is a strong need to improve our understanding of how these

alterations affect long term water quality trends (Kennedy 2005). By conducting paleolimnological analyses of 12 north temperate reservoirs, we failed to find strong support that changes in hydrology were the primary driver of change in several water quality indicators. The modest water quality changes we detected, and could associate with winter drawdown, are consistent with the few studies that have completed comparable analyses. Interestingly, these results contrast with studies that have focused on water level changes in shallow ecosystems and/or examined the effect of summer drawdown, which appear to be more vulnerable to impacts (e.g. cyanobacteria blooms). It is becoming increasingly important to understand reservoir water quality dynamics in the current landscape of intensifying stressors. Understanding how reservoir function and how their operations may exacerbate (or mitigate) declining water quality in this changing anthropogenic era is crucial to safeguarding many important freshwater resources.

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Figures

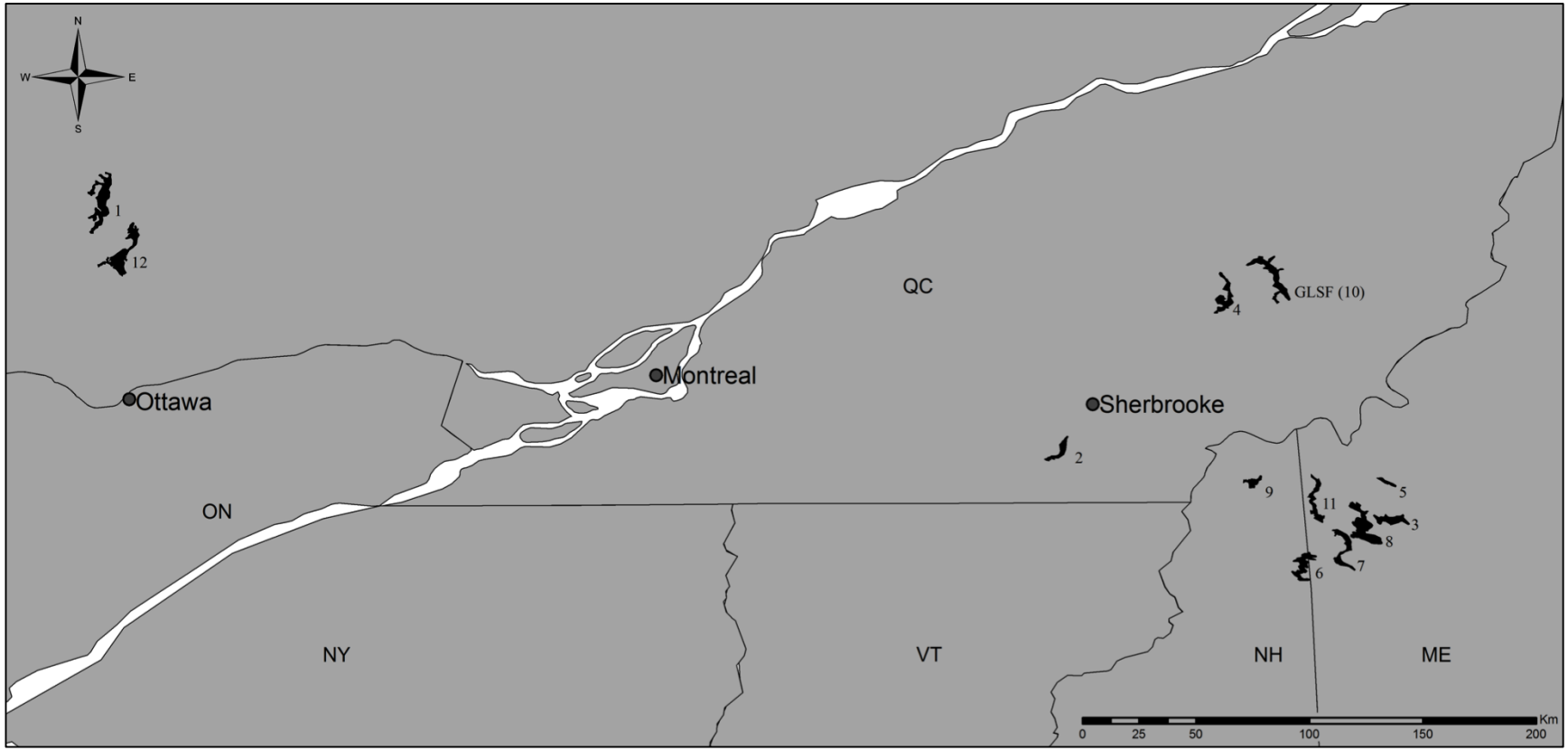


Fig. 1. Location of 12 reservoirs (black), identified to match associated reservoir ID in Table 1 (ID). Nearby cities (gray circles), Grand Lac Saint-François and, provinces/states are labeled for reference.

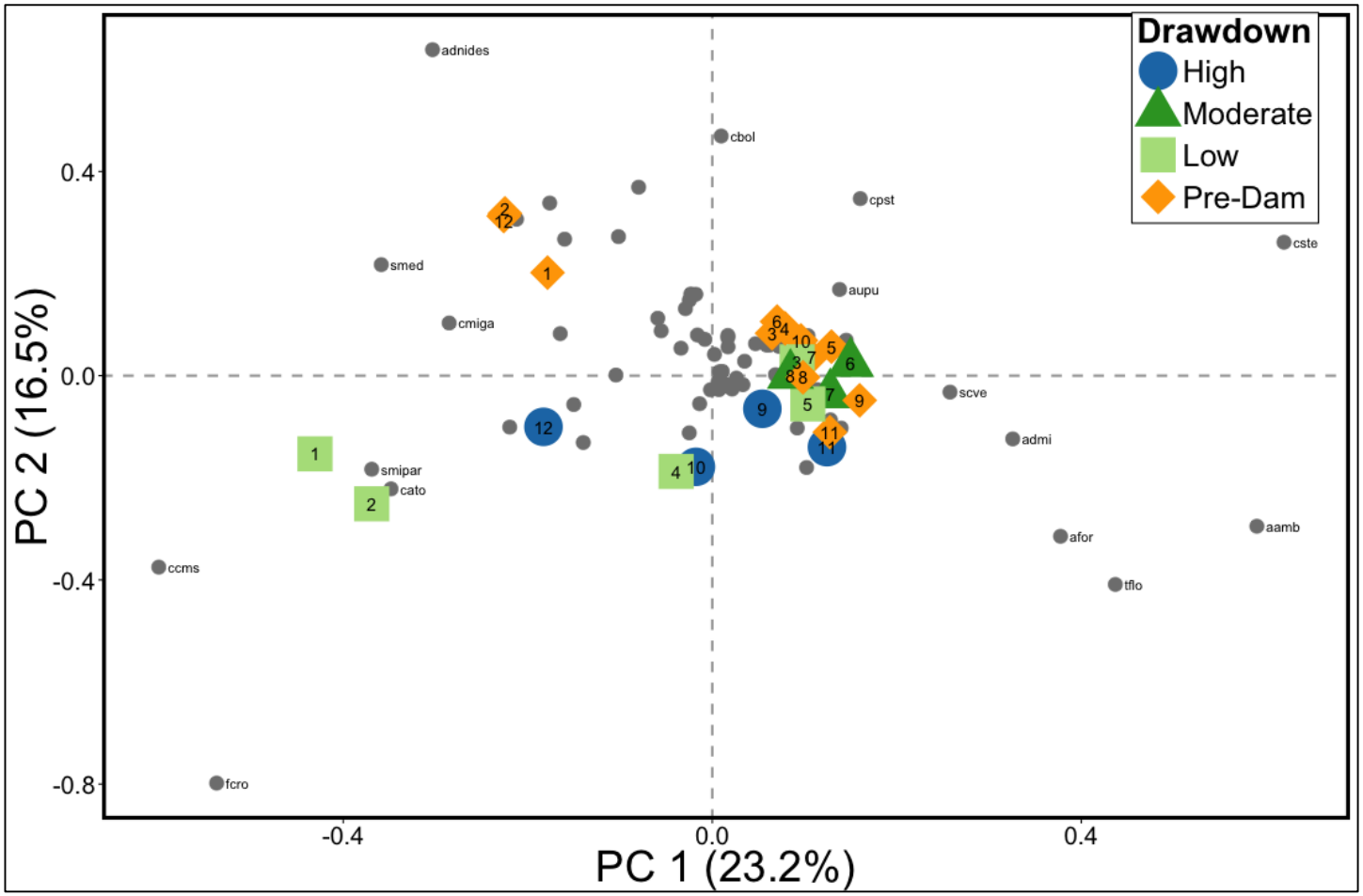
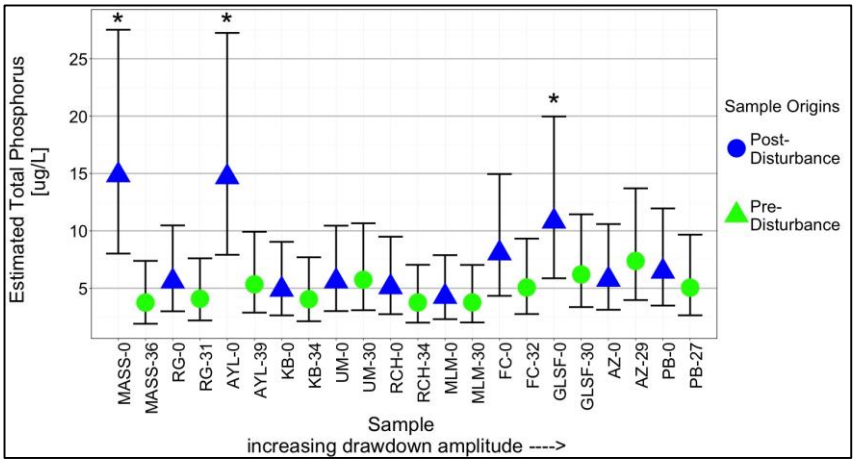


Fig. 2. Principal component analysis (PCA) biplot of top and bottom diatom assemblages of the 12 selected reservoirs. Current drawdown amplitudes are represented across the top samples by high drawdown amplitudes (> 3 m), moderate (1.5- 3 m), and low (< 1.5 m). Bottom samples are represented by pre-drawdown. Numbered labels identified for each point match the associated reservoir ID listed in Table 1 (ID). Some potentially influential taxa are labelled. Taxa included were species with >1% and were hellinger transformed prior to analysis.

A.



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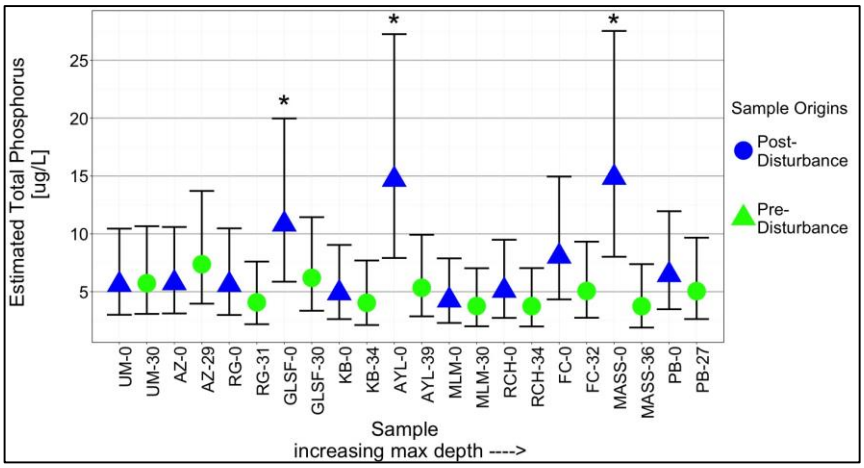

C.

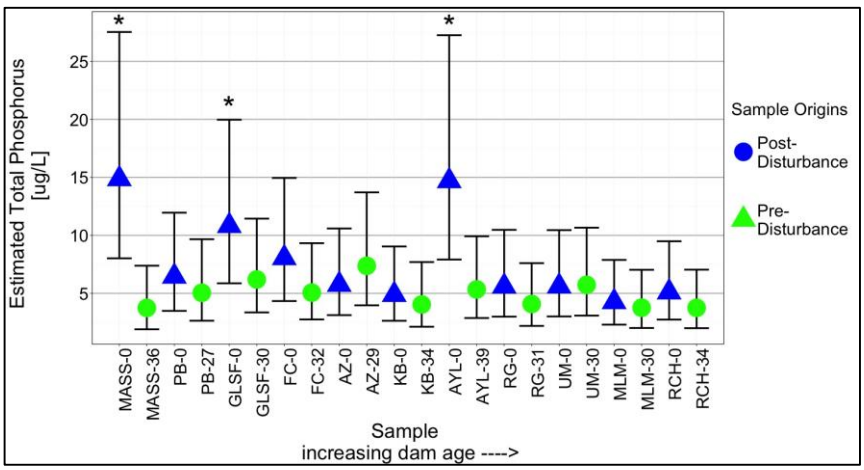

Fig. 3. Reconstructed total phosphorus concentrations (µg/l) for the top-bottom analysis. Each site has a blue circle and green triangle, representing contemporary (i.e. post-disturbance) and pre-dam (i.e. pre-disturbance) estimated total phosphorus concentrations respectively. Sites are ordered by A. contemporary drawdown amplitude, B. increasing max depth, and C. increasing dam age. Note: * indicates sites where DI-TP concentrations are significantly different between recent and pre-dam conditions (> 2 x the square root of the sum of the predicted squared errors (RMSEP) of the inference model). Reservoir codes are listed in Table 1 (Code); interval depth (cm) is indicated at the end of the labels.

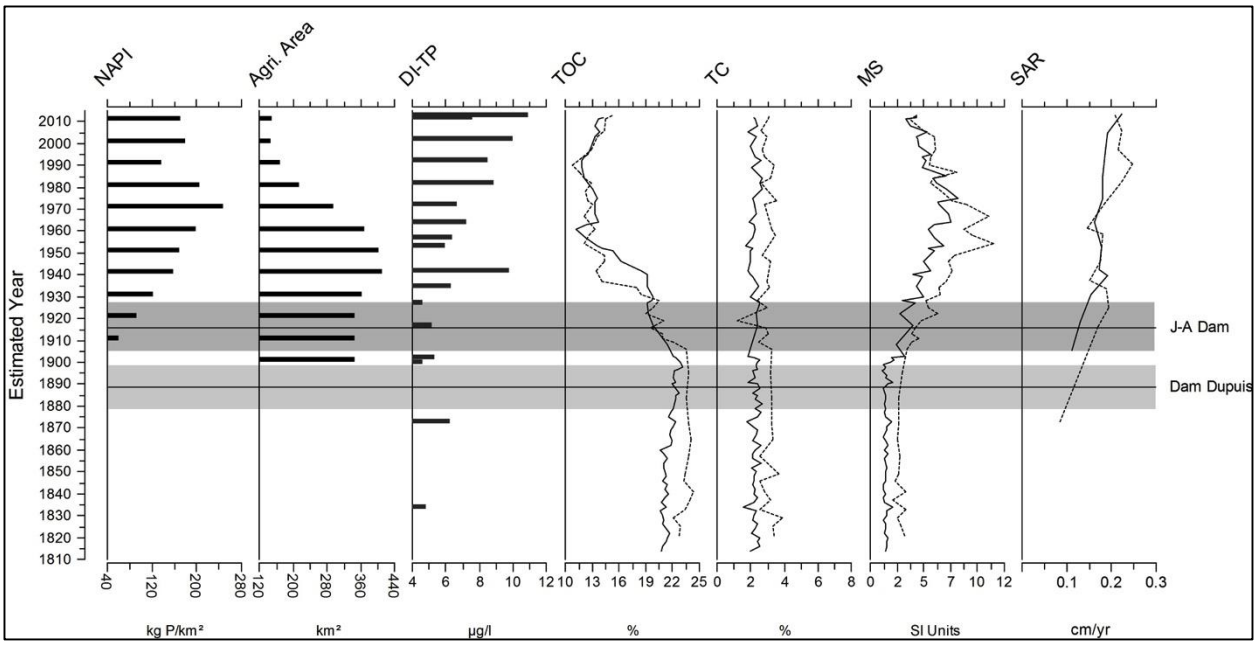

Fig. 4. Historical watershed agriculture data and sedimentological time series of Grand Lac Saint-François. NAPI is a measure of net anthropogenic phosphorus inputs to the watershed. NAPI and agriculture area are calculated using agricultural census data at a decadal timescale. Diatom-inferred total phosphorus (DI-TP) estimates are plotted as µg/L and were calculated for only the SB. Total organic carbon (TOC) and total carbonates (TC), magnetic susceptibility (MS) and sediment accumulation rates (SAR) are indicated for both the NB core (dashed line) and SB (black line). The horizontal lines indicate the timing of dam construction of both the Dupuis Dam and a second larger dam, the Jules-Allard Dam, that raised the water levels and led to the onset of annual winter water level drawdowns. The grey shading highlights the error associated with dating methods to pinpoint the timing of the dam construction.

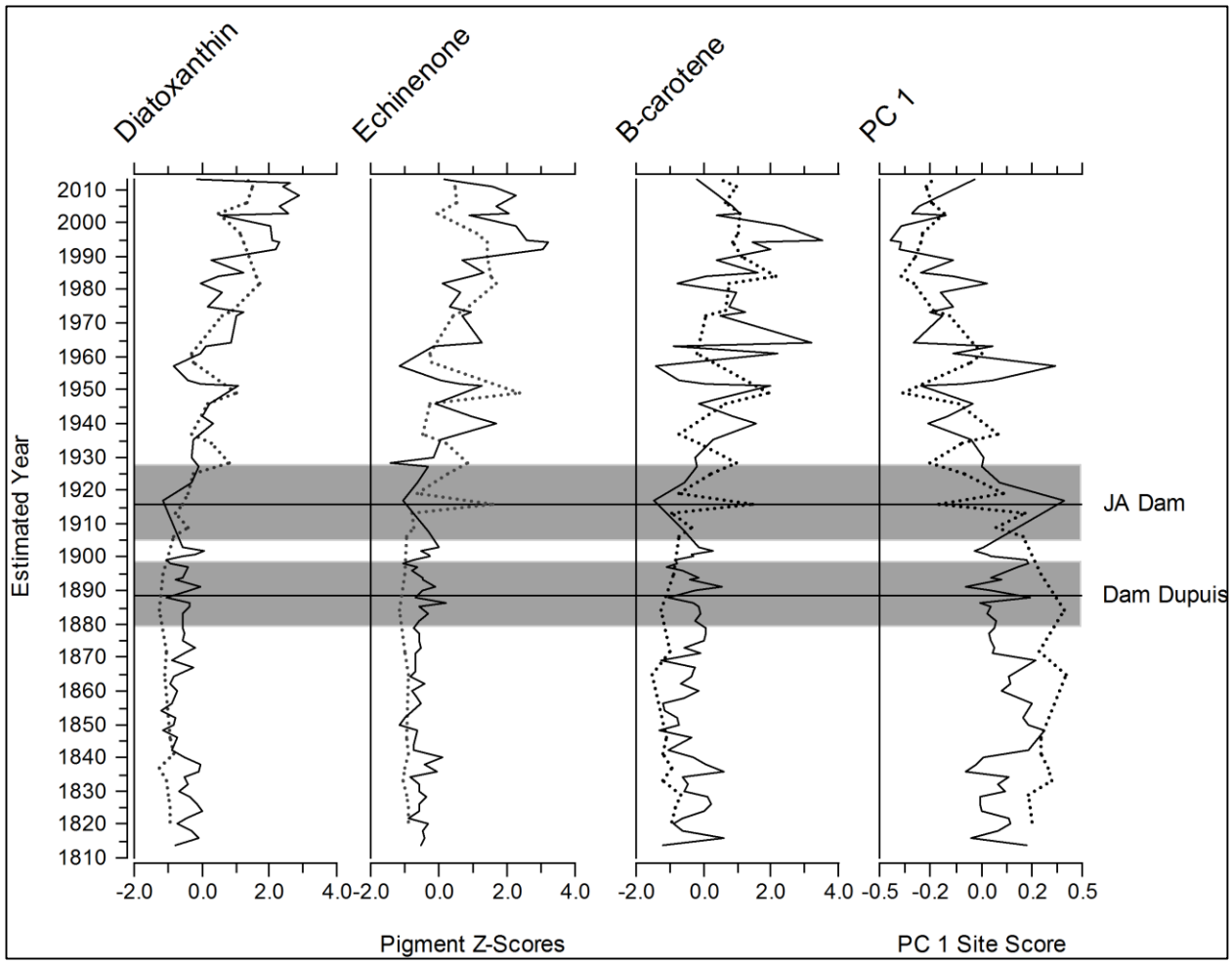

Fig. 5 Pigment stratigraphies of both Grand Lac Saint-François cores. The black line corresponds to the SB (0.5 cm resolution), the dotted line corresponds to the NB (1 cm resolution). Diatoxanthin is a proxy for diatoms, echinenone is a proxy for cyanobacteria, and β-carotene is a proxy for total algal abundance. Pigments are presented as standardized Z-scores to account for differential preservation across cores. PC 1 represents the principal component site scores across the first axis (pigments log(x + 1) transformed). The horizontal lines indicate the timing of dam construction of both dams. The grey shading represents the error associated with pinpointing the timing of dam construction with the sediment core dating methods.

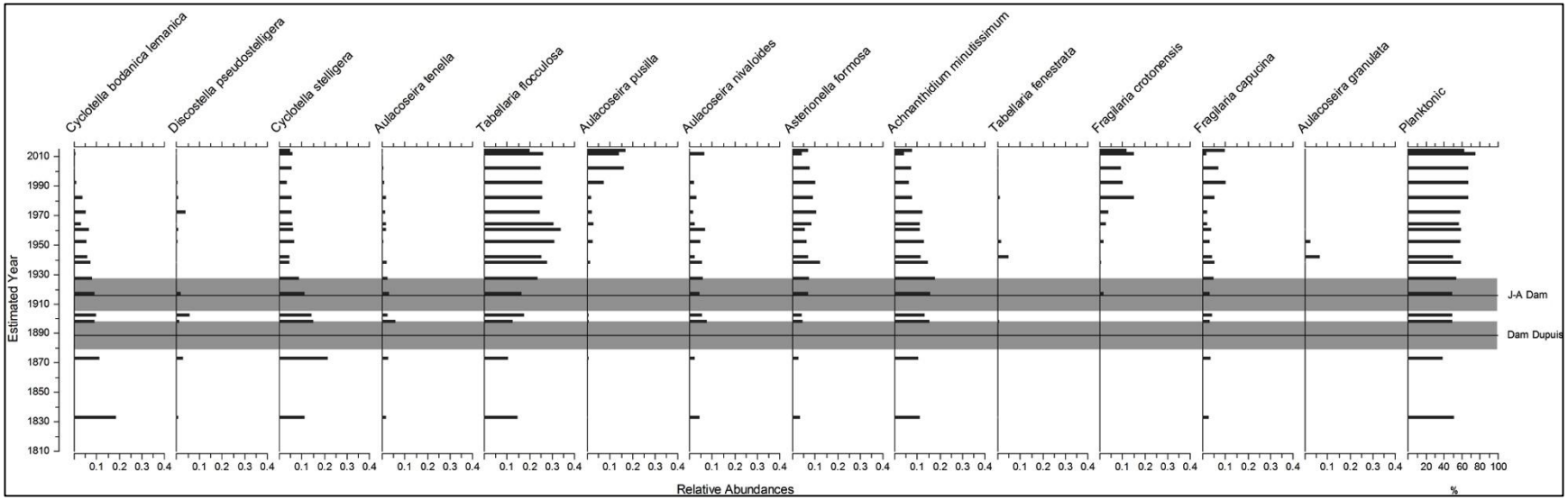

Fig. 6 Dominant diatom taxa (i.e. species with > 5% relative abundance) for the Grand Lac Saint-François SB core. Relative abundances are presented for each taxa along with the total planktonic percentage. Taxa are ordered based on increasing nutrient optima to the right. The horizontal lines indicate the timing of dam construction of both the Dupuis Dam (~1888 AD) and Jules-Allard Dam (~1916 AD). The grey shading represents the associated dating error of the dating methods.

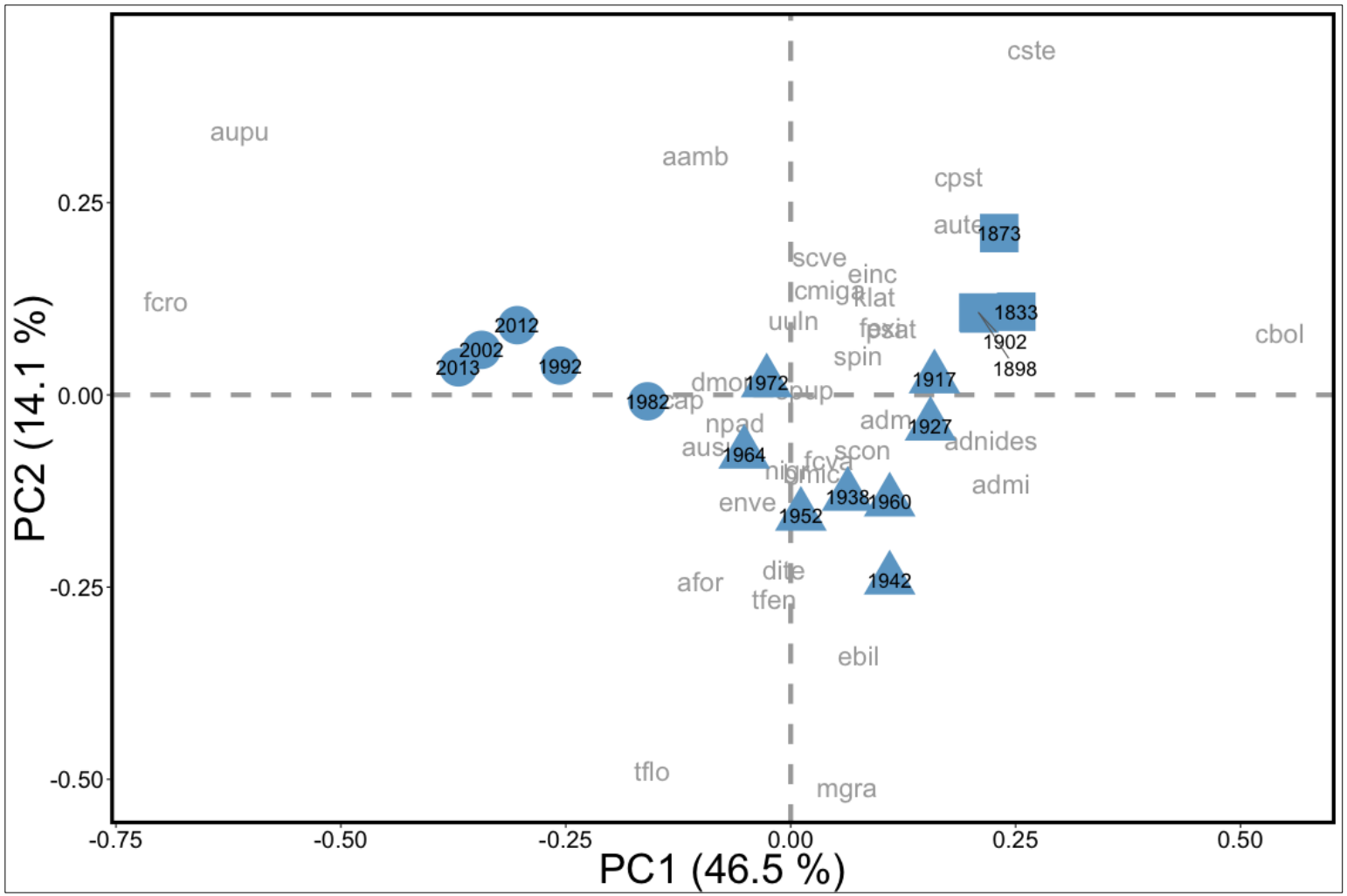

Fig. 7 Principal Component Analysis (PCA) biplot of the Grand Lac Saint-François downcore diatom assemblages, the first two principal components (PC) combined explained approximately 60% of the variation. Estimated year of the sample is indicated. Shapes represent the 3 biostratigraphic zones identified using CONISS: 1) pre- JA dam (<1916) represented by squares; 2) post-damming (1917-1970s) represented by triangles; and 3) modern era (post-1980s) represented by circles. Taxa included in analysis were species with >1% and hellinger transformed.

Tables

Table 1. Summary of the morphometric and watershed characteristics for the 12 top-bottom reservoirs. Reservoirs are listed by increasing drawdown amplitudes. Grand Lac Saint-François is highlighted.

ID	Reservoir	Code	Latitude (DD)	Longitude (DD)	Drawdown (m)	Max Depth (Z_{max}; m)	Lake Area (Km^2)	Watershed Area (Km^2)	Drainage Ratio	Forested Watershed Area (%)	Cropland Watershed Area (%)	Transparancy (Z_{secchi}; m)	Dam Age	"Bottom" depth (cm)
1	Trente-et-un-milles	31-M	46.201	-75.809	0.3	88	48.24	337	7.0	78.6	0.0	8.6	35	31.0- 31.5
2	Massawippi	MASS	45.217	-72.011	0.7	86	18.88	620	32.8	82.4	11.1	4.4	50	36.0- 36.5
3	Rangeley	RG	44.946	-70.699	1.2	45.4	25.5	256.41	10.1	82.7	3.1	4.0	177	31.0- 31.5
4	Aylmer	AYL	45.817	-71.360	1.3	35.7	30.23	516.1	17.1	86.1	3.5	1.8	157	39.0- 39.5
5	Kennebago	KB	45.094	-70.723	1.4	35.4	7.14	89.77	12.6	89.4	2.1	3.1	130	34.0- 34.5
6	Umbagog	UM	44.776	-71.035	1.5	14.6	30.86	929.81	30.1	93.3	0.4	4.0	160	30.0- 30.5
7	Richardson	RCH	44.825	-70.870	2.7	32.9	31.37	233.1	7.4	80.1	0.8	4.0	160	34.0- 34.5
8	Mooselookmeguntic	MLM	44.914	-70.805	3.0	40.2	65.73	471.38	7.2	85.2	1.9	5.3	160	30.0- 30.5
9	First Connecticut	FC	45.093	-71.248	3.2	49.7	12.43	214.97	17.3	88.0	0.3	3.9	98	32.0- 32.5
10	Grand Lac Saint-Francois	GLSF	45.903	-71.171	5.1	40.2	50.5	1204.3	23.8	90.1	3.9	2.3	96	30.0- 30.5
11	Aziscohos	AZ	45.025	-71.008	5.6	18.3	27.99	554.26	19.8	88.4	1.8	4.3	102	29.0- 29.5
12	Poisson Blanc	PB	46.045	-75.711	7.2	124	71.77	7666.4	106.8	67.7	0.2	5.4	83	27.0- 27.5

Table 2. Grand Lac Saint-François lake and watershed history, highlighting historical events with potential ecological effects (Daoudi and Charest 2008).

Timing (AD)	Event
Pre- 1800s	Territory of Algonquin peoples- small trading routes and migratory settlements.
1792- 1830s	First waves of European colonization of the greater region began, localized settlements began with 1800's settlers expanding from neighbouring townships.
1843-1850s	In 1837 settlers present on Grand Lac Saint-François shores, 1843 initiated the establishment of roads/villages (Lambton Parish founded circa 1845). Expansion into area due to overflowing settlements of neighbouring municipalities.
1840s - 1900	Logging of the region started and rapidly the area was settled and land cleared for agriculture (~90% of families in area lived on farms).
1888	Construction of the first 'primitive' dam at Grand Lac Saint-François outlet: *Dam Dupuis.*
1915- 1917	Construction of a larger dam: *Jules Allard Dam*. This dam almost doubled the lake size by increasing water level 7- 8 m (~27 km^2 to 51 km^2).
1930s	Logging activity in the region around lake peaks.
1941	Dam modifications (purpose unknown)
1940s	End of the log drive at Grand Lac Saint-François.
1987	Official creation of the Parc national de la Frontenac (initiatives began in early 1970s). This park covers 155 km^2 of the watershed and 55% of Grand Lac Saint-François's shores.
1986- 1987	Dam reconstruction conducted to better adapt to flood control and power generation.

Table 3. Spearman rank correlation coefficients ($|r_{(s)}|$) of top-bottom Bray Curtis (BC) dissimilarity, top diatom assemblages PC1 scores, and long-term change in total phosphorus concentrations (ΔDI-TP) with listed environmental variables across the selected reservoirs. Bolded text highlights a significant result, where the observed $|r_{(s)}|$ value was above the critical value, based on a two-tailed t-distribution and an alpha of 0.05. The sample size for all BC and PC1 score analyses was 12, and 11 for the change in DI-TP analyses. Note: -- indicates relationship not applicable.

	Spearman Rank Correlation ($\|r_{spearman}\|$)		
Environmental Variable	**BC dissimilarity**	**Top PC1 Site Scores**	**Δ DI-TP**
Drawdown Amplitude	-0.15	0.27	-0.39
Wetland Area	0.04	0.20	0.14
Cropland Area	0.06	-0.05	0.55
Latitude	**0.8**	**-0.87**	0.61
Longitude	**-0.83**	**0.77**	-0.53
Max Depth	**0.65**	**-0.83**	0.58
Lake Perimeter	0.3	-0.25	-0.26
Lake Area	0.26	-0.21	-0.17
Watershed Area	0.41	-0.26	0.10
Shoreline Development	0.14	-0.08	-0.44
Drainage Ratio	-0.13	0.02	0.07
Secchi Depth Average	0.32	-0.29	-0.36
Dam Age	**-0.8**	**0.73**	-0.42
Δ DI-TP	0.57	--	--
Top DI-TP	--	**-0.69**	--

Table 4: Summary of the record length and data resolution for each of the explanatory variables as well as for each of the biological and sedimentology indicators quantified in the Grand Lac Saint-François cores. Results from breakpoint analyses (i.e. BP dates and associated standard
error), Mann-Kendall trend coefficients (MK_τ) with associated *p*-values, and the coefficient of variation (CV) both pre- and post-construction of the Jules-Allard (JA) dam are also listed. Note: - indicates no secondary breakpoint detected.

Explanatory Variables										
Variable	**Data Resolution**	**N**	**Record Start**	**Record End**	**MKτ**	**MK *p*-value**				
Growing Season Mean Temp.	1 yr	115	1900	2013	0.59	< 0.001				
Drawdown Amp.	1 yr	42	1972	2013	0.16	0.135				
NAPI	10 yr	12	1901	2011	0.61	0.008				
South Basin										
Sedimentology										
Indicator	**Data Resolution**	**N**	**BP Date(s)**		**BP St Er**		**MKτ**	**MK *p*-value**	**CV Pre- JA Dam**	**CV Post- JA Dam**
LOI	~2 yr	83	1913	1962	2.2	2.4	-0.35	< 0.001	3.1	19.3
MS	~2 yr	88	1895	1974	3.0	1.8	0.54	< 0.001	23.7	24.3
Biological Indicators										
β carotene	~2 yr	82	1909	-	25.3	-	0.32	< 0.001	21.4	35.4
diatoxanthin	~2 yr	81	1924	-	9.0	-	0.48	< 0.001	14.0	29.4
echinenone	~2 yr	84	1917	-	11.9	-	0.47	< 0.001	14.7	34.9
DITP	~10 yr	17	1906	-	28.1	-	0.65	< 0.001	13.6	24.5
North Basin										
Sedimentology										
Indicator	**Data Resolution**	**N**	**BP Date(s)**		**BP St Er**		**MKτ**	**MK *p*-value**	**CV Pre- JA Dam**	**CV Post- JA Dam**
LOI	~4 yr	45	1901	1957	3.7	3	-0.65	< 0.001	3.8	18.9
MS	~4 yr	45	1901	1957	5.6	2.7	0.49	< 0.001	20.3	27.6
Biological Indicators										
β carotene	~4 yr	35	1852	-	22.23	-	0.56	< 0.001	36.4	27.8
diatoxanthin	~4 yr	35	1884	-	18.8	-	0.70	< 0.001	20.3	30.6
echinenone	~4 yr	35	1884	-	31.4	-	0.56	0.028	13.0	35.6

Table 5. Summary of correlation analyses of biological indicators and explanatory variables across the different datasets. Prior to analyses, all variables were standardized and, all response variables (i.e. biological indicators) and the NAPI predictor were log10 transformed. Notes: 1) p_{adj} are the model *p*-values adjusted for temporal autocorrelation with an alpha of 0.05; 2) *p*-values reported for analysis with NAPI are 1-tailed tests; 3) n refers to the sample size for the associated model; 4) AICc is the small-sample-size corrected version of Akaike information criterion.

Long-term, high resolution (1900-2013, ~ 2yr)					
Biological Indicator	**Explanatory Variable**	**R^2**	**p adj**	**n**	**AICc**
β-carotene	temperature	0.15	*0.03*	60	-25.7
diatoxanthin	temperature	0.44	*0.03*	62	-71.5
echinenone	temperature	0.22	*0.06*	64	-38.3
Long-term, coarse resolution (1900-2013, ~ 10 yr)					
Biological Indicator	**Explanatory Variable**	**R^2**	**p adj**	**n**	**AICc**
β-carotene	temperature	0.14	0.125	23	-3.7
	napi	0.11	*0.06*	23	-2.9
	temperature + napi	0.12	*0.13*	23	-1.2
diatoxanthin	temperature	0.43	*0.04*	24	-23.6
	napi	0.34	*0.04*	24	-20.1
	temperature + napi	0.45	*0.04*	24	-22.8
echinenone	temperature	0.14	0.16	24	-15.5
	napi	0.32	*0.04*	24	-21.1
	temperature + napi	0.12	*0.125*	24	-18.3
ditp	temperature	0.40	*0.08*	12	1.1
	napi	0.36	0.04	12	2.1
	temperature + napi	0.43	0.08	12	4.0

General Conclusion

Hydrological modifications are widely recognized as one of the main pressures on aquatic ecosystems. There is a general consensus that reservoir creation and operation alters water quality; however, understanding of the ecological impacts of long-term reservoir operation is poor (Straškraba et al. 1993; Kennedy 2005; Leira and Cantonati 2008; Zohary and Ostrovsky 2011). The overall objective of this study was to quantify the impacts of winter water level drawdowns on water quality. In particular, I wanted to: 1) identify any regional trends in long-term water quality changes related to drawdown amplitudes; and 2) quantify changes in water quality trends through time at a local reservoir, exploring whether observed changes are coincident with dam construction and/or correlated to the annual water level drawdowns. I combined paleolimnological techniques with historical ecology, as well as correlative and multivariate analyses to identify long-term trends in water quality metrics and their potential environmental drivers (e.g. watershed nutrients, climate, and drawdown amplitudes).

I did not find strong support for the hypothesis that annual winter drawdowns are the primary driver of water quality change in the relatively large and deep reservoirs sampled. Long-term trends of water quality were variable across the region and drivers were difficult to isolate in the presence of multiple stressors. Watershed land use and warming temperatures were significant, and persistent, stressors through space and time in explaining trends of deteriorating water quality metrics. Although drawdown did not appear to have an over-arching effect on water quality, increased ecological variability post damming was prominent in many of the reconstructed physical and biological profiles at Grand Lac Saint-François. It is also interesting that, based on existing literature, low water levels associated with over-exploitation, hydrological forcing, or drought during the summer season appear to have more detrimental impacts on water

quality (e.g. Naselli-Flores and Barone 2005; Baldwin et al. 2008; Zohary and Ostrovsky 2011), than when observed during winter drawdown (e.g. Hall et al. 1999, Turner et al. 2005; Serieyssol et al. 2009, this study). As next steps in understanding the impacts of winter water level drawdown on water quality, I think it would be important to study the interconnectedness of the littoral and pelagic zones to the watershed under a winter drawdown regime. Drawdown has been shown to highly modify littoral habitats as well as the flora and fauna (Turner et al. 2005; Cooley and Franzin 2008; White et al. 2010). Thus, it is important to understand the potential for these highly modified zones to alter nutrient and sediment dynamics within the reservoir. From previous work we already know littoral macrophyte beds can act as sediment traps and long-term sinks of nutrients; however in their absence, nutrients from the watershed are unlikely to be retained within the littoral zone for long periods (Rooney et al. 2003). Using a littoral-to-profundal transect of surface cores, I would propose a spatial-temporal analysis of sediment and nutrient dynamics throughout the year in a winter drawdown reservoir. A similar study has been conducted in a summer drawdown reservoir where they compared transects throughout the growing season between a reservoir experiencing summer drawdown and a control reservoir experiencing minimal water level changes. Furey et al. (2004) showed that summer drawdown has the potential to alter the fundamental physical (e.g. particle size, bulk density, texture) and nutrient (e.g. total organic nitrogen, total organic matter, total organic carbon) characteristics of littoral sediments in the exposure zone due to erosion and sediment focusing. Following a similar sampling design would not only allow me to develop an understanding of sediment and nutrient dynamics within winter drawdown reservoirs but also allow me to gain further insights into the difference of summer vs. winter drawdown regimes, and contribute to overall understanding of the ecological impacts of drawdown for reservoir managers.

Managing reservoirs in this contemporary, changing landscape is becoming increasingly more difficult and there is increasing concern for the ecological health of reservoirs (Zohary and Ostrovsky 2011). Under current reservoir management, the ecological needs often conflict with developmental, and are frequently only secondary considerations (Straškraba 1993; Kennedy 2005). There are many broad-scale environmental stressors acting on overlapping spatial and temporal scales, which poses the potential for interactions across such effects (e.g. additive, antagonistic, synergistic; Danz et al. 2007). Thus, it is becoming increasingly important to understand reservoir water quality dynamics within the current context of intensifying stressors (Kennedy 2005). This work demonstrates the variable response, both spatially and temporally, of water quality to environmental stressors, further highlighting the need for long-term and/or high-resolution data in order to better interpret trends of ecological change amongst multiple stressors. Understanding how reservoir function and operation may play a role in exacerbating (or mitigating) declining water quality conditions, under the many ongoing landscape and climatic stressors in this changing anthropogenic era, may be crucial to safeguarding many important freshwater resources.

References: General Conclusion

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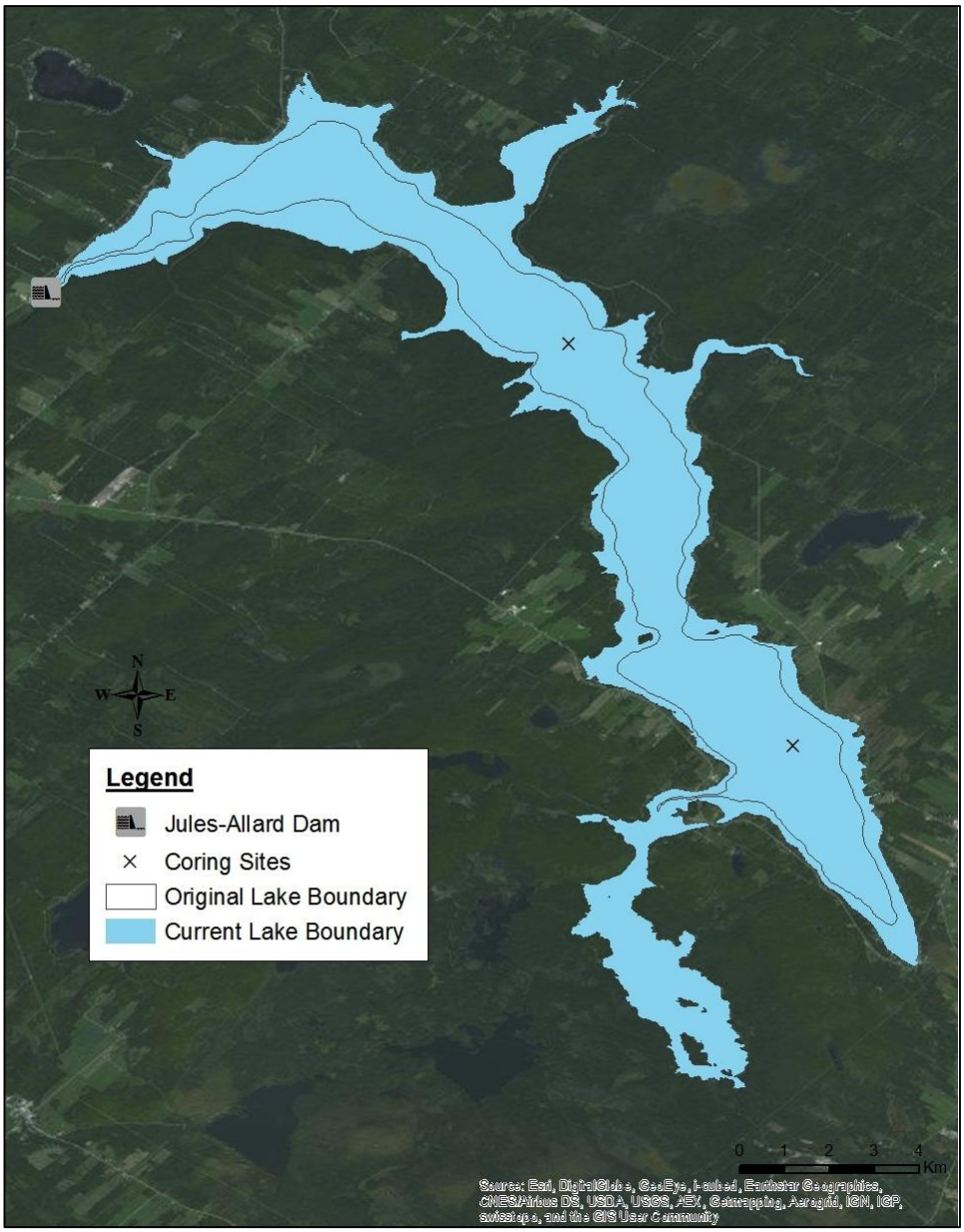
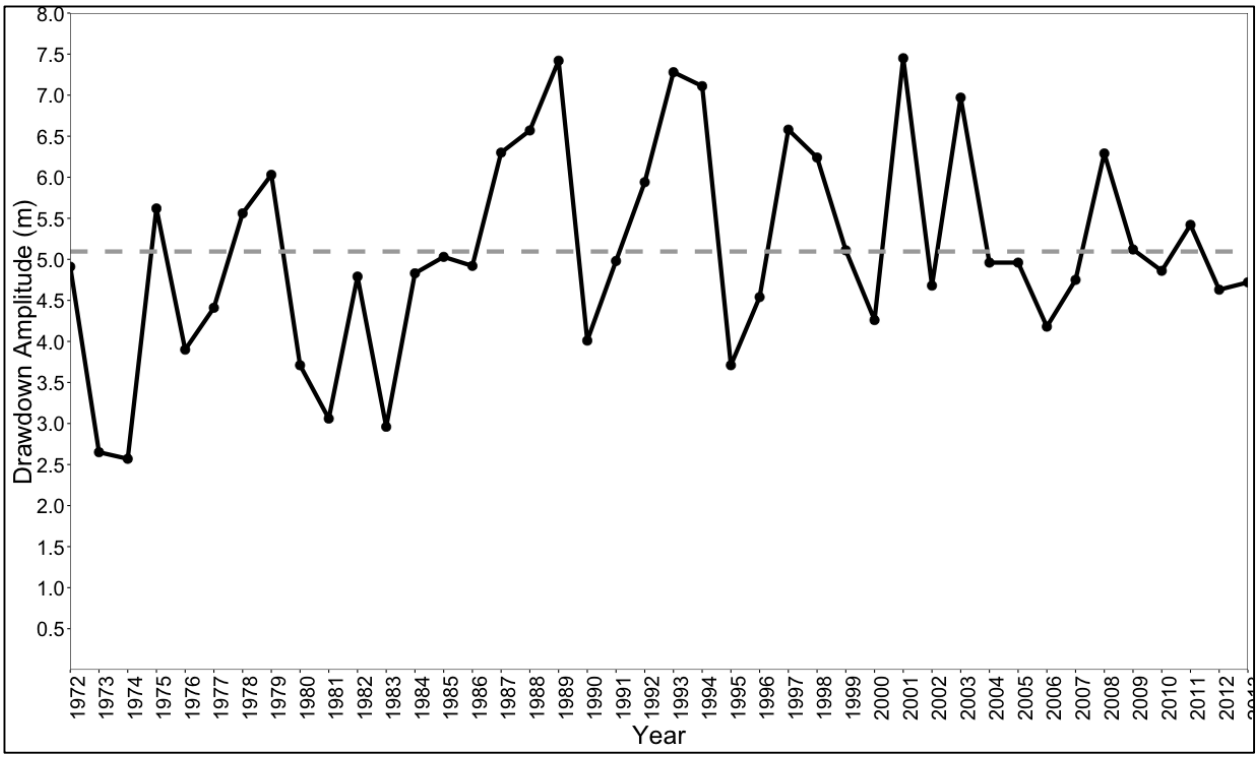
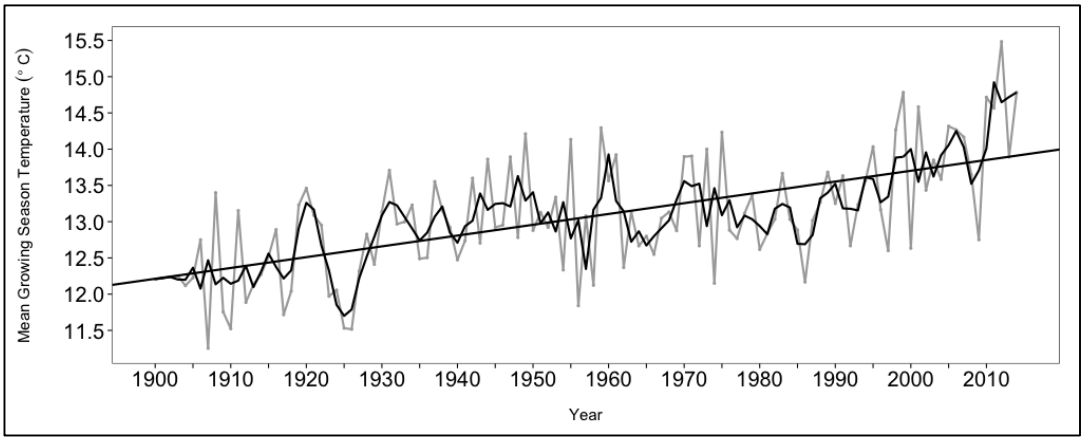
Appendicies



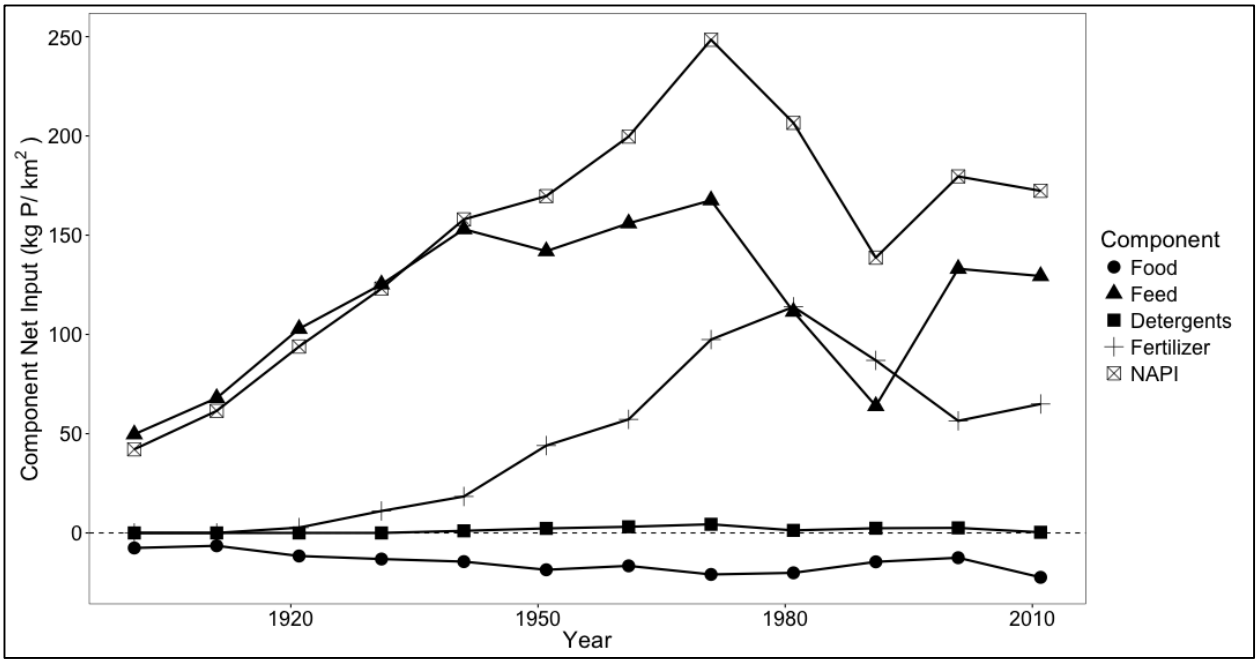
Appendix 1. Map of Grand Lac Saint-François depicting the original lake boundary and current lake boundary after the Jules-Allard Dam construction (~1915-1917), that raised the water levels and led to the onset of annual winter water level drawdowns. The coring sites are indicated for each basin.



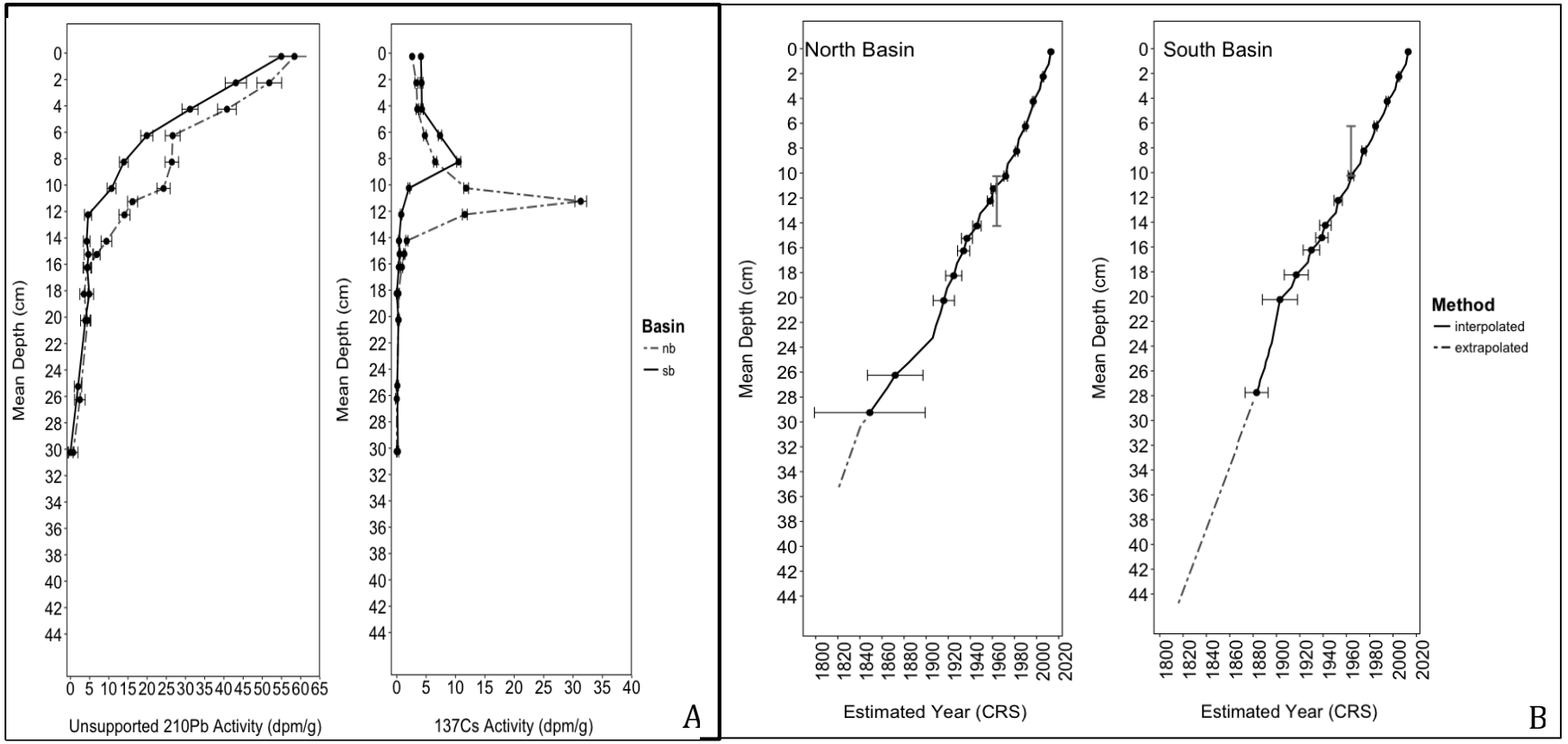
Appendix 2. Drawdown amplitudes over the past 41 years at Grand Lac Saint-François. The horizontal line represents the 41-year long-term mean (5.1 m). Drawdown amplitudes have not significantly increased over time according to Mann-Kendall trend analyses (MKτ = 0.16, p = 0.14).



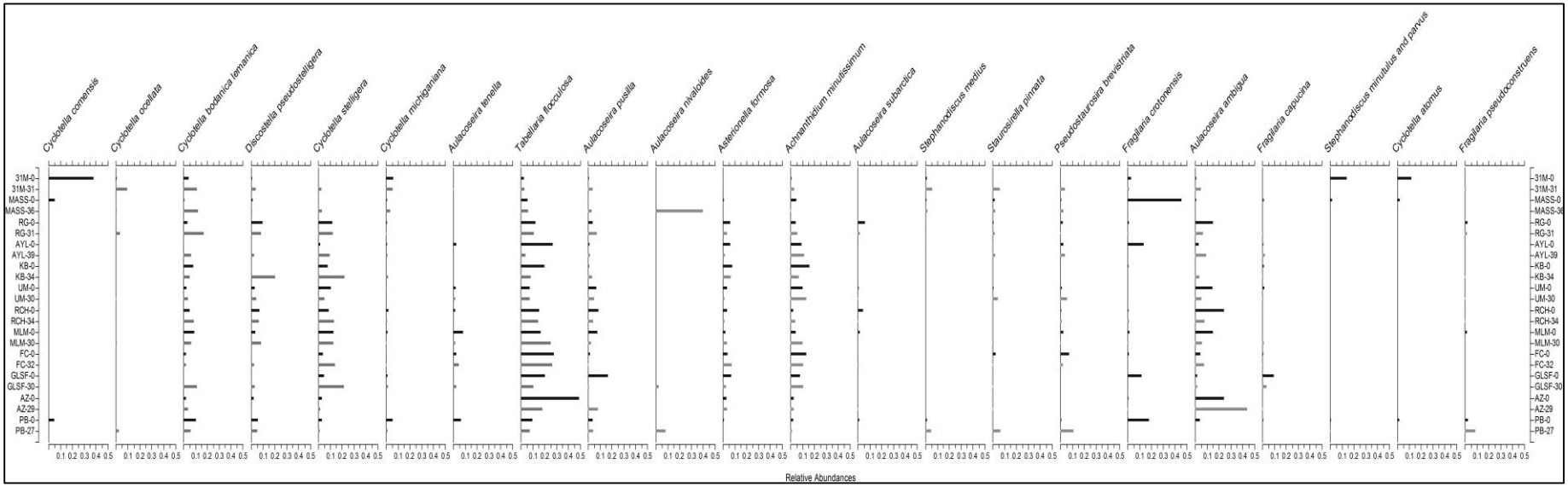
Appendix 3. Mean annual growing season temperature trends at Saint-Éphrem-de-Beauce (Qc) climate station from 1900 to 2013. Recorded temperatures (grey line), 3 year smoothed mean (black line) and linear trend of the recorded data (straight black) are included in the plot. Based on the slope of the linear trend (y = 0.015x – 16.1) there has been a significant 1.68°C increase in growing season temperatures since 1900 (MKτ = 0.59, p = 0.008).



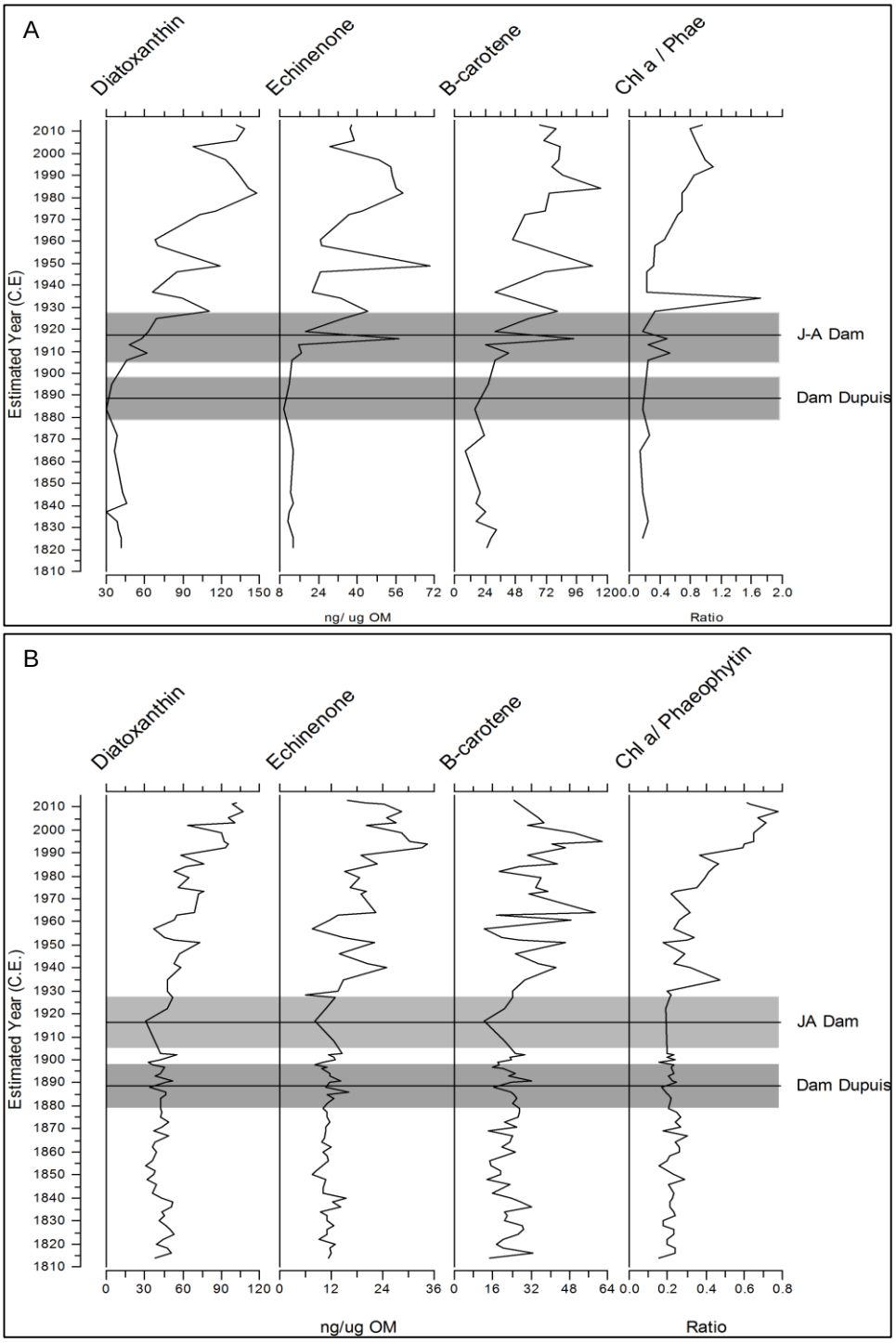
Appendix 4. NAPI (net anthropogenic phosphorus inputs) and contributing components as calculated for the Grand Lac Saint-François watershed through time. Values represent net values (i.e. negative is lost/exported out of system where positives are surpluses added/imported to the system). Terms were calculated using agricultural and population census data at a decadal timescale from 1901- 2011.



Appendix 5. Cummulative unsupported ^{210}Pb profiles based on measured ^{210}Pb and ^{226}Ra activity of each basin and ^{137}Cs profile, an independent control for dating model where peak global fallout is known to coincide with the year 1964 AD. Radioisotopes are measured as disintegrations per minute per gram (dpm/g). On panel A, the black line represents the SB and the dashed line represents the NB. On the year-depth profile for each basin (panel B), dashed trends are linear extrapolated dates as cores extended beyond the base of unsupported ^{210}Pb inventory and are estimated based on best approximated baseline sedimentation rates from deep-core intervals. Interpolation and extrapolation methods are as per Binford (1990). Dots represent the dated intervals. The grey range indicated on each year-depth profile indicates the estimated range of 1964 based on the ^{137}Cs profiles.



Appendix 6. Dominate diatom taxa (i.e. species with >5% relative abundance) for the top-bottom reservoirs. Reservoirs are listed by top and bottom samples in order of increasing drawdown amplitudes (top to bottom). Taxa are ordered based on increasing nutrient optima to the right.



Appendix 7. Pigment stratigraphies of the north basin core (A) and the south basin core (B) from Grand Lac Saint-François. Pigments are expressed as ng of pigment per ug of organic matter. The chl-*a*/phaeophytin ratio is a conservative proxy for pigment preservation. The horizontal lines indicate the timing of each dam construction and associated error in the shading

Appendix 8. Correlation analysis summary of biological indicators and explanatory variables across the short-term different datasets. Sample sizes were too small and data were too variable to draw concrete conclusions. Prior to analyses, all variables were standardized and, all response variables and the NAPI predictor were log10 transformed. Notes: 1) p_{adj} are the model *p*-values adjusted for temporal autocorrelation; 2) *p*-values reported for analysis with NAPI are 1-tailed tests; 3) n refers to the sample size for the associated model.

Short-term, high resolution (1972-2013, ~ 2yrs)				
Biological Indicator	**Explanatory Variable**	**R^2**	**p adj**	**n**
β carotene	temperature	0.00	*0.44*	27
	drawdown	0.02	*0.25*	27
diatoxanthin	temperature	0.02	*0.23*	30
	drawdown	0.01	*0.26*	30
echinenone	temperature	0.00	*0.40*	30
	drawdown	0.11	*0.13*	30
Short-Term, Coarse-Res (1972-2013, ~ 10yrs)				
Biological Indicator	**Explanatory Variable**	**R2**	**p adj**	**n**
β carotene	temperature	0.06	0.38	9
	drawdown	0.21	0.10	9
	napi	0.40	0.06	9
diatoxanthin	temperature	0.00	0.09	10
	drawdown	0.00	0.46	10
	napi	0.12	0.05	10
echinenone	temperature	0.06	0.10	10
	drawdown	0.00	0.18	10
	napi	0.24	0.05	10
ditp	temperature	0.00	0.18	5
	napi	0.00	0.18	5
	drawdown	0.00	0.18	5

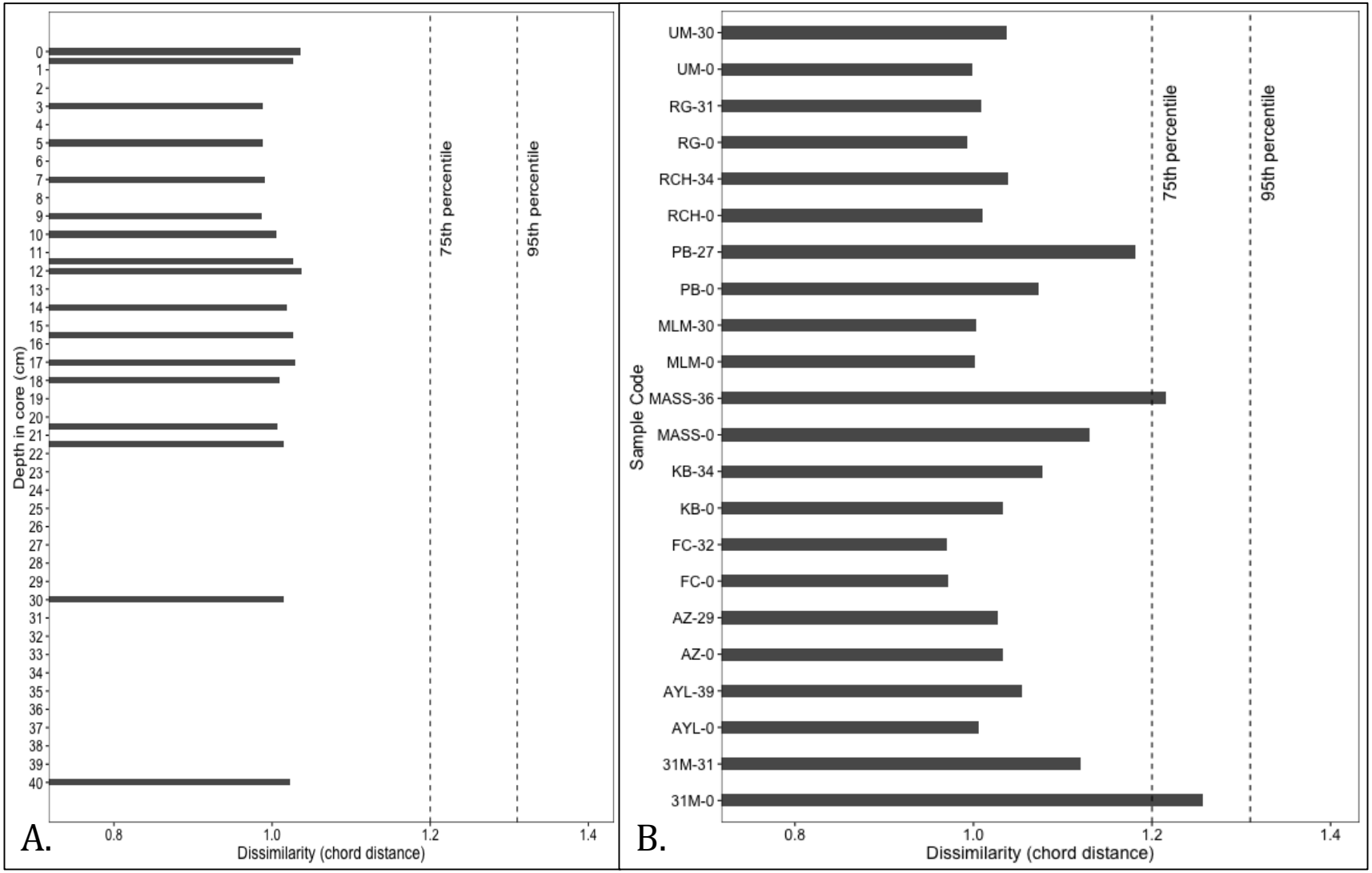
Appendix 9. List of diatom taxa (≥1%) of the compiled dataset with codes associated to their respective authors. Taxa are listed in alphabetical order by code.

Taxa code	Taxa name	Authorities
aamb	*Aulacoseira ambigua*	(Grunow) Simonsen 1979
acbo	*Achnanthes clevei var.bottnica*	Cleve 1891
acut	*Achnanthes curtissima*	Carter 1963
adm	*Achnanthidium microcephalum*	Kützing 1844
admi	*Achnanthidium minutissimum*	(Kützing) Czarnecki in Czarnecki & Edlund 1995
adnides	*Aulacoseira nivaloides*	(Camburn) J. English & M. Potapova 2009
afor	*Asterionella formosa*	Hassall 1850
aina	*Amphora inariensis*	Krammer 1980
alir	*Aulacoseira lirata*	(Ehrenberg) Ross 1986
aupu	*Aulacoseira pusilla*	(Meister) A. Tuji & A. Houki 2004
ausu	*Aulacoseira subarctica*	O. Müller) Haworth 1988
aute	*Aulacoseira tenella*	(Nygaard) Simonsen
bbre	*Brachysira brebissonii*	Ross in Hartley 1986
bmic	*Brachysira microcephala*	(Grunow) Compère 1986
brainte	*Brachysira intermedia*	(Østrup) Lange-Bertalot in Lange-Bertalot & Moser 1994
cato	*Cyclotella atomus*	Hustedt 1937
cbol	*Cyclotella bodanica f. lemanica*	(O. Müller dans Schröter) Bachmann 1903
ccms	*Cyclotella comensis*	Grunow in van Heurck 1882
ccoc	*Cavinula cocconeiformis*	(Gregory ex Greville) Mann and Stickle in Round et al. 1990
cmiga	*Cyclotella michiganiana*	Skvortzow 1937
cnth	*Cocconeis neothumensis*	Krammer 1991
coce	*Cyclotella ocellata*	Pantocsek 1901
cplc	*Ctenophora pulchella*	(Ralfs ex Kützing) Williams & Round 1986
cpst	*Discostella pseudostelligera*	(Hustedt) Houk & Klee 2004
cros	*Cyclotella rosii*	(Grunow) Håkansson 1990
cste	*Cyclotella stelligera*	Cleve and Grunow (in Van Heurck) 1882
ctho	*Cyclostephanos tholiformis*	Stoermer, Håkansson & Theriot 1988
cyml	*Cymbopleura lapponica*	(Grunow) Krammer 2003
dite	*Diatoma tenuis*	Agardh 1812
dmar	*Diploneis marginestriata*	Hustedt 1922
dmon	*Diatoma moniliformis*	Kützing 1833

ebil	*Eunotia bilunaris*	(Ehrenberg) Mills 1934
einc	*Eunotia incisa*	Gregory 1854
encm	*Encyonopsis microcephala*	(Grunow) Krammer 1997
enmi	*Encyonema minutum*	(Hilse ex Rabenhorst) Mann in Round & Al. 1990
enng	*Cymbella gracilis*	(Rabenhorst) Cleve 1894
enve	*Encyonema ventricosum*	Grunow in Schmidt 1874
ezas	*Eunotia zasuminensis*	(Cabejszekowna) Korner 1969
fcap	*Fragilaria capucina*	Desmazières 1825
fcro	*Fragilaria crotonensis*	Kitton 1869
fcva	*Fragilaria capucina var. vaucheriae*	(Kützing) Lange-Bertalot 1980
fexi	*Fragilaria exigua*	Grunow 1878
ffam	*Fragilaria famelica*	(Kützing) Lange-Bertalot 1980
fnop	*Fragilaria neoproducta*	Lange-Bertalot 1991
gpar	*Gomphonema parvulum*	Kützing) Van Heurck 1880
klat	*Karayevia laterostrata*	(Hustedt) Kingston 2000
ksuc	*Karayevia suchlandtii*	(Hustedt) Bukhtiyarova 1999
mcir	*Meridion circulare*	(Greville) Agardh 1831
mgra	*Aulacoseira granulata*	(Ehrenberg) Simonsen 1979
nigr	*Nitzschia gracilis*	Hantzsch 1860
nipm	*Nitzschia perminuta*	(Grunow) Peragallo 1903
nlst	*Navicula leptostriata*	Jørgensen 1948
npad	*Nitzschia palea var. debilis*	(Kützing) Grunow in Cleve & Grunow 1880
npal	*Nitzschia palea*	(Kützing) W.Smith 1856
nsem	*Sellaphora seminulum*	(Grunow) Mann
nseo	*Navicula seminuloides*	Hustedt in Schmidt et al. 1936
nsmu	*Navicula submuralis*	Hustedt 1945
ntub	*Nitzschia tubicola*	Grunow in Cleve & Grunow 1880 sensu lato
nuvi	*Nupela vitiosa*	(Schimanski) Siver & Hamilton 2005
pchl	*Psammothidium chlidanos*	(Hohn and Hellerman) Lange-Bertalot 1999
pexp	*Placoneis explanata*	(Hustedt) Mayama 1998
pmrg	*Psammothidium marginulatum*	(Grun) Bukhtiyarova & Round
ppco	*Pseudostaurosira pseudoconstruens*	(Marciniak) Williams & Round 1987
psat	*Psammothidium subatomoides*	(Hustedt) Bukhtiyarova & Round 1996
psbr	*Pseudostaurosira brevistriata*	(Grunow in Van Heurck) Williams & Round 1987
scon	*Staurosira construens*	Ehrenberg 1843
scve	*Staurosira construens var. venter*	(Ehrenberg) Hamilton in Hamilton et al. 1992

shan	*Stephanodiscus hantzschii*	Grunow (in Cleve & Grunow)
smed	*Stephanodiscus medius*	Håkansson 1986
smipar	*Stephanodiscus minutulus et parvus*	(Kutzing) Cleve & Moller 1882 /Stoermer & Håkansson 1984
spin	*Staurosirella pinnata*	(Ehrenberg) Williams & Round 1987
spup	*Sellaphora pupula Complexe*	(Kützing) Mereschkowsky 1902
sves	*Stephanodiscus vestibulis*	Hakansson Theriot & Stoermer
tfen	*Tabellaria fenestrata*	(Lyngbye) Kützing 1844
tflo	*Tabellaria flocculosa*	(Roth) Kützing 1844
uuln	*Ulnaria ulna*	(Kützing) Compère 2001

Appendix 10. Dissimilarity between enumerated fossil assemblages of A. Grand Lac Saint-François and B. top-bottom reservoir samples and the training set assemblages of Tremblay et al. (2015).



Data Archives

Sedimentology

Lake Name	Basin ID	Interval Top (cm)	Interval Bottom (cm)	Interval Mean Depth (cm)	Year (AD)	Year Error	loi_550	loi_950	MS (10^-5 SI Units)
North Basin, Core ID= GLSF NB 2, date= 01/08/2016 , depth=38.5 m, length= 37 cm									
GLSF	nb	0	0.5	0.25	2013	0	15.32	3.14	4.27
GLSF	nb	1	1.5	1.25	2011	0.1	14.45	3.05	3.53
GLSF	nb	2	2.5	2.25	2006	0.5	14.36	2.60	4.83
GLSF	nb	3	3.5	3.25	2003	0.5	13.57	2.94	5.73
GLSF	nb	4	4.5	4.25	1997	0.7	12.87	2.66	5.87
GLSF	nb	5	5.5	5.25	1994	0.8	12.03	2.84	5.37
GLSF	nb	6	6.5	6.25	1990	0.9	10.79	3.39	5.27
GLSF	nb	6.5	7	6.75	1987	NA	11.59	NA	7.70
GLSF	nb	7	7.5	7.25	1984	1.1	12.14	3.16	5.60
GLSF	nb	8	8.5	8.25	1982	1.2	12.90	2.59	5.40
GLSF	nb	8.5	9	8.75	1978	NA	12.27	NA	6.37
GLSF	nb	9	9.5	9.25	1974	1.5	12.56	3.10	7.35
GLSF	nb	10	10.5	10.25	1972	1.6	13.05	2.86	8.63
GLSF	nb	10.5	11	10.75	1967	NA	12.06	NA	10.67
GLSF	nb	11	11.5	11.25	1961	2.3	13.38	3.28	8.40
GLSF	nb	12	12.5	12.25	1958	2.5	12.62	3.46	9.17
GLSF	nb	12.5	13	12.75	1954	NA	12.08	NA	11.07
GLSF	nb	13	13.5	13.25	1949	3.4	14.32	2.71	7.50
GLSF	nb	14	14.5	14.25	1946	3.8	14.38	3.17	7.03
GLSF	nb	14.5	15	14.75	1942	NA	13.50	NA	7.37
GLSF	nb	15	15.5	15.25	1937	5.0	14.06	2.95	6.77
GLSF	nb	16	16.5	16.25	1934	5.5	17.90	3.12	6.17

GLSF	nb	16.5	17	16.75	1931	NA	18.54	NA	6.27
GLSF	nb	17	17.5	17.25	1928	6.6	20.47	2.40	4.97
GLSF	nb	18	18.5	18.25	1925	7.3	19.85	2.95	5.23
GLSF	nb	18.5	19	18.75	1922	NA	19.02	NA	6.10
GLSF	nb	19	19.5	19.25	1919	8.8	20.97	1.18	4.57
GLSF	nb	20	20.5	20.25	1916	9.6	19.50	2.91	4.07
GLSF	nb	21	21.5	21.25	1913	NA	20.93	3.07	3.73
GLSF	nb	21.5	22	21.75	1911	NA	20.94	NA	4.33
GLSF	nb	22	22.5	22.25	1909	NA	22.12	2.49	3.70
GLSF	nb	23	23.5	23.25	1906	13.2	23.53	3.26	3.27
GLSF	nb	24	24.5	24.25	1895	NA	23.80	3.20	2.87
GLSF	nb	25	25.5	25.25	1884	NA	23.58	3.27	2.53
GLSF	nb	26	26.5	26.25	1872	25.1	23.85	3.27	2.57
GLSF	nb	27	27.5	27.25	1865	NA	24.03	3.35	2.43
GLSF	nb	28	28.5	28.25	1857	NA	23.79	2.53	2.67
GLSF	nb	29	29.5	29.25	1849	50.1	23.44	3.66	2.60
GLSF	nb	29.5	30	29.75	1846	NA	23.34	2.56	2.27
GLSF	nb	30	30.5	30.25	1841	NA	24.39	2.83	3.17
GLSF	nb	31	31.5	31.25	1837	NA	23.96	3.18	1.97
GLSF	nb	32	32.5	32.25	1833	NA	23.41	2.56	3.23
GLSF	nb	33	33.5	33.25	1829	NA	22.12	3.90	2.47
GLSF	nb	34	34.5	34.25	1825	NA	22.81	3.32	2.80
GLSF	nb	35	35.5	35.25	1821	NA	22.77	3.37	3.13
South Basin, Core ID= GLSF SB 2, date= 30/07/2016 , depth= 28.9 m, length= 46 cm									
GLSF	sb	0.0	0.5	0.25	2013	0	21.32	1.53	4.13
GLSF	sb	0.5	1.0	0.75	2012	NA	14.24	2.18	4.10
GLSF	sb	1.0	1.5	1.25	2011	0.1	13.76	2.24	3.20
GLSF	sb	1.5	2.0	1.75	2008	NA	13.37	2.40	3.63
GLSF	sb	2.0	2.5	2.25	2005	0.6	13.83	1.83	5.10

GLSF	sb	2.5	3.0	2.75	2003	NA	13.37	2.33	4.10
GLSF	sb	3.0	3.5	3.25	2002	0.7	NA	NA	4.30
GLSF	sb	3.5	4.0	3.75	1999	NA	12.92	2.00	4.40
GLSF	sb	4.0	4.5	4.25	1995	0.9	12.55	2.16	5.40
GLSF	sb	4.5	5.0	4.75	1994	NA	12.09	2.24	4.70
GLSF	sb	5.0	5.5	5.25	1992	1.0	11.92	2.63	5.00
GLSF	sb	5.5	6.0	5.75	1989	NA	11.85	2.05	4.70
GLSF	sb	6.0	6.5	6.25	1985	1.3	NA	NA	6.83
GLSF	sb	6.5	7.0	6.75	1984	NA	12.17	2.71	5.60
GLSF	sb	7.0	7.5	7.25	1982	1.4	12.50	2.54	5.93
GLSF	sb	7.5	8.0	7.75	1979	NA	13.02	2.67	6.77
GLSF	sb	8.0	8.5	8.25	1975	1.8	13.56	2.12	7.87
GLSF	sb	8.5	9.0	8.75	1973	NA	13.28	2.18	6.07
GLSF	sb	9.0	9.5	9.25	1972	1.9	NA	NA	6.17
GLSF	sb	9.5	10.0	9.75	1968	NA	13.30	2.36	7.00
GLSF	sb	10.0	10.5	10.25	1964	2.4	13.67	1.91	7.20
GLSF	sb	10.5	11.0	10.75	1963	NA	12.38	2.18	5.77
GLSF	sb	11.0	11.5	11.25	1961	2.7	11.22	2.25	5.20
GLSF	sb	11.5	12.0	11.75	1957	NA	12.26	2.11	5.70
GLSF	sb	12.0	12.5	12.25	1953	3.5	13.58	1.67	6.60
GLSF	sb	12.5	13.0	12.75	1952	NA	14.07	2.15	5.17
GLSF	sb	13.0	13.5	13.25	1951	3.7	15.33	1.99	5.77
GLSF	sb	13.5	14.0	13.75	1946	NA	16.24	1.96	4.83
GLSF	sb	14.0	14.5	14.25	1942	4.9	18.46	1.81	5.37
GLSF	sb	14.5	15.0	14.75	1940	NA	19.13	1.95	3.77
GLSF	sb	15.0	15.5	15.25	1939	5.3	19.18	2.13	4.70
GLSF	sb	15.5	16.0	15.75	1935	NA	19.22	2.50	4.13
GLSF	sb	16.0	16.5	16.25	1930	7.1	19.85	2.00	4.77
GLSF	sb	16.5	17.0	16.75	1928	NA	19.71	2.34	2.87
GLSF	sb	17.0	17.5	17.25	1927	7.8	19.14	2.56	4.00

GLSF	sb	17.5	18.0	17.75	1922	NA	19.25	2.34	2.67
GLSF	sb	18.0	18.5	18.25	1917	10.3	19.87	2.42	3.80
GLSF	sb	18.5	19.5	19.00	1914	11.8	20.17	2.20	2.90
GLSF	sb	19.5	20.0	19.75	1908	NA	21.39	2.07	2.33
GLSF	sb	20.0	20.5	20.25	1903	15.1	22.11	1.84	3.13
GLSF	sb	20.5	21.0	20.75	1902	NA	22.33	2.21	1.93
GLSF	sb	21.0	21.5	21.25	1901	NA	22.57	2.54	2.10
GLSF	sb	21.5	22.0	21.75	1900	NA	22.91	2.41	1.83
GLSF	sb	22.0	22.5	22.25	1899	NA	23.01	2.31	1.17
GLSF	sb	22.5	23.0	22.75	1898	NA	23.17	2.34	1.40
GLSF	sb	23.0	23.5	23.25	1897	18.2	22.57	2.38	1.30
GLSF	sb	23.5	24.0	23.75	1896	NA	22.22	2.14	1.10
GLSF	sb	24.0	24.5	24.25	1894	NA	NA	NA	1.50
GLSF	sb	24.5	25.0	24.75	1893	NA	22.03	2.28	1.40
GLSF	sb	25.0	25.5	25.25	1891	NA	22.41	1.85	2.03
GLSF	sb	25.5	26.0	25.75	1890	NA	21.97	2.44	1.60
GLSF	sb	26.0	26.5	26.25	1888	NA	22.39	2.55	1.20
GLSF	sb	26.5	27.0	26.75	1886	NA	22.75	2.09	NA
GLSF	sb	27.0	27.5	27.25	1885	NA	22.38	2.40	1.43
GLSF	sb	27.5	28.0	27.75	1883	9.9	22.32	2.26	1.33
GLSF	sb	28.0	28.5	28.25	1881	NA	22.21	2.71	1.23
GLSF	sb	28.5	29.0	28.75	1879	NA	22.14	2.24	1.37
GLSF	sb	29.0	29.5	29.25	1877	NA	21.76	2.65	1.27
GLSF	sb	29.5	30.0	29.75	1875	NA	21.60	2.39	1.37
GLSF	sb	30.0	30.5	30.25	1873	NA	22.41	1.78	1.90
GLSF	sb	30.5	31.0	30.75	1871	NA	22.03	2.10	1.47
GLSF	sb	31.0	31.5	31.25	1869	NA	21.75	2.39	1.50
GLSF	sb	31.5	32.0	31.75	1867	NA	21.73	2.32	1.27
GLSF	sb	32.0	32.5	32.25	1866	NA	NA	NA	1.20
GLSF	sb	32.5	33.0	32.75	1864	NA	21.95	2.11	1.40

GLSF	sb	33.0	33.5	33.25	1862	NA	21.75	2.61	1.57
GLSF	sb	33.5	34.0	33.75	1860	NA	20.63	2.28	1.27
GLSF	sb	34.0	34.5	34.25	1858	NA	21.02	2.13	1.60
GLSF	sb	34.5	35.0	34.75	1856	NA	21.40	2.10	1.23
GLSF	sb	35.0	35.5	35.25	1854	NA	21.06	2.61	1.33
GLSF	sb	35.5	36.0	35.75	1852	NA	21.00	2.02	1.50
GLSF	sb	36.0	36.5	36.25	1850	NA	21.09	2.33	1.43
GLSF	sb	36.5	37.0	36.75	1848	NA	21.24	2.20	1.40
GLSF	sb	37.0	37.5	37.25	1846	NA	20.91	2.17	1.40
GLSF	sb	37.5	38.0	37.75	1844	NA	21.44	2.09	1.20
GLSF	sb	38.0	38.5	38.25	1842	NA	21.21	2.24	1.20
GLSF	sb	38.5	39.0	38.75	1840	NA	21.61	2.17	1.37
GLSF	sb	39.0	39.5	39.25	1838	NA	21.12	2.38	1.20
GLSF	sb	39.5	40.0	39.75	1836	NA	20.75	2.16	1.27
GLSF	sb	40.0	40.5	40.25	1834	NA	21.32	1.53	2.03
GLSF	sb	40.5	41.0	40.75	1832	NA	20.63	2.37	1.53
GLSF	sb	41.0	41.5	41.25	1830	NA	20.82	2.23	1.50
GLSF	sb	41.5	42.0	41.75	1828	NA	20.97	2.13	1.13
GLSF	sb	42.0	42.5	42.25	1826	NA	20.82	2.40	1.43
GLSF	sb	42.5	43.0	42.75	1824	NA	21.27	2.25	1.40
GLSF	sb	43.0	43.5	43.25	1822	NA	21.74	2.04	1.30
GLSF	sb	43.5	44.0	43.75	1820	NA	21.40	2.57	1.60
GLSF	sb	44.0	44.5	44.25	1818	NA	21.26	2.42	1.50
GLSF	sb	44.5	45.0	44.75	1816	NA	20.91	2.56	1.50
GLSF	sb	45.0	45.5	45.25	1814	NA	20.75	2.00	1.40

Pigments

Lake Name	Basin ID	Mean interval depth (cm)	Year	Diatoxanthin (ng ug-1 OM)	Echinenone (ng ug-1 OM)	B-carotene (ng ug-1 OM)	Pheophytin (ng ug-1 OM)
GLSF	nb	0.25	2013	1.319	0.378	0.671	3.619
GLSF	nb	1.25	2011	1.379	0.374	0.798	4.034
GLSF	nb	2.25	2006	1.319	0.388	0.704	4.064
GLSF	nb	3.25	2003	0.978	0.290	0.827	4.075
GLSF	nb	4.25	1997	1.232	0.493	0.815	4.444
GLSF	nb	5.25	1994	1.284	0.540	0.767	5.490
GLSF	nb	6.25	1990	1.346	0.544	0.847	5.386
GLSF	nb	6.75	1987	NA	NA	NA	NA
GLSF	nb	7.25	1984	1.414	0.564	1.142	5.839
GLSF	nb	8.25	1982	1.476	0.591	0.739	5.485
GLSF	nb	8.75	1978	NA	NA	NA	NA
GLSF	nb	9.25	1974	1.159	0.420	0.714	4.766
GLSF	nb	10.25	1972	1.037	0.365	0.548	4.151
GLSF	nb	10.75	1967	NA	NA	NA	NA
GLSF	nb	11.25	1961	0.683	0.248	0.461	3.198
GLSF	nb	12.25	1958	0.702	0.254	0.602	3.345
GLSF	nb	12.75	1954	NA	NA	NA	NA
GLSF	nb	13.25	1949	1.196	0.705	1.083	4.681
GLSF	nb	14.25	1946	0.855	0.248	0.711	3.263
GLSF	nb	14.75	1942	NA	NA	NA	NA
GLSF	nb	15.25	1937	0.665	0.213	0.319	2.898
GLSF	nb	16.25	1934	0.897	0.333	0.480	1.711
GLSF	nb	16.75	1931	NA	NA	NA	NA
GLSF	nb	17.25	1928	1.110	0.443	0.809	3.478
GLSF	nb	18.25	1925	0.694	0.342	0.586	NA
GLSF	nb	18.75	1922	NA	NA	NA	NA

GLSF	nb	19.25	1919	0.633	0.186	0.320	2.454
GLSF	nb	20.25	1916	0.575	0.575	0.934	7.089
GLSF	nb	21.25	1913	0.483	0.156	0.245	2.211
GLSF	nb	21.75	1911	NA	NA	NA	NA
GLSF	nb	22.25	1909	0.623	0.170	0.426	2.404
GLSF	nb	23.25	1906	0.456	0.131	0.318	1.987
GLSF	nb	24.25	1895	0.341	0.121	0.262	NA
GLSF	nb	25.25	1884	0.301	0.097	0.161	1.477
GLSF	nb	26.25	1872	0.384	0.123	0.237	1.926
GLSF	nb	27.25	1865	0.367	0.136	0.088	1.771
GLSF	nb	28.25	1857	NA	NA	NA	NA
GLSF	nb	29.25	1849	NA	NA	NA	NA
GLSF	nb	29.75	1846	0.422	0.127	0.202	1.981
GLSF	nb	30.25	1841	0.457	0.137	0.169	NA
GLSF	nb	31.25	1837	0.304	0.119	0.246	NA
GLSF	nb	32.25	1833	0.388	0.115	0.168	1.805
GLSF	nb	33.25	1829	0.397	0.125	0.334	NA
GLSF	nb	34.25	1825	0.413	0.136	0.283	1.957
GLSF	nb	35.25	1821	0.415	0.136	0.256	NA
GLSF	sb	0.25	2013	0.504	0.158	0.248	2.350
GLSF	sb	0.75	2012	1.015	0.198	NA	3.289
GLSF	sb	1.25	2011	0.983	0.242	NA	3.197
GLSF	sb	1.75	2008	1.073	0.283	NA	3.284
GLSF	sb	2.25	2005	0.956	0.248	0.354	3.053
GLSF	sb	2.75	2003	1.006	0.273	0.375	3.174
GLSF	sb	3.25	2002	0.633	0.201	0.307	3.096
GLSF	sb	3.75	1999	0.907	0.283	0.500	3.386
GLSF	sb	4.25	1995	0.925	0.304	0.616	3.564
GLSF	sb	4.75	1994	0.957	0.343	0.410	3.843
GLSF	sb	5.25	1992	0.937	0.332	0.462	3.704

GLSF	sb	5.75	1989	0.580	0.189	0.307	2.710
GLSF	sb	6.25	1985	0.765	0.227	0.429	3.226
GLSF	sb	6.75	1984	0.626	0.203	0.272	3.285
GLSF	sb	7.25	1982	0.526	0.153	0.188	2.748
GLSF	sb	7.75	1979	0.645	0.186	0.365	2.927
GLSF	sb	8.25	1975	0.567	0.165	0.342	2.749
GLSF	sb	8.75	1973	0.762	0.203	0.390	3.433
GLSF	sb	9.25	1972	0.723	0.190	0.314	3.303
GLSF	sb	9.5	1968	NA	NA	NA	NA
GLSF	sb	10.25	1964	0.689	0.224	0.588	3.036
GLSF	sb	10.75	1963	0.556	0.137	0.176	2.437
GLSF	sb	11.25	1961	0.527	0.116	0.488	2.157
GLSF	sb	11.75	1957	0.374	0.075	0.127	1.847
GLSF	sb	12.25	1953	0.458	0.149	0.197	1.854
GLSF	sb	12.75	1952	0.528	0.185	0.272	2.398
GLSF	sb	13.25	1951	0.732	0.223	0.465	4.025
GLSF	sb	13.75	1946	0.570	0.139	0.254	1.995
GLSF	sb	14.25	1942	0.532	0.206	0.353	2.126
GLSF	sb	14.75	1940	0.589	0.250	0.424	2.385
GLSF	sb	15.25	1939	NA	NA	NA	NA
GLSF	sb	15.75	1935	0.481	0.149	0.296	2.081
GLSF	sb	16.25	1930	0.475	0.136	0.243	2.158
GLSF	sb	16.75	1928	NA	0.061	NA	2.034
GLSF	sb	17.25	1927	0.515	0.128	0.245	2.074
GLSF	sb	17.75	1922	0.477	0.108	0.209	2.094
GLSF	sb	18.25	1917	0.313	0.081	0.122	1.264
GLSF	sb	19	1914	0.360	0.106	0.166	1.761
GLSF	sb	19.75	1908	NA	0.128	0.209	2.085
GLSF	sb	20.25	1903	0.423	0.146	0.252	2.360
GLSF	sb	20.75	1902	0.548	0.113	0.297	2.244

GLSF	sb	21.25	1901	0.490	0.127	0.231	2.247
GLSF	sb	21.75	1900	0.422	0.130	0.239	2.055
GLSF	sb	22.25	1899	0.331	0.102	0.183	2.008
GLSF	sb	22.75	1898	0.358	0.082	0.188	2.009
GLSF	sb	23.25	1897	0.454	0.110	0.156	2.182
GLSF	sb	23.75	1896	NA	0.098	0.206	NA
GLSF	sb	24.25	1894	0.421	0.118	0.255	2.012
GLSF	sb	24.75	1893	0.386	0.118	0.227	2.128
GLSF	sb	25.25	1891	0.523	0.141	0.322	1.852
GLSF	sb	25.75	1890	0.467	0.117	0.240	2.198
GLSF	sb	26.25	1888	0.339	0.106	0.164	1.751
GLSF	sb	26.75	1886	0.465	0.160	0.237	2.333
GLSF	sb	27.25	1885	0.469	0.110	0.251	1.968
GLSF	sb	27.75	1883	0.424	0.127	0.260	1.709
GLSF	sb	28.25	1881	0.422	0.111	0.243	1.921
GLSF	sb	28.75	1879	0.421	0.101	0.275	1.918
GLSF	sb	29.25	1877	0.436	0.111	0.272	1.905
GLSF	sb	29.75	1875	0.426	0.110	0.268	1.933
GLSF	sb	30.25	1873	0.494	0.116	0.208	2.074
GLSF	sb	30.75	1871	0.432	0.106	0.260	1.931
GLSF	sb	31.25	1869	0.369	0.106	0.139	1.874
GLSF	sb	31.75	1867	0.484	NA	0.241	2.145
GLSF	sb	32.25	1866	NA	0.106	0.236	NA
GLSF	sb	32.75	1864	0.377	0.097	0.231	2.010
GLSF	sb	33.25	1862	0.360	0.120	0.199	2.032
GLSF	sb	33.75	1860	0.393	0.100	0.253	2.014
GLSF	sb	34.25	1858	NA	0.110	0.210	1.997
GLSF	sb	34.75	1856	0.362	0.114	0.145	1.825
GLSF	sb	35.25	1854	0.310	NA	0.154	1.970
GLSF	sb	35.75	1852	0.382	0.086	0.192	NA

GLSF	sb	36.25	1850	0.373	0.077	0.195	1.835
GLSF	sb	36.75	1848	0.317	0.108	0.137	1.359
GLSF	sb	37.25	1846	0.392	NA	0.234	2.037
GLSF	sb	37.75	1844	NA	0.101	NA	NA
GLSF	sb	38.25	1842	0.364	0.102	0.161	1.845
GLSF	sb	38.75	1840	0.438	0.154	0.237	2.032
GLSF	sb	39.25	1838	0.524	0.122	0.277	2.300
GLSF	sb	39.75	1836	0.512	0.142	0.324	2.258
GLSF	sb	40.25	1834	0.431	0.096	0.208	2.079
GLSF	sb	40.75	1832	0.453	0.110	0.219	2.004
GLSF	sb	41.25	1830	0.409	0.111	0.211	2.148
GLSF	sb	41.75	1828	0.467	0.125	0.280	2.217
GLSF	sb	42.25	1826	0.504	0.112	0.291	2.213
GLSF	sb	42.75	1824	0.532	0.110	0.268	2.249
GLSF	sb	43.25	1822	0.444	0.093	0.204	2.072
GLSF	sb	43.75	1820	0.393	0.128	0.177	1.954
GLSF	sb	44.25	1818	0.475	0.117	0.202	2.101
GLSF	sb	44.75	1816	0.512	0.121	0.326	2.180
GLSF	sb	45.25	1814	0.382	0.114	0.149	2.091

Diatoms: Grand Lac Saint-François

Relative abundance of taxa representing at least 1% of the diatom assemblage in at least one down-core interval.

	GLSF SB Core Interval Depth (cm)																
Taxa Code	**0.25**	**0.75**	**3.25**	**5.25**	**7.25**	**9.25**	**10.25**	**11.75**	**12.25**	**14.25**	**15.75**	**17.25**	**18.25**	**20.75**	**21.75**	**30.25**	**40.25**
bmic	0.020	0.039	0.046	0.039	0.012	0.005	0.012	0.005	0.000	0.024	0.000	0.005	0.012	0.010	0.038	0.017	0.028
adm	0.012	0.010	0.002	0.010	0.005	0.010	0.040	0.012	0.019	0.019	0.008	0.028	0.023	0.012	0.025	0.020	0.019
admi	0.079	0.043	0.074	0.065	0.078	0.122	0.113	0.114	0.130	0.118	0.150	0.179	0.159	0.136	0.156	0.107	0.112
adnides	0.005	0.068	0.000	0.022	0.031	0.017	0.026	0.070	0.048	0.024	0.055	0.061	0.047	0.056	0.078	0.024	0.044
afor	0.069	0.041	0.079	0.102	0.092	0.108	0.085	0.056	0.065	0.070	0.125	0.073	0.070	0.041	0.048	0.027	0.035
aupu	0.169	0.143	0.162	0.075	0.017	0.020	0.028	0.000	0.024	0.000	0.013	0.005	0.000	0.007	0.008	0.007	0.002
ausu	0.000	0.000	0.007	0.022	0.002	0.000	0.000	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000
aute	0.000	0.004	0.007	0.012	0.017	0.015	0.019	0.017	0.007	0.000	0.020	0.024	0.033	0.024	0.060	0.027	0.019
bmic	0.012	0.000	0.002	0.007	0.000	0.000	0.014	0.005	0.012	0.007	0.000	0.012	0.014	0.000	0.008	0.002	0.005
cbol	0.000	0.006	0.005	0.010	0.040	0.051	0.033	0.068	0.058	0.060	0.075	0.083	0.091	0.100	0.093	0.115	0.189
cmiga	0.015	0.012	0.007	0.002	0.007	0.010	0.005	0.017	0.007	0.005	0.000	0.021	0.012	0.010	0.010	0.017	0.016
cpst	0.000	0.004	0.000	0.007	0.012	0.042	0.005	0.012	0.007	0.000	0.005	0.002	0.021	0.058	0.015	0.032	0.012
cste	0.050	0.061	0.056	0.034	0.057	0.056	0.061	0.065	0.067	0.046	0.045	0.087	0.112	0.144	0.151	0.217	0.112
dite	0.005	0.000	0.000	0.000	0.000	0.012	0.016	0.002	0.007	0.002	0.008	0.000	0.007	0.000	0.000	0.000	0.000
dmon	0.000	0.006	0.012	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000
ebil	0.000	0.000	0.002	0.000	0.002	0.000	0.014	0.012	0.010	0.010	0.015	0.012	0.009	0.000	0.008	0.000	0.000
einc	0.000	0.000	0.000	0.007	0.000	0.002	0.000	0.000	0.000	0.000	0.005	0.002	0.002	0.000	0.005	0.007	0.014
enve	0.000	0.000	0.002	0.005	0.005	0.005	0.002	0.015	0.002	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000
fcap	0.099	0.018	0.069	0.102	0.054	0.022	0.021	0.039	0.031	0.043	0.053	0.050	0.033	0.044	0.030	0.034	0.028
fcro	0.122	0.152	0.097	0.102	0.154	0.039	0.028	0.005	0.019	0.000	0.008	0.000	0.019	0.000	0.000	0.000	0.000
fcva	0.007	0.006	0.000	0.005	0.007	0.000	0.000	0.007	0.007	0.017	0.018	0.000	0.005	0.005	0.005	0.007	0.007
fexi	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.003	0.000	0.002	0.005	0.000	0.002	0.014
klat	0.000	0.000	0.000	0.002	0.005	0.002	0.000	0.000	0.000	0.002	0.000	0.002	0.002	0.002	0.010	0.002	0.009
mgra	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.024	0.067	0.005	0.000	0.000	0.000	0.000	0.000	0.000
nigr	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

npad	0.000	0.002	0.005	0.000	0.009	0.015	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
psat	0.000	0.002	0.000	0.000	0.000	0.007	0.000	0.000	0.002	0.002	0.003	0.005	0.005	0.002	0.000	0.012	0.009
scon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.002	0.000	0.000	0.002	0.017	0.000	0.000	0.000
scve	0.000	0.000	0.005	0.005	0.002	0.002	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.002	0.005	0.029	0.000
spin	0.005	0.008	0.014	0.000	0.000	0.010	0.005	0.002	0.000	0.031	0.005	0.007	0.000	0.029	0.015	0.005	0.014
spup	0.002	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.002	0.000	0.000	0.012	0.005	0.000	0.000	0.002	0.000
tfen	0.005	0.002	0.005	0.000	0.012	0.000	0.000	0.000	0.019	0.051	0.000	0.005	0.000	0.000	0.008	0.000	0.002
tflo	0.203	0.262	0.250	0.259	0.258	0.247	0.308	0.339	0.313	0.255	0.280	0.238	0.166	0.178	0.128	0.107	0.150
uuln	0.007	0.008	0.005	0.012	0.012	0.022	0.005	0.002	0.010	0.002	0.010	0.007	0.014	0.005	0.008	0.012	0.012

DITP estimates

Lake	Basin	Mean Interval depth (cm)	DITP estimate (ug l-1)	Upper Error Range (ug l-1)	Lower Error Range (ug l-1)
GLSF	sb	0.25	10.83	19.99	5.86
GLSF	sb	0.75	7.56	14.04	4.08
GLSF	sb	3.25	9.99	18.45	5.41
GLSF	sb	5.25	8.48	15.66	4.60
GLSF	sb	7.25	8.87	16.39	4.80
GLSF	sb	9.25	6.66	12.32	3.60
GLSF	sb	10.25	7.22	13.39	3.90
GLSF	sb	11.75	6.38	11.84	3.44
GLSF	sb	12.25	5.90	10.96	3.18
GLSF	sb	14.25	9.75	18.05	5.27
GLSF	sb	15.75	6.35	11.74	3.43
GLSF	sb	17.25	4.58	8.50	2.47
GLSF	sb	18.25	5.15	9.53	2.78
GLSF	sb	20.75	5.27	9.77	2.84
GLSF	sb	21.75	4.58	8.58	2.45
GLSF	sb	30.25	6.18	11.42	3.35

GLSF	sb	40.25	4.842073	8.983642	2.609818

Diatoms: Top-Bottom

Relative abundance of taxa representing at least 1% of an enumerated diatom assemblage.

	Sample ID																					
Taxa Code	**AZ-0**	**AZ-29**	**RCH-0**	**RCH-34**	**KB-0**	**KB-34**	**RG-0**	**RG-31**	**UM-0**	**UM-30**	**FC-0**	**FC-32**	**MLM-0**	**MLM-30**	**MASS-0**	**MASS-36**	**PB-0**	**PB-27**	**31M-0**	**31M-31**	**AYL-0**	**AYL-39**
aamb	0.24	0.44	0.24	0.08	0.00	0.04	0.15	0.07	0.15	0.05	0.04	0.08	0.15	0.06	0.01	0.00	0.04	0.00	0.01	0.05	0.03	0.09
acbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
admi	0.03	0.02	0.02	0.04	0.16	0.07	0.04	0.06	0.10	0.13	0.13	0.11	0.05	0.10	0.05	0.00	0.02	0.01	0.01	0.03	0.09	0.12
adnides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.08	0.00	0.00	0.00	0.00
afor	0.03	0.04	0.04	0.01	0.08	0.07	0.06	0.03	0.04	0.01	0.04	0.07	0.02	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.06	0.02
aina	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00
alir	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
aupu	0.00	0.08	0.09	0.05	0.01	0.04	0.04	0.08	0.07	0.05	0.02	0.00	0.08	0.03	0.00	0.03	0.04	0.04	0.01	0.04	0.01	0.02
ausu	0.00	0.00	0.04	0.00	0.00	0.00	0.06	0.02	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
aute	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.05	0.08	0.02	0.00	0.00	0.06	0.00	0.00	0.00	0.03	0.00
bbre	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
bmic	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
brainte	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
cato	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.12	0.00	0.00	0.00
cbol	0.02	0.04	0.05	0.09	0.08	0.05	0.03	0.17	0.03	0.04	0.02	0.02	0.09	0.07	0.01	0.12	0.11	0.06	0.05	0.12	0.00	0.07
ccms	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.38	0.00	0.00	0.00
ccoc	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02

cros	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
cmiga	0.00	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.04	0.06	0.01	0.06	0.06	0.01	0.01
cnth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.00
coce	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.03	0.01	0.10	0.00	0.00
cplc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cpst	0.02	0.00	0.07	0.07	0.00	0.20	0.10	0.09	0.03	0.04	0.00	0.03	0.03	0.08	0.01	0.01	0.06	0.05	0.01	0.04	0.00	0.03
cste	0.03	0.02	0.09	0.13	0.08	0.22	0.12	0.12	0.11	0.05	0.04	0.14	0.13	0.13	0.00	0.03	0.03	0.01	0.00	0.03	0.02	0.10
ctho	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.00
cyml	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
dite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
dmar	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
ebil	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
einc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
encm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01
enmi	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
enng	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
ezas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fcap	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.02
fcro	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.01	0.46	0.00	0.18	0.00	0.03	0.01	0.14	0.00
fexi	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.05	0.02	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
ffam	0.01	0.00	0.02	0.02	0.02	0.05	0.01	0.01	0.01	0.00	0.02	0.03	0.00	0.04	0.02	0.00	0.01	0.01	0.01	0.00	0.00	0.01
fnop	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
gpar	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00

ksuc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01
mcir	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
navexp	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
nipm	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
nlst	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
npal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
nsem	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
nseo	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.03
nsmu	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
ntub	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
nuvi	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
pchl	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
pmrg	0.00	0.00	0.01	0.03	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
ppco	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.09	0.00	0.01	0.00	0.00
psacurt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.03
psat	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
psbr	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.00	0.01	0.06	0.08	0.02	0.03	0.00	0.01	0.02	0.01	0.11	0.00	0.04	0.03	0.04
scon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00
scve	0.00	0.04	0.00	0.01	0.05	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
shan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.00
smed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.05	0.02	0.06	0.00	0.00
smipar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.14	0.00	0.00	0.00
spin	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.04	0.03	0.00	0.00	0.01	0.02	0.02	0.00	0.07	0.00	0.06	0.00	0.02

sves	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
tflo	0.49	0.18	0.15	0.15	0.20	0.08	0.12	0.11	0.07	0.08	0.28	0.26	0.17	0.25	0.06	0.06	0.10	0.08	0.03	0.03	0.27	0.04

DITP estimates

Sample Code	DITP estimate (ug l-1)	Upper Error Range (ug l-1)	Lower Error Range (ug l-1)
GLSF-0	10.81	19.96	5.85
GLSF-30	6.17	11.40	3.34
AZ-0	5.77	10.65	3.13
AZ-29	7.41	13.82	3.97
RCH-0	5.10	9.51	2.73
RCH-34	3.76	7.07	2.00
KB-0	4.89	9.07	2.63
KB-34	4.06	7.72	2.13
RG-0	5.58	10.45	2.98
RG-31	4.09	7.62	2.19
UM-0	5.61	10.47	3.00
UM-30	5.74	10.69	3.08
FC-0	8.14	15.15	4.37
FC-32	5.07	9.35	2.75
MLM-0	4.29	7.97	2.31
MLM-30	3.78	7.09	2.02
MASS-0	15.02	27.88	8.09
MASS-36	3.74	7.34	1.91
PB-0	6.52	12.10	3.51
PB-27	5.04	9.64	2.64
AYL-0	14.82	27.54	7.98
AYL-39	5.37	10.00	2.88

NAPI

Watershed	Year	Agr. land use	Food	Feed	Detergents	Fertilizer	NAPI
		(km2)	*(Kg P km-2)*				
GLSF	1901	346.23	-7.57	49.69	0.00	0.00	42.12
GLSF	1911	346.23	-6.47	67.95	0.00	0.00	61.48
GLSF	1921	346.58	-11.62	102.82	0.00	2.69	93.89
GLSF	1931	364.13	-13.15	125.22	0.00	11.05	123.12
GLSF	1941	412.05	-14.46	152.99	1.06	18.36	157.96
GLSF	1951	402.33	-18.57	141.95	2.28	44.00	169.67
GLSF	1961	369.18	-16.59	155.97	3.09	57.21	199.68
GLSF	1971	297.90	-20.91	167.57	4.36	97.41	248.43
GLSF	1981	215.55	-20.11	111.47	1.28	113.91	206.56
GLSF	1991	169.77	-14.56	63.94	2.36	86.92	138.66
GLSF	2001	148.34	-12.49	133.07	2.54	56.46	179.58
GLSF	2011	151.33	-22.37	129.41	0.33	64.95	172.33

Watershed land cover

Watershed name	Watershed area (km2)	Forest cover (%)	Cropland cover (%)	Urban and built-up cover (%)	Water cover (%)	Wetland cover (%)	Barren (%)
Grand Lac Saint Francois	1201	93.781	4.097	0.000	1.669	0.453	0.000
Lac Aylmer	443	91.927	3.766	0.169	3.164	0.973	0.000
Lac Massawippi	770	84.369	11.411	1.217	2.369	0.633	0.000
Kennebago Lake	93	96.312	2.223	0.000	1.466	0.000	0.000
Rangeley Lake	234	91.649	3.469	0.534	4.349	0.000	0.000
Mooselookmeguntic Lake	570	95.028	2.172	0.000	2.724	0.077	0.000
Richardson Lake	196	92.959	0.924	0.000	5.512	0.318	0.287
Umbagog Lake	875	96.577	0.400	0.000	1.673	1.350	0.000
Aziscohos Lake	523	93.155	1.863	0.000	4.827	0.155	0.000
First Connecticut Lake	204	93.371	0.368	0.000	6.261	0.000	0.000
Lac des 31-Milles	323	90.322	0.000	0.000	9.678	0.000	0.000
Lac du Poisson Blanc	177	67.670	0.177	0.000	32.153	0.000	0.000

Water-level loggers

Lake Name	Date (yy-mm-dd)	Time (hh:mm:ss)	Logger Depth (m)	Full PondWater Level Reference (m)
Aylmer	*see text for data source*			
Aziscohos	14-08-28	21:44:58	17.46	-0.71
Aziscohos	14-08-29	9:44:58	17.52	-0.65
Aziscohos	14-08-29	21:44:58	17.50	-0.67
Aziscohos	14-08-30	9:44:58	17.47	-0.70
Aziscohos	14-08-30	21:44:58	17.40	-0.77
Aziscohos	14-08-31	9:44:58	17.36	-0.81
Aziscohos	14-08-31	21:44:58	17.33	-0.84
Aziscohos	14-09-01	9:44:58	17.32	-0.85
Aziscohos	14-09-01	21:44:58	17.29	-0.88
Aziscohos	14-09-02	9:44:58	17.25	-0.92
Aziscohos	14-09-02	21:44:58	17.17	-1.00
Aziscohos	14-09-03	9:44:58	17.22	-0.94
Aziscohos	14-09-03	21:44:58	17.25	-0.92
Aziscohos	14-09-04	9:44:58	17.26	-0.90
Aziscohos	14-09-04	21:44:58	17.22	-0.95
Aziscohos	14-09-05	9:44:58	17.21	-0.96
Aziscohos	14-09-05	21:44:58	17.12	-1.05
Aziscohos	14-09-06	9:44:58	17.07	-1.10
Aziscohos	14-09-06	21:44:58	17.09	-1.08
Aziscohos	14-09-07	9:44:58	17.13	-1.04
Aziscohos	14-09-07	21:44:58	17.15	-1.02
Aziscohos	14-09-08	9:44:58	17.20	-0.97
Aziscohos	14-09-08	21:44:58	17.18	-0.99
Aziscohos	14-09-09	9:44:58	17.17	-1.00
Aziscohos	14-09-09	21:44:58	17.10	-1.07
Aziscohos	14-09-10	9:44:58	17.06	-1.11
Aziscohos	14-09-10	21:44:58	17.00	-1.17
Aziscohos	14-09-11	9:44:58	16.89	-1.28
Aziscohos	14-09-11	21:44:58	16.93	-1.24
Aziscohos	14-09-12	9:44:58	17.00	-1.16
Aziscohos	14-09-12	21:44:58	17.02	-1.14
Aziscohos	14-09-13	9:44:58	17.02	-1.15
Aziscohos	14-09-13	21:44:58	16.94	-1.23
Aziscohos	14-09-14	9:44:58	16.97	-1.20
Aziscohos	14-09-14	21:44:58	16.95	-1.22

Aziscohos	14-09-15	9:44:58	16.92	-1.25
Aziscohos	14-09-15	21:44:58	16.87	-1.30
Aziscohos	14-09-16	9:44:58	16.82	-1.35
Aziscohos	14-09-16	21:44:58	16.79	-1.37
Aziscohos	14-09-17	9:44:58	16.79	-1.38
Aziscohos	14-09-17	21:44:58	16.76	-1.41
Aziscohos	14-09-18	9:44:58	16.76	-1.41
Aziscohos	14-09-18	21:44:58	16.79	-1.38
Aziscohos	14-09-19	9:44:58	16.85	-1.32
Aziscohos	14-09-19	21:44:58	16.82	-1.35
Aziscohos	14-09-20	9:44:58	16.75	-1.42
Aziscohos	14-09-20	21:44:58	16.68	-1.49
Aziscohos	14-09-21	9:44:58	16.62	-1.55
Aziscohos	14-09-21	21:44:58	16.53	-1.64
Aziscohos	14-09-22	9:44:58	16.54	-1.63
Aziscohos	14-09-22	21:44:58	16.63	-1.54
Aziscohos	14-09-23	9:44:58	16.68	-1.49
Aziscohos	14-09-23	21:44:58	16.73	-1.44
Aziscohos	14-09-24	9:44:58	16.79	-1.38
Aziscohos	14-09-24	21:44:58	16.75	-1.42
Aziscohos	14-09-25	9:44:58	16.71	-1.45
Aziscohos	14-09-25	21:44:58	16.64	-1.53
Aziscohos	14-09-26	9:44:58	16.62	-1.55
Aziscohos	14-09-26	21:44:58	16.58	-1.59
Aziscohos	14-09-27	9:44:58	16.57	-1.60
Aziscohos	14-09-27	21:44:58	16.55	-1.62
Aziscohos	14-09-28	9:44:58	16.52	-1.65
Aziscohos	14-09-28	21:44:58	16.46	-1.71
Aziscohos	14-09-29	9:44:58	16.45	-1.72
Aziscohos	14-09-29	21:44:58	16.43	-1.73
Aziscohos	14-09-30	9:44:58	16.42	-1.75
Aziscohos	14-09-30	21:44:58	16.41	-1.76
Aziscohos	14-10-01	9:44:58	16.43	-1.74
Aziscohos	14-10-01	21:44:58	16.42	-1.75
Aziscohos	14-10-02	9:44:58	16.42	-1.75
Aziscohos	14-10-02	21:44:58	16.39	-1.78
Aziscohos	14-10-03	9:44:58	16.35	-1.82
Aziscohos	14-10-03	21:44:58	16.28	-1.89
Aziscohos	14-10-04	9:44:58	16.20	-1.97
Aziscohos	14-10-04	21:44:58	16.11	-2.05
Aziscohos	14-10-05	9:44:58	16.16	-2.01

Aziscohos	14-10-05	21:44:58	16.21	-1.96
Aziscohos	14-10-06	9:44:58	16.25	-1.92
Aziscohos	14-10-06	21:44:58	16.25	-1.92
Aziscohos	14-10-07	9:44:58	16.20	-1.97
Aziscohos	14-10-07	21:44:58	16.20	-1.97
Aziscohos	14-10-08	9:44:58	16.10	-2.07
Aziscohos	14-10-08	21:44:58	16.12	-2.05
Aziscohos	14-10-09	9:44:58	16.17	-2.00
Aziscohos	14-10-09	21:44:58	16.18	-1.99
Aziscohos	14-10-10	9:44:58	16.21	-1.96
Aziscohos	14-10-10	21:44:58	16.23	-1.93
Aziscohos	14-10-11	9:44:58	16.24	-1.93
Aziscohos	14-10-11	21:44:58	16.22	-1.95
Aziscohos	14-10-12	9:44:58	16.26	-1.91
Aziscohos	14-10-12	21:44:58	16.25	-1.92
Aziscohos	14-10-13	9:44:58	16.25	-1.92
Aziscohos	14-10-13	21:44:58	16.21	-1.96
Aziscohos	14-10-14	9:44:58	16.19	-1.98
Aziscohos	14-10-14	21:44:58	16.14	-2.03
Aziscohos	14-10-15	9:44:58	16.14	-2.03
Aziscohos	14-10-15	21:44:58	16.10	-2.07
Aziscohos	14-10-16	9:44:58	16.06	-2.11
Aziscohos	14-10-16	21:44:58	16.01	-2.16
Aziscohos	14-10-17	9:44:58	15.96	-2.21
Aziscohos	14-10-17	21:44:58	16.01	-2.15
Aziscohos	14-10-18	9:44:58	16.00	-2.17
Aziscohos	14-10-18	21:44:58	16.00	-2.17
Aziscohos	14-10-19	9:44:58	16.11	-2.06
Aziscohos	14-10-19	21:44:58	16.13	-2.04
Aziscohos	14-10-20	9:44:58	16.16	-2.01
Aziscohos	14-10-20	21:44:58	16.16	-2.01
Aziscohos	14-10-21	9:44:58	16.19	-1.98
Aziscohos	14-10-21	21:44:58	16.22	-1.95
Aziscohos	14-10-22	9:44:58	16.26	-1.91
Aziscohos	14-10-22	21:44:58	16.23	-1.94
Aziscohos	14-10-23	9:44:58	16.17	-2.00
Aziscohos	14-10-23	21:44:58	16.15	-2.02
Aziscohos	14-10-24	9:44:58	16.18	-1.99
Aziscohos	14-10-24	21:44:58	16.20	-1.97
Aziscohos	14-10-25	9:44:58	16.20	-1.97
Aziscohos	14-10-25	21:44:58	16.14	-2.03

Aziscohos	14-10-26	9:44:58	16.14	-2.03
Aziscohos	14-10-26	21:44:58	16.22	-1.95
Aziscohos	14-10-27	9:44:58	16.30	-1.87
Aziscohos	14-10-27	21:44:58	16.37	-1.80
Aziscohos	14-10-28	9:44:58	16.40	-1.77
Aziscohos	14-10-28	21:44:58	16.38	-1.79
Aziscohos	14-10-29	9:44:58	16.35	-1.82
Aziscohos	14-10-29	21:44:58	16.36	-1.81
Aziscohos	14-10-30	9:44:58	16.39	-1.78
Aziscohos	14-10-30	21:44:58	16.41	-1.76
Aziscohos	14-10-31	9:44:58	16.43	-1.74
Aziscohos	14-10-31	21:44:58	16.44	-1.73
Aziscohos	14-11-01	9:44:58	16.42	-1.75
Aziscohos	14-11-01	21:44:58	16.41	-1.76
Aziscohos	14-11-02	9:44:58	16.38	-1.79
Aziscohos	14-11-02	21:44:58	16.32	-1.84
Aziscohos	14-11-03	9:44:58	16.35	-1.82
Aziscohos	14-11-03	21:44:58	16.38	-1.79
Aziscohos	14-11-04	9:44:58	16.40	-1.77
Aziscohos	14-11-04	21:44:58	16.36	-1.81
Aziscohos	14-11-05	9:44:58	16.33	-1.84
Aziscohos	14-11-05	21:44:58	16.36	-1.81
Aziscohos	14-11-06	9:44:58	16.35	-1.82
Aziscohos	14-11-06	21:44:58	16.24	-1.93
Aziscohos	14-11-07	9:44:58	16.18	-1.99
Aziscohos	14-11-07	21:44:58	16.22	-1.94
Aziscohos	14-11-08	9:44:58	16.29	-1.88
Aziscohos	14-11-08	21:44:58	16.27	-1.90
Aziscohos	14-11-09	9:44:58	16.26	-1.91
Aziscohos	14-11-09	21:44:58	16.29	-1.88
Aziscohos	14-11-10	9:44:58	16.32	-1.85
Aziscohos	14-11-10	21:44:58	16.35	-1.82
Aziscohos	14-11-11	9:44:58	16.31	-1.86
Aziscohos	14-11-11	21:44:58	16.28	-1.89
Aziscohos	14-11-12	9:44:58	16.23	-1.94
Aziscohos	14-11-12	21:44:58	16.27	-1.90
Aziscohos	14-11-13	9:44:58	16.28	-1.89
Aziscohos	14-11-13	21:44:58	16.24	-1.92
Aziscohos	14-11-14	9:44:58	16.23	-1.94
Aziscohos	14-11-14	21:44:58	16.25	-1.92
Aziscohos	14-11-15	9:44:58	16.31	-1.86

Aziscohos	14-11-15	21:44:58	16.33	-1.84
Aziscohos	14-11-16	9:44:58	16.32	-1.85
Aziscohos	14-11-16	21:44:58	16.26	-1.91
Aziscohos	14-11-17	9:44:58	16.21	-1.96
Aziscohos	14-11-17	21:44:58	16.05	-2.12
Aziscohos	14-11-18	9:44:58	16.05	-2.12
Aziscohos	14-11-18	21:44:58	16.10	-2.07
Aziscohos	14-11-19	9:44:58	16.19	-1.98
Aziscohos	14-11-19	21:44:58	16.20	-1.97
Aziscohos	14-11-20	9:44:58	16.12	-2.05
Aziscohos	14-11-20	21:44:58	16.12	-2.05
Aziscohos	14-11-21	9:44:58	16.18	-1.99
Aziscohos	14-11-21	21:44:58	16.27	-1.90
Aziscohos	14-11-22	9:44:58	16.23	-1.94
Aziscohos	14-11-22	21:44:58	16.14	-2.03
Aziscohos	14-11-23	9:44:58	16.18	-1.99
Aziscohos	14-11-23	21:44:58	16.20	-1.97
Aziscohos	14-11-24	9:44:58	16.08	-2.09
Aziscohos	14-11-24	21:44:58	16.03	-2.14
Aziscohos	14-11-25	9:44:58	16.15	-2.02
Aziscohos	14-11-25	21:44:58	16.23	-1.94
Aziscohos	14-11-26	9:44:58	16.35	-1.82
Aziscohos	14-11-26	21:44:58	16.29	-1.88
Aziscohos	14-11-27	9:44:58	16.28	-1.89
Aziscohos	14-11-27	21:44:58	16.33	-1.84
Aziscohos	14-11-28	9:44:58	16.34	-1.83
Aziscohos	14-11-28	21:44:58	16.37	-1.79
Aziscohos	14-11-29	9:44:58	16.42	-1.75
Aziscohos	14-11-29	21:44:58	16.40	-1.77
Aziscohos	14-11-30	9:44:58	16.36	-1.80
Aziscohos	14-11-30	21:44:58	16.31	-1.86
Aziscohos	14-12-01	9:44:58	16.33	-1.84
Aziscohos	14-12-01	21:44:58	16.46	-1.71
Aziscohos	14-12-02	9:44:58	16.58	-1.59
Aziscohos	14-12-02	21:44:58	16.52	-1.65
Aziscohos	14-12-03	9:44:58	16.37	-1.80
Aziscohos	14-12-03	21:44:58	16.31	-1.86
Aziscohos	14-12-04	9:44:58	16.43	-1.74
Aziscohos	14-12-04	21:44:58	16.52	-1.65
Aziscohos	14-12-05	9:44:58	16.57	-1.60
Aziscohos	14-12-05	21:44:58	16.52	-1.65

Aziscohos	14-12-06	9:44:58	16.45	-1.72
Aziscohos	14-12-06	21:44:58	16.43	-1.74
Aziscohos	14-12-07	9:44:58	16.53	-1.64
Aziscohos	14-12-07	21:44:58	16.57	-1.59
Aziscohos	14-12-08	9:44:58	16.57	-1.60
Aziscohos	14-12-08	21:44:58	16.52	-1.65
Aziscohos	14-12-09	9:44:58	16.44	-1.73
Aziscohos	14-12-09	21:44:58	16.30	-1.87
Aziscohos	14-12-10	9:44:58	16.24	-1.93
Aziscohos	14-12-10	21:44:58	16.16	-2.01
Aziscohos	14-12-11	9:44:58	16.16	-2.00
Aziscohos	14-12-11	21:44:58	16.21	-1.96
Aziscohos	14-12-12	9:44:58	16.26	-1.91
Aziscohos	14-12-12	21:44:58	16.26	-1.91
Aziscohos	14-12-13	9:44:58	16.24	-1.93
Aziscohos	14-12-13	21:44:58	16.23	-1.94
Aziscohos	14-12-14	9:44:58	16.24	-1.93
Aziscohos	14-12-14	21:44:58	16.25	-1.92
Aziscohos	14-12-15	9:44:58	16.29	-1.88
Aziscohos	14-12-15	21:44:58	16.31	-1.86
Aziscohos	14-12-16	9:44:58	16.30	-1.87
Aziscohos	14-12-16	21:44:58	16.25	-1.92
Aziscohos	14-12-17	9:44:58	16.20	-1.97
Aziscohos	14-12-17	21:44:58	16.15	-2.02
Aziscohos	14-12-18	9:44:58	16.15	-2.02
Aziscohos	14-12-18	21:44:58	16.17	-1.99
Aziscohos	14-12-19	9:44:58	16.22	-1.95
Aziscohos	14-12-19	21:44:58	16.27	-1.90
Aziscohos	14-12-20	9:44:58	16.31	-1.85
Aziscohos	14-12-20	21:44:58	16.31	-1.86
Aziscohos	14-12-21	9:44:58	16.31	-1.86
Aziscohos	14-12-21	21:44:58	16.30	-1.87
Aziscohos	14-12-22	9:44:58	16.31	-1.86
Aziscohos	14-12-22	21:44:58	16.28	-1.89
Aziscohos	14-12-23	9:44:58	16.27	-1.90
Aziscohos	14-12-23	21:44:58	16.24	-1.92
Aziscohos	14-12-24	9:44:58	16.18	-1.99
Aziscohos	14-12-24	21:44:58	16.05	-2.12
Aziscohos	14-12-25	9:44:58	15.98	-2.19
Aziscohos	14-12-25	21:44:58	16.13	-2.04
Aziscohos	14-12-26	9:44:58	16.27	-1.90

Aziscohos	14-12-26	21:44:58	16.35	-1.82
Aziscohos	14-12-27	9:44:58	16.40	-1.77
Aziscohos	14-12-27	21:44:58	16.39	-1.77
Aziscohos	14-12-28	9:44:58	16.32	-1.85
Aziscohos	14-12-28	21:44:58	16.41	-1.76
Aziscohos	14-12-29	9:44:58	16.49	-1.68
Aziscohos	14-12-29	21:44:58	16.55	-1.62
Aziscohos	14-12-30	9:44:58	16.59	-1.58
Aziscohos	14-12-30	21:44:58	16.59	-1.58
Aziscohos	14-12-31	9:44:58	16.56	-1.60
Aziscohos	14-12-31	21:44:58	16.52	-1.65
Aziscohos	15-01-01	9:44:58	16.47	-1.70
Aziscohos	15-01-01	21:44:58	16.43	-1.74
Aziscohos	15-01-02	9:44:58	16.48	-1.69
Aziscohos	15-01-02	21:44:58	16.59	-1.58
Aziscohos	15-01-03	9:44:58	16.70	-1.47
Aziscohos	15-01-03	21:44:58	16.63	-1.54
Aziscohos	15-01-04	9:44:58	16.47	-1.70
Aziscohos	15-01-04	21:44:58	16.34	-1.83
Aziscohos	15-01-05	9:44:58	16.42	-1.75
Aziscohos	15-01-05	21:44:58	16.52	-1.65
Aziscohos	15-01-06	9:44:58	16.52	-1.65
Aziscohos	15-01-06	21:44:58	16.42	-1.75
Aziscohos	15-01-07	9:44:58	16.33	-1.84
Aziscohos	15-01-07	21:44:58	16.40	-1.77
Aziscohos	15-01-08	9:44:58	16.44	-1.73
Aziscohos	15-01-08	21:44:58	16.39	-1.78
Aziscohos	15-01-09	9:44:58	16.30	-1.87
Aziscohos	15-01-09	21:44:58	16.33	-1.84
Aziscohos	15-01-10	9:44:58	16.40	-1.77
Aziscohos	15-01-10	21:44:58	16.43	-1.74
Aziscohos	15-01-11	9:44:58	16.49	-1.68
Aziscohos	15-01-11	21:44:58	16.47	-1.70
Aziscohos	15-01-12	9:44:58	16.39	-1.78
Aziscohos	15-01-12	21:44:58	16.35	-1.82
Aziscohos	15-01-13	9:44:58	16.48	-1.69
Aziscohos	15-01-13	21:44:58	16.47	-1.70
Aziscohos	15-01-14	9:44:58	16.41	-1.76
Aziscohos	15-01-14	21:44:58	16.31	-1.85
Aziscohos	15-01-15	9:44:58	16.26	-1.91
Aziscohos	15-01-15	21:44:58	16.12	-2.05

Aziscohos	15-01-16	9:44:58	16.03	-2.14
Aziscohos	15-01-16	21:44:58	16.13	-2.04
Aziscohos	15-01-17	9:44:58	16.23	-1.94
Aziscohos	15-01-17	21:44:58	16.18	-1.98
Aziscohos	15-01-18	9:44:58	16.14	-2.03
Aziscohos	15-01-18	21:44:58	16.04	-2.13
Aziscohos	15-01-19	9:44:58	15.98	-2.19
Aziscohos	15-01-19	21:44:58	16.00	-2.17
Aziscohos	15-01-20	9:44:58	16.03	-2.14
Aziscohos	15-01-20	21:44:58	16.07	-2.10
Aziscohos	15-01-21	9:44:58	16.16	-2.01
Aziscohos	15-01-21	21:44:58	16.16	-2.01
Aziscohos	15-01-22	9:44:58	16.16	-2.01
Aziscohos	15-01-22	21:44:58	16.14	-2.03
Aziscohos	15-01-23	9:44:58	16.11	-2.06
Aziscohos	15-01-23	21:44:58	16.00	-2.16
Aziscohos	15-01-24	9:44:58	15.93	-2.24
Aziscohos	15-01-24	21:44:58	15.77	-2.40
Aziscohos	15-01-25	9:44:58	15.84	-2.33
Aziscohos	15-01-25	21:44:58	15.96	-2.21
Aziscohos	15-01-26	9:44:58	16.01	-2.16
Aziscohos	15-01-26	21:44:58	16.00	-2.17
Aziscohos	15-01-27	9:44:58	15.88	-2.29
Aziscohos	15-01-27	21:44:58	15.82	-2.34
Aziscohos	15-01-28	9:44:58	15.86	-2.30
Aziscohos	15-01-28	21:44:58	15.93	-2.24
Aziscohos	15-01-29	9:44:58	15.95	-2.22
Aziscohos	15-01-29	21:44:58	15.83	-2.34
Aziscohos	15-01-30	9:44:58	15.74	-2.43
Aziscohos	15-01-30	21:44:58	15.74	-2.43
Aziscohos	15-01-31	9:44:58	15.74	-2.43
Aziscohos	15-01-31	21:44:58	15.73	-2.44
Aziscohos	15-02-01	9:44:58	15.73	-2.44
Aziscohos	15-02-01	21:44:58	15.73	-2.44
Aziscohos	15-02-02	9:44:58	15.63	-2.54
Aziscohos	15-02-02	21:44:58	15.54	-2.63
Aziscohos	15-02-03	9:44:58	15.62	-2.55
Aziscohos	15-02-03	21:44:58	15.64	-2.53
Aziscohos	15-02-04	9:44:58	15.62	-2.55
Aziscohos	15-02-04	21:44:58	15.52	-2.65
Aziscohos	15-02-05	9:44:58	15.52	-2.65

Aziscohos	15-02-05	21:44:58	15.52	-2.65
Aziscohos	15-02-06	9:44:58	15.49	-2.68
Aziscohos	15-02-06	21:44:58	15.42	-2.75
Aziscohos	15-02-07	9:44:58	15.43	-2.74
Aziscohos	15-02-07	21:44:58	15.42	-2.75
Aziscohos	15-02-08	9:44:58	15.42	-2.75
Aziscohos	15-02-08	21:44:58	15.41	-2.76
Aziscohos	15-02-09	9:44:58	15.43	-2.74
Aziscohos	15-02-09	21:44:58	15.38	-2.79
Aziscohos	15-02-10	9:44:58	15.34	-2.83
Aziscohos	15-02-10	21:44:58	15.33	-2.84
Aziscohos	15-02-11	9:44:58	15.29	-2.88
Aziscohos	15-02-11	21:44:58	15.19	-2.98
Aziscohos	15-02-12	9:44:58	15.10	-3.07
Aziscohos	15-02-12	21:44:58	15.07	-3.10
Aziscohos	15-02-13	9:44:58	15.10	-3.07
Aziscohos	15-02-13	21:44:58	15.11	-3.06
Aziscohos	15-02-14	9:44:58	15.04	-3.13
Aziscohos	15-02-14	21:44:58	14.96	-3.21
Aziscohos	15-02-15	9:44:58	14.91	-3.26
Aziscohos	15-02-15	21:44:58	14.92	-3.25
Aziscohos	15-02-16	9:44:58	14.90	-3.27
Aziscohos	15-02-16	21:44:58	14.93	-3.24
Aziscohos	15-02-17	9:44:58	14.91	-3.26
Aziscohos	15-02-17	21:44:58	14.85	-3.32
Aziscohos	15-02-18	9:44:58	14.84	-3.33
Aziscohos	15-02-18	21:44:58	14.75	-3.41
Aziscohos	15-02-19	9:44:58	14.66	-3.51
Aziscohos	15-02-19	21:44:58	14.64	-3.53
Aziscohos	15-02-20	9:44:58	14.67	-3.50
Aziscohos	15-02-20	21:44:58	14.78	-3.39
Aziscohos	15-02-21	9:44:58	14.81	-3.36
Aziscohos	15-02-21	21:44:58	14.71	-3.46
Aziscohos	15-02-22	9:44:58	14.69	-3.48
Aziscohos	15-02-22	21:44:58	14.65	-3.52
Aziscohos	15-02-23	9:44:58	14.63	-3.54
Aziscohos	15-02-23	21:44:58	14.61	-3.56
Aziscohos	15-02-24	9:44:58	14.58	-3.59
Aziscohos	15-02-24	21:44:58	14.45	-3.72
Aziscohos	15-02-25	9:44:58	14.37	-3.80
Aziscohos	15-02-25	21:44:58	14.40	-3.77

Aziscohos	15-02-26	9:44:58	14.44	-3.73
Aziscohos	15-02-26	21:44:58	14.41	-3.76
Aziscohos	15-02-27	9:44:58	14.44	-3.73
Aziscohos	15-02-27	21:44:58	14.46	-3.71
Aziscohos	15-02-28	9:44:58	14.51	-3.66
Aziscohos	15-02-28	21:44:58	14.48	-3.69
Aziscohos	15-03-01	9:44:58	14.43	-3.74
Aziscohos	15-03-01	21:44:58	14.25	-3.92
Aziscohos	15-03-02	9:44:58	14.14	-4.03
Aziscohos	15-03-02	21:44:58	14.18	-3.98
Aziscohos	15-03-03	9:44:58	14.22	-3.95
Aziscohos	15-03-03	21:44:58	14.04	-4.13
Aziscohos	15-03-04	9:44:58	13.96	-4.21
Aziscohos	15-03-04	21:44:58	13.96	-4.21
Aziscohos	15-03-05	9:44:58	14.02	-4.15
Aziscohos	15-03-05	21:44:58	14.06	-4.11
Aziscohos	15-03-06	9:44:58	14.08	-4.09
Aziscohos	15-03-06	21:44:58	13.99	-4.18
Aziscohos	15-03-07	9:44:58	13.92	-4.25
Aziscohos	15-03-07	21:44:58	13.87	-4.30
Aziscohos	15-03-08	9:44:58	13.86	-4.31
Aziscohos	15-03-08	21:44:58	13.86	-4.31
Aziscohos	15-03-09	9:44:58	13.83	-4.34
Aziscohos	15-03-09	21:44:58	13.85	-4.32
Aziscohos	15-03-10	9:44:58	13.89	-4.28
Aziscohos	15-03-10	21:44:58	13.76	-4.41
Aziscohos	15-03-11	9:44:58	13.67	-4.50
Aziscohos	15-03-11	21:44:58	13.69	-4.48
Aziscohos	15-03-12	9:44:58	13.80	-4.37
Aziscohos	15-03-12	21:44:58	13.84	-4.33
Aziscohos	15-03-13	9:44:58	13.84	-4.33
Aziscohos	15-03-13	21:44:58	13.76	-4.41
Aziscohos	15-03-14	9:44:58	13.67	-4.50
Aziscohos	15-03-14	21:44:58	13.54	-4.63
Aziscohos	15-03-15	9:44:58	13.47	-4.70
Aziscohos	15-03-15	21:44:58	13.55	-4.62
Aziscohos	15-03-16	9:44:58	13.54	-4.63
Aziscohos	15-03-16	21:44:58	13.46	-4.71
Aziscohos	15-03-17	9:44:58	13.34	-4.83
Aziscohos	15-03-17	21:44:58	13.37	-4.80
Aziscohos	15-03-18	9:44:58	13.38	-4.79

Aziscohos	15-03-18	21:44:58	13.41	-4.76
Aziscohos	15-03-19	9:44:58	13.43	-4.73
Aziscohos	15-03-19	21:44:58	13.45	-4.72
Aziscohos	15-03-20	9:44:58	13.45	-4.72
Aziscohos	15-03-20	21:44:58	13.36	-4.81
Aziscohos	15-03-21	9:44:58	13.28	-4.88
Aziscohos	15-03-21	21:44:58	13.16	-5.01
Aziscohos	15-03-22	9:44:58	13.21	-4.96
Aziscohos	15-03-22	21:44:58	13.18	-4.99
Aziscohos	15-03-23	9:44:58	13.19	-4.98
Aziscohos	15-03-23	21:44:58	13.24	-4.93
Aziscohos	15-03-24	9:44:58	13.24	-4.93
Aziscohos	15-03-24	21:44:58	13.22	-4.95
Aziscohos	15-03-25	9:44:58	13.21	-4.96
Aziscohos	15-03-25	21:44:58	13.07	-5.10
Aziscohos	15-03-26	9:44:58	12.99	-5.18
Aziscohos	15-03-26	21:44:58	12.92	-5.25
Aziscohos	15-03-27	9:44:58	12.90	-5.27
Aziscohos	15-03-27	21:44:58	12.90	-5.27
Aziscohos	15-03-28	9:44:58	12.91	-5.26
Aziscohos	15-03-28	21:44:58	12.93	-5.23
Aziscohos	15-03-29	9:44:58	12.98	-5.19
Aziscohos	15-03-29	21:44:58	12.91	-5.26
Aziscohos	15-03-30	9:44:58	12.79	-5.37
Aziscohos	15-03-30	21:44:58	12.75	-5.42
Aziscohos	15-03-31	9:44:58	12.77	-5.40
Aziscohos	15-03-31	21:44:58	12.79	-5.38
Aziscohos	15-04-01	9:44:58	12.83	-5.34
Aziscohos	15-04-01	21:44:58	12.85	-5.31
Aziscohos	15-04-02	9:44:58	12.85	-5.32
Aziscohos	15-04-02	21:44:58	12.72	-5.45
Aziscohos	15-04-03	9:44:58	12.68	-5.48
Aziscohos	15-04-03	21:44:58	12.68	-5.48
Aziscohos	15-04-04	9:44:58	12.60	-5.57
Aziscohos	15-04-04	21:44:58	12.73	-5.43
Aziscohos	15-04-05	9:44:58	12.75	-5.42
Aziscohos	15-04-05	21:44:58	12.81	-5.36
Aziscohos	15-04-06	9:44:58	12.87	-5.30
Aziscohos	15-04-06	21:44:58	12.83	-5.34
Aziscohos	15-04-07	9:44:58	12.84	-5.33
Aziscohos	15-04-07	21:44:58	12.87	-5.30

Aziscohos	15-04-08	9:44:58	12.91	-5.26
Aziscohos	15-04-08	21:44:58	12.88	-5.29
Aziscohos	15-04-09	9:44:58	12.88	-5.29
Aziscohos	15-04-09	21:44:58	12.84	-5.33
Aziscohos	15-04-10	9:44:58	12.72	-5.45
Aziscohos	15-04-10	21:44:58	12.62	-5.55
Aziscohos	15-04-11	9:44:58	12.66	-5.51
Aziscohos	15-04-11	21:44:58	12.78	-5.38
Aziscohos	15-04-12	9:44:58	12.85	-5.32
Aziscohos	15-04-12	21:44:58	12.90	-5.27
Aziscohos	15-04-13	9:44:58	12.94	-5.23
Aziscohos	15-04-13	21:44:58	12.89	-5.28
Aziscohos	15-04-14	9:44:58	12.97	-5.20
Aziscohos	15-04-14	21:44:58	13.09	-5.08
Aziscohos	15-04-15	9:44:58	13.21	-4.96
Aziscohos	15-04-15	21:44:58	13.39	-4.78
Aziscohos	15-04-16	9:44:58	13.52	-4.64
Aziscohos	15-04-16	21:44:58	13.54	-4.63
Aziscohos	15-04-17	9:44:58	13.56	-4.61
Aziscohos	15-04-17	21:44:58	13.67	-4.50
Aziscohos	15-04-18	9:44:58	13.84	-4.33
Aziscohos	15-04-18	21:44:58	14.00	-4.16
Aziscohos	15-04-19	9:44:58	14.20	-3.97
Aziscohos	15-04-19	21:44:58	14.31	-3.86
Aziscohos	15-04-20	9:44:58	14.39	-3.78
Aziscohos	15-04-20	21:44:58	14.42	-3.75
Aziscohos	15-04-21	9:44:58	14.39	-3.78
Aziscohos	15-04-21	21:44:58	14.56	-3.61
Aziscohos	15-04-22	9:44:58	14.68	-3.49
Aziscohos	15-04-22	21:44:58	14.73	-3.44
Aziscohos	15-04-23	9:44:58	14.84	-3.33
Aziscohos	15-04-23	21:44:58	14.98	-3.19
Aziscohos	15-04-24	9:44:58	15.09	-3.08
Aziscohos	15-04-24	21:44:58	15.18	-2.99
Aziscohos	15-04-25	9:44:58	15.22	-2.95
Aziscohos	15-04-25	21:44:58	15.28	-2.89
Aziscohos	15-04-26	9:44:58	15.30	-2.87
Aziscohos	15-04-26	21:44:58	15.33	-2.84
Aziscohos	15-04-27	9:44:58	15.37	-2.80
Aziscohos	15-04-27	21:44:58	15.44	-2.72
Aziscohos	15-04-28	9:44:58	15.54	-2.62

Aziscohos	15-04-28	21:44:58	15.56	-2.61
Aziscohos	15-04-29	9:44:58	15.65	-2.52
Aziscohos	15-04-29	21:44:58	15.76	-2.41
Aziscohos	15-04-30	9:44:58	15.86	-2.31
Aziscohos	15-04-30	21:44:58	15.98	-2.19
Aziscohos	15-05-01	9:44:58	16.07	-2.09
Aziscohos	15-05-01	21:44:58	16.14	-2.02
Aziscohos	15-05-02	9:44:58	16.23	-1.94
Aziscohos	15-05-02	21:44:58	16.31	-1.86
Aziscohos	15-05-03	9:44:58	16.42	-1.75
Aziscohos	15-05-03	21:44:58	16.52	-1.65
Aziscohos	15-05-04	9:44:58	16.62	-1.55
Aziscohos	15-05-04	21:44:58	16.67	-1.50
Aziscohos	15-05-05	9:44:58	16.83	-1.34
Aziscohos	15-05-05	21:44:58	16.92	-1.25
Aziscohos	15-05-06	9:44:58	17.02	-1.15
Aziscohos	15-05-06	21:44:58	17.07	-1.10
Aziscohos	15-05-07	9:44:58	17.15	-1.02
Aziscohos	15-05-07	21:44:58	17.19	-0.98
Aziscohos	15-05-08	9:44:58	17.26	-0.91
Aziscohos	15-05-08	21:44:58	17.33	-0.84
Aziscohos	15-05-09	9:44:58	17.36	-0.80
Aziscohos	15-05-09	21:44:58	17.38	-0.79
Aziscohos	15-05-10	9:44:58	17.39	-0.78
Aziscohos	15-05-10	21:44:58	17.43	-0.74
Aziscohos	15-05-11	9:44:58	17.49	-0.68
Aziscohos	15-05-11	21:44:58	17.53	-0.64
Aziscohos	15-05-12	9:44:58	17.48	-0.68
Aziscohos	15-05-12	21:44:58	17.53	-0.64
Aziscohos	15-05-13	9:44:58	17.68	-0.49
Aziscohos	15-05-13	21:44:58	17.80	-0.37
Aziscohos	15-05-14	9:44:58	17.90	-0.27
Aziscohos	15-05-14	21:44:58	17.90	-0.27
Aziscohos	15-05-15	9:44:58	17.92	-0.25
Aziscohos	15-05-15	21:44:58	17.90	-0.27
Aziscohos	15-05-16	9:44:58	17.91	-0.26
Aziscohos	15-05-16	21:44:58	17.90	-0.27
Aziscohos	15-05-17	9:44:58	17.92	-0.25
Aziscohos	15-05-17	21:44:58	17.93	-0.23
Aziscohos	15-05-18	9:44:58	17.94	-0.23
Aziscohos	15-05-18	21:44:58	17.89	-0.28

Aziscohos	15-05-19	9:44:58	17.85	-0.32
Aziscohos	15-05-19	21:44:58	17.80	-0.37
Aziscohos	15-05-20	9:44:58	17.82	-0.35
Aziscohos	15-05-20	21:44:58	17.86	-0.31
Aziscohos	15-05-21	9:44:58	17.88	-0.29
Aziscohos	15-05-21	21:44:58	17.86	-0.31
Aziscohos	15-05-22	9:44:58	17.84	-0.32
Aziscohos	15-05-22	21:44:58	17.92	-0.25
Aziscohos	15-05-23	9:44:58	17.98	-0.19
Aziscohos	15-05-23	21:44:58	17.95	-0.22
Aziscohos	15-05-24	9:44:58	17.93	-0.23
Aziscohos	15-05-24	21:44:58	17.93	-0.24
Aziscohos	15-05-25	9:44:58	17.94	-0.23
Aziscohos	15-05-25	21:44:58	17.92	-0.25
Aziscohos	15-05-26	9:44:58	17.90	-0.27
Aziscohos	15-05-26	21:44:58	17.90	-0.27
Aziscohos	15-05-27	9:44:58	17.90	-0.27
Aziscohos	15-05-27	21:44:58	17.89	-0.28
Aziscohos	15-05-28	9:44:58	17.90	-0.27
Aziscohos	15-05-28	21:44:58	17.97	-0.20
Aziscohos	15-05-29	9:44:58	18.04	-0.13
Aziscohos	15-05-29	21:44:58	18.00	-0.17
Aziscohos	15-05-30	9:44:58	17.98	-0.19
Aziscohos	15-05-30	21:44:58	17.94	-0.23
Aziscohos	15-05-31	9:44:58	18.04	-0.13
Aziscohos	15-05-31	21:44:58	18.09	-0.08
Aziscohos	15-06-01	9:44:58	18.12	-0.05
Aziscohos	15-06-01	21:44:58	18.15	-0.02
Aziscohos	15-06-02	9:44:58	18.15	-0.02
Aziscohos	15-06-02	21:44:58	18.16	-0.01
Aziscohos	15-06-03	9:44:58	18.22	0.05
Aziscohos	15-06-03	21:44:58	18.24	0.07
Aziscohos	15-06-04	9:44:58	18.26	0.09
Aziscohos	15-06-04	21:44:58	18.24	0.07
Aziscohos	15-06-05	9:44:58	18.21	0.04
Aziscohos	15-06-05	21:44:58	18.16	-0.01
Aziscohos	15-06-06	9:44:58	18.20	0.04
Aziscohos	15-06-06	21:44:58	18.24	0.07
Aziscohos	15-06-07	9:44:58	18.26	0.09
Aziscohos	15-06-07	21:44:58	18.21	0.04
Aziscohos	15-06-08	9:44:58	18.14	-0.02

First Connecticut	Data accessed with permission from Transcanada, contact author			
Grand Lac Saint-Francois	*see text for data source*			
Kennebago	14-08-27	21:17:58	11.23	-0.25
Kennebago	14-08-28	9:17:58	11.20	-0.28
Kennebago	14-08-28	21:17:58	11.23	-0.25
Kennebago	14-08-29	9:17:58	11.31	-0.18
Kennebago	14-08-29	21:17:58	11.30	-0.18
Kennebago	14-08-30	9:17:58	11.30	-0.18
Kennebago	14-08-30	21:17:58	11.25	-0.23
Kennebago	14-08-31	9:17:58	11.22	-0.26
Kennebago	14-08-31	21:17:58	11.21	-0.27
Kennebago	14-09-01	9:17:58	11.22	-0.26
Kennebago	14-09-01	21:17:58	11.22	-0.26
Kennebago	14-09-02	9:17:58	11.19	-0.29
Kennebago	14-09-02	21:17:58	11.14	-0.34
Kennebago	14-09-03	9:17:58	11.19	-0.29
Kennebago	14-09-03	21:17:58	11.26	-0.22
Kennebago	14-09-04	9:17:58	11.29	-0.19
Kennebago	14-09-04	21:17:58	11.27	-0.21
Kennebago	14-09-05	9:17:58	11.28	-0.20
Kennebago	14-09-05	21:17:58	11.21	-0.27
Kennebago	14-09-06	9:17:58	11.17	-0.31
Kennebago	14-09-06	21:17:58	11.19	-0.29
Kennebago	14-09-07	9:17:58	11.24	-0.24
Kennebago	14-09-07	21:17:58	11.29	-0.19
Kennebago	14-09-08	9:17:58	11.36	-0.12
Kennebago	14-09-08	21:17:58	11.36	-0.12
Kennebago	14-09-09	9:17:58	11.35	-0.13
Kennebago	14-09-09	21:17:58	11.30	-0.18
Kennebago	14-09-10	9:17:58	11.27	-0.21
Kennebago	14-09-10	21:17:58	11.22	-0.26
Kennebago	14-09-11	9:17:58	11.15	-0.33
Kennebago	14-09-11	21:17:58	11.15	-0.33
Kennebago	14-09-12	9:17:58	11.22	-0.26
Kennebago	14-09-12	21:17:58	11.25	-0.23
Kennebago	14-09-13	9:17:58	11.26	-0.22
Kennebago	14-09-13	21:17:58	11.20	-0.28
Kennebago	14-09-14	9:17:58	11.22	-0.26
Kennebago	14-09-14	21:17:58	11.22	-0.26
Kennebago	14-09-15	9:17:58	11.21	-0.27

Kennebago	14-09-15	21:17:58	11.17	-0.31
Kennebago	14-09-16	9:17:58	11.13	-0.35
Kennebago	14-09-16	21:17:58	11.11	-0.37
Kennebago	14-09-17	9:17:58	11.11	-0.37
Kennebago	14-09-17	21:17:58	11.09	-0.39
Kennebago	14-09-18	9:17:58	11.09	-0.39
Kennebago	14-09-18	21:17:58	11.13	-0.35
Kennebago	14-09-19	9:17:58	11.19	-0.29
Kennebago	14-09-19	21:17:58	11.18	-0.30
Kennebago	14-09-20	9:17:58	11.12	-0.36
Kennebago	14-09-20	21:17:58	11.06	-0.42
Kennebago	14-09-21	9:17:58	11.02	-0.46
Kennebago	14-09-21	21:17:58	10.93	-0.55
Kennebago	14-09-22	9:17:58	10.90	-0.58
Kennebago	14-09-22	21:17:58	11.01	-0.47
Kennebago	14-09-23	9:17:58	11.08	-0.40
Kennebago	14-09-23	21:17:58	11.13	-0.35
Kennebago	14-09-24	9:17:58	11.21	-0.27
Kennebago	14-09-24	21:17:58	11.18	-0.30
Kennebago	14-09-25	9:17:58	11.15	-0.33
Kennebago	14-09-25	21:17:58	11.09	-0.39
Kennebago	14-09-26	9:17:58	11.08	-0.40
Kennebago	14-09-26	21:17:58	11.04	-0.44
Kennebago	14-09-27	9:17:58	11.04	-0.44
Kennebago	14-09-27	21:17:58	11.03	-0.45
Kennebago	14-09-28	9:17:58	11.00	-0.48
Kennebago	14-09-28	21:17:58	10.95	-0.53
Kennebago	14-09-29	9:17:58	10.95	-0.53
Kennebago	14-09-29	21:17:58	10.95	-0.53
Kennebago	14-09-30	9:17:58	10.94	-0.54
Kennebago	14-09-30	21:17:58	10.94	-0.54
Kennebago	14-10-01	9:17:58	10.96	-0.52
Kennebago	14-10-01	21:17:58	10.96	-0.52
Kennebago	14-10-02	9:17:58	10.96	-0.52
Kennebago	14-10-02	21:17:58	10.94	-0.54
Kennebago	14-10-03	9:17:58	10.91	-0.57
Kennebago	14-10-03	21:17:58	10.83	-0.65
Kennebago	14-10-04	9:17:58	10.77	-0.71
Kennebago	14-10-04	21:17:58	10.69	-0.79
Kennebago	14-10-05	9:17:58	10.71	-0.77
Kennebago	14-10-05	21:17:58	10.79	-0.69

Kennebago	14-10-06	9:17:58	10.84	-0.64
Kennebago	14-10-06	21:17:58	10.85	-0.63
Kennebago	14-10-07	9:17:58	10.82	-0.66
Kennebago	14-10-07	21:17:58	10.79	-0.69
Kennebago	14-10-08	9:17:58	10.70	-0.78
Kennebago	14-10-08	21:17:58	10.73	-0.75
Kennebago	14-10-09	9:17:58	10.79	-0.69
Kennebago	14-10-09	21:17:58	10.80	-0.68
Kennebago	14-10-10	9:17:58	10.85	-0.63
Kennebago	14-10-10	21:17:58	10.86	-0.62
Kennebago	14-10-11	9:17:58	10.88	-0.60
Kennebago	14-10-11	21:17:58	10.87	-0.61
Kennebago	14-10-12	9:17:58	10.91	-0.57
Kennebago	14-10-12	21:17:58	10.93	-0.55
Kennebago	14-10-13	9:17:58	10.91	-0.57
Kennebago	14-10-13	21:17:58	10.86	-0.62
Kennebago	14-10-14	9:17:58	10.84	-0.64
Kennebago	14-10-14	21:17:58	10.78	-0.70
Kennebago	14-10-15	9:17:58	10.76	-0.72
Kennebago	14-10-15	21:17:58	10.71	-0.77
Kennebago	14-10-16	9:17:58	10.69	-0.79
Kennebago	14-10-16	21:17:58	10.64	-0.84
Kennebago	14-10-17	9:17:58	10.59	-0.89
Kennebago	14-10-17	21:17:58	10.66	-0.82
Kennebago	14-10-18	9:17:58	10.67	-0.81
Kennebago	14-10-18	21:17:58	10.70	-0.78
Kennebago	14-10-19	9:17:58	10.81	-0.67
Kennebago	14-10-19	21:17:58	10.86	-0.62
Kennebago	14-10-20	9:17:58	10.90	-0.58
Kennebago	14-10-20	21:17:58	10.90	-0.58
Kennebago	14-10-21	9:17:58	10.94	-0.54
Kennebago	14-10-21	21:17:58	10.96	-0.52
Kennebago	14-10-22	9:17:58	10.98	-0.50
Kennebago	14-10-22	21:17:58	10.94	-0.54
Kennebago	14-10-23	9:17:58	10.88	-0.60
Kennebago	14-10-23	21:17:58	10.85	-0.63
Kennebago	14-10-24	9:17:58	10.90	-0.58
Kennebago	14-10-24	21:17:58	10.98	-0.50
Kennebago	14-10-25	9:17:58	11.04	-0.44
Kennebago	14-10-25	21:17:58	11.03	-0.45
Kennebago	14-10-26	9:17:58	11.05	-0.43

Kennebago	14-10-26	21:17:58	11.15	-0.33
Kennebago	14-10-27	9:17:58	11.23	-0.25
Kennebago	14-10-27	21:17:58	11.30	-0.18
Kennebago	14-10-28	9:17:58	11.35	-0.13
Kennebago	14-10-28	21:17:58	11.32	-0.16
Kennebago	14-10-29	9:17:58	11.29	-0.19
Kennebago	14-10-29	21:17:58	11.27	-0.21
Kennebago	14-10-30	9:17:58	11.28	-0.20
Kennebago	14-10-30	21:17:58	11.30	-0.18
Kennebago	14-10-31	9:17:58	11.30	-0.18
Kennebago	14-10-31	21:17:58	11.29	-0.19
Kennebago	14-11-01	9:17:58	11.26	-0.22
Kennebago	14-11-01	21:17:58	11.24	-0.24
Kennebago	14-11-02	9:17:58	11.21	-0.27
Kennebago	14-11-02	21:17:58	11.16	-0.32
Kennebago	14-11-03	9:17:58	11.20	-0.28
Kennebago	14-11-03	21:17:58	11.25	-0.23
Kennebago	14-11-04	9:17:58	11.28	-0.20
Kennebago	14-11-04	21:17:58	11.23	-0.25
Kennebago	14-11-05	9:17:58	11.19	-0.29
Kennebago	14-11-05	21:17:58	11.21	-0.27
Kennebago	14-11-06	9:17:58	11.21	-0.27
Kennebago	14-11-06	21:17:58	11.09	-0.39
Kennebago	14-11-07	9:17:58	11.01	-0.47
Kennebago	14-11-07	21:17:58	11.03	-0.45
Kennebago	14-11-08	9:17:58	11.12	-0.36
Kennebago	14-11-08	21:17:58	11.13	-0.35
Kennebago	14-11-09	9:17:58	11.13	-0.35
Kennebago	14-11-09	21:17:58	11.18	-0.30
Kennebago	14-11-10	9:17:58	11.21	-0.27
Kennebago	14-11-10	21:17:58	11.23	-0.25
Kennebago	14-11-11	9:17:58	11.20	-0.28
Kennebago	14-11-11	21:17:58	11.18	-0.30
Kennebago	14-11-12	9:17:58	11.15	-0.33
Kennebago	14-11-12	21:17:58	11.15	-0.33
Kennebago	14-11-13	9:17:58	11.14	-0.34
Kennebago	14-11-13	21:17:58	11.10	-0.38
Kennebago	14-11-14	9:17:58	11.05	-0.43
Kennebago	14-11-14	21:17:58	11.05	-0.43
Kennebago	14-11-15	9:17:58	11.08	-0.40
Kennebago	14-11-15	21:17:58	11.08	-0.40

Kennebago	14-11-16	9:17:58	11.07	-0.41
Kennebago	14-11-16	21:17:58	10.99	-0.49
Kennebago	14-11-17	9:17:58	10.92	-0.56
Kennebago	14-11-17	21:17:58	10.75	-0.73
Kennebago	14-11-18	9:17:58	10.74	-0.74
Kennebago	14-11-18	21:17:58	10.81	-0.67
Kennebago	14-11-19	9:17:58	10.88	-0.60
Kennebago	14-11-19	21:17:58	10.92	-0.56
Kennebago	14-11-20	9:17:58	10.85	-0.63
Kennebago	14-11-20	21:17:58	10.85	-0.63
Kennebago	14-11-21	9:17:58	10.90	-0.58
Kennebago	14-11-21	21:17:58	11.00	-0.48
Kennebago	14-11-22	9:17:58	10.98	-0.50
Kennebago	14-11-22	21:17:58	10.89	-0.59
Kennebago	14-11-23	9:17:58	10.93	-0.55
Kennebago	14-11-23	21:17:58	10.97	-0.51
Kennebago	14-11-24	9:17:58	10.89	-0.59
Kennebago	14-11-24	21:17:58	10.78	-0.70
Kennebago	14-11-25	9:17:58	10.92	-0.56
Kennebago	14-11-25	21:17:58	11.02	-0.46
Kennebago	14-11-26	9:17:58	11.14	-0.34
Kennebago	14-11-26	21:17:58	11.09	-0.39
Kennebago	14-11-27	9:17:58	11.09	-0.39
Kennebago	14-11-27	21:17:58	11.15	-0.33
Kennebago	14-11-28	9:17:58	11.17	-0.32
Kennebago	14-11-28	21:17:58	11.18	-0.30
Kennebago	14-11-29	9:17:58	11.24	-0.25
Kennebago	14-11-29	21:17:58	11.23	-0.25
Kennebago	14-11-30	9:17:58	11.19	-0.29
Kennebago	14-11-30	21:17:58	11.16	-0.32
Kennebago	14-12-01	9:17:58	11.17	-0.31
Kennebago	14-12-01	21:17:58	11.29	-0.19
Kennebago	14-12-02	9:17:58	11.41	-0.07
Kennebago	14-12-02	21:17:58	11.37	-0.11
Kennebago	14-12-03	9:17:58	11.20	-0.28
Kennebago	14-12-03	21:17:58	11.10	-0.38
Kennebago	14-12-04	9:17:58	11.19	-0.29
Kennebago	14-12-04	21:17:58	11.30	-0.18
Kennebago	14-12-05	9:17:58	11.34	-0.14
Kennebago	14-12-05	21:17:58	11.29	-0.19
Kennebago	14-12-06	9:17:58	11.23	-0.25

Kennebago	14-12-06	21:17:58	11.21	-0.27
Kennebago	14-12-07	9:17:58	11.32	-0.16
Kennebago	14-12-07	21:17:58	11.38	-0.10
Kennebago	14-12-08	9:17:58	11.39	-0.09
Kennebago	14-12-08	21:17:58	11.33	-0.15
Kennebago	14-12-09	9:17:58	11.26	-0.22
Kennebago	14-12-09	21:17:58	11.11	-0.37
Kennebago	14-12-10	9:17:58	11.06	-0.42
Kennebago	14-12-10	21:17:58	10.99	-0.49
Kennebago	14-12-11	9:17:58	10.99	-0.49
Kennebago	14-12-11	21:17:58	11.01	-0.47
Kennebago	14-12-12	9:17:58	11.07	-0.41
Kennebago	14-12-12	21:17:58	11.05	-0.43
Kennebago	14-12-13	9:17:58	11.01	-0.47
Kennebago	14-12-13	21:17:58	11.01	-0.47
Kennebago	14-12-14	9:17:58	11.02	-0.46
Kennebago	14-12-14	21:17:58	11.04	-0.44
Kennebago	14-12-15	9:17:58	11.08	-0.40
Kennebago	14-12-15	21:17:58	11.10	-0.38
Kennebago	14-12-16	9:17:58	11.10	-0.38
Kennebago	14-12-16	21:17:58	11.05	-0.43
Kennebago	14-12-17	9:17:58	11.01	-0.47
Kennebago	14-12-17	21:17:58	10.97	-0.51
Kennebago	14-12-18	9:17:58	10.97	-0.51
Kennebago	14-12-18	21:17:58	11.01	-0.47
Kennebago	14-12-19	9:17:58	11.05	-0.43
Kennebago	14-12-19	21:17:58	11.12	-0.36
Kennebago	14-12-20	9:17:58	11.18	-0.30
Kennebago	14-12-20	21:17:58	11.19	-0.29
Kennebago	14-12-21	9:17:58	11.19	-0.29
Kennebago	14-12-21	21:17:58	11.20	-0.28
Kennebago	14-12-22	9:17:58	11.22	-0.26
Kennebago	14-12-22	21:17:58	11.21	-0.27
Kennebago	14-12-23	9:17:58	11.20	-0.28
Kennebago	14-12-23	21:17:58	11.15	-0.33
Kennebago	14-12-24	9:17:58	11.10	-0.38
Kennebago	14-12-24	21:17:58	10.96	-0.52
Kennebago	14-12-25	9:17:58	10.88	-0.60
Kennebago	14-12-25	21:17:58	11.06	-0.42
Kennebago	14-12-26	9:17:58	11.24	-0.24
Kennebago	14-12-26	21:17:58	11.35	-0.13

Kennebago	14-12-27	9:17:58	11.41	-0.07
Kennebago	14-12-27	21:17:58	11.39	-0.09
Kennebago	14-12-28	9:17:58	11.29	-0.19
Kennebago	14-12-28	21:17:58	11.35	-0.13
Kennebago	14-12-29	9:17:58	11.41	-0.07
Kennebago	14-12-29	21:17:58	11.46	-0.02
Kennebago	14-12-30	9:17:58	11.50	0.02
Kennebago	14-12-30	21:17:58	11.48	0.00
Kennebago	14-12-31	9:17:58	11.44	-0.04
Kennebago	14-12-31	21:17:58	11.38	-0.10
Kennebago	15-01-01	9:17:58	11.30	-0.18
Kennebago	15-01-01	21:17:58	11.26	-0.22
Kennebago	15-01-02	9:17:58	11.29	-0.19
Kennebago	15-01-02	21:17:58	11.38	-0.10
Kennebago	15-01-03	9:17:58	11.48	0.00
Kennebago	15-01-03	21:17:58	11.44	-0.04
Kennebago	15-01-04	9:17:58	11.27	-0.21
Kennebago	15-01-04	21:17:58	11.14	-0.34
Kennebago	15-01-05	9:17:58	11.19	-0.29
Kennebago	15-01-05	21:17:58	11.30	-0.18
Kennebago	15-01-06	9:17:58	11.33	-0.15
Kennebago	15-01-06	21:17:58	11.25	-0.23
Kennebago	15-01-07	9:17:58	11.18	-0.30
Kennebago	15-01-07	21:17:58	11.24	-0.24
Kennebago	15-01-08	9:17:58	11.28	-0.20
Kennebago	15-01-08	21:17:58	11.27	-0.21
Kennebago	15-01-09	9:17:58	11.17	-0.31
Kennebago	15-01-09	21:17:58	11.22	-0.26
Kennebago	15-01-10	9:17:58	11.29	-0.19
Kennebago	15-01-10	21:17:58	11.32	-0.16
Kennebago	15-01-11	9:17:58	11.39	-0.09
Kennebago	15-01-11	21:17:58	11.36	-0.12
Kennebago	15-01-12	9:17:58	11.30	-0.18
Kennebago	15-01-12	21:17:58	11.26	-0.22
Kennebago	15-01-13	9:17:58	11.39	-0.09
Kennebago	15-01-13	21:17:58	11.39	-0.09
Kennebago	15-01-14	9:17:58	11.33	-0.15
Kennebago	15-01-14	21:17:58	11.24	-0.24
Kennebago	15-01-15	9:17:58	11.19	-0.29
Kennebago	15-01-15	21:17:58	11.09	-0.39
Kennebago	15-01-16	9:17:58	11.00	-0.48

Kennebago	15-01-16	21:17:58	11.10	-0.38
Kennebago	15-01-17	9:17:58	11.20	-0.28
Kennebago	15-01-17	21:17:58	11.19	-0.29
Kennebago	15-01-18	9:17:58	11.14	-0.34
Kennebago	15-01-18	21:17:58	11.07	-0.41
Kennebago	15-01-19	9:17:58	11.02	-0.46
Kennebago	15-01-19	21:17:58	11.05	-0.43
Kennebago	15-01-20	9:17:58	11.11	-0.37
Kennebago	15-01-20	21:17:58	11.18	-0.30
Kennebago	15-01-21	9:17:58	11.29	-0.19
Kennebago	15-01-21	21:17:58	11.32	-0.16
Kennebago	15-01-22	9:17:58	11.32	-0.16
Kennebago	15-01-22	21:17:58	11.31	-0.17
Kennebago	15-01-23	9:17:58	11.29	-0.19
Kennebago	15-01-23	21:17:58	11.20	-0.28
Kennebago	15-01-24	9:17:58	11.13	-0.35
Kennebago	15-01-24	21:17:58	10.98	-0.50
Kennebago	15-01-25	9:17:58	11.05	-0.43
Kennebago	15-01-25	21:17:58	11.19	-0.29
Kennebago	15-01-26	9:17:58	11.27	-0.21
Kennebago	15-01-26	21:17:58	11.27	-0.21
Kennebago	15-01-27	9:17:58	11.17	-0.31
Kennebago	15-01-27	21:17:58	11.13	-0.35
Kennebago	15-01-28	9:17:58	11.18	-0.30
Kennebago	15-01-28	21:17:58	11.25	-0.23
Kennebago	15-01-29	9:17:58	11.29	-0.19
Kennebago	15-01-29	21:17:58	11.19	-0.29
Kennebago	15-01-30	9:17:58	11.12	-0.36
Kennebago	15-01-30	21:17:58	11.10	-0.38
Kennebago	15-01-31	9:17:58	11.11	-0.37
Kennebago	15-01-31	21:17:58	11.12	-0.36
Kennebago	15-02-01	9:17:58	11.14	-0.34
Kennebago	15-02-01	21:17:58	11.16	-0.32
Kennebago	15-02-02	9:17:58	11.10	-0.38
Kennebago	15-02-02	21:17:58	11.02	-0.46
Kennebago	15-02-03	9:17:58	11.10	-0.38
Kennebago	15-02-03	21:17:58	11.14	-0.34
Kennebago	15-02-04	9:17:58	11.15	-0.33
Kennebago	15-02-04	21:17:58	11.05	-0.43
Kennebago	15-02-05	9:17:58	11.06	-0.42
Kennebago	15-02-05	21:17:58	11.06	-0.42

Kennebago	15-02-06	9:17:58	11.05	-0.43
Kennebago	15-02-06	21:17:58	11.01	-0.47
Kennebago	15-02-07	9:17:58	11.03	-0.46
Kennebago	15-02-07	21:17:58	11.04	-0.44
Kennebago	15-02-08	9:17:58	11.06	-0.42
Kennebago	15-02-08	21:17:58	11.07	-0.41
Kennebago	15-02-09	9:17:58	11.10	-0.38
Kennebago	15-02-09	21:17:58	11.08	-0.40
Kennebago	15-02-10	9:17:58	11.05	-0.43
Kennebago	15-02-10	21:17:58	11.05	-0.43
Kennebago	15-02-11	9:17:58	11.04	-0.44
Kennebago	15-02-11	21:17:58	10.96	-0.52
Kennebago	15-02-12	9:17:58	10.88	-0.60
Kennebago	15-02-12	21:17:58	10.86	-0.62
Kennebago	15-02-13	9:17:58	10.89	-0.60
Kennebago	15-02-13	21:17:58	10.91	-0.57
Kennebago	15-02-14	9:17:58	10.87	-0.61
Kennebago	15-02-14	21:17:58	10.82	-0.66
Kennebago	15-02-15	9:17:58	10.79	-0.69
Kennebago	15-02-15	21:17:58	10.81	-0.67
Kennebago	15-02-16	9:17:58	10.81	-0.67
Kennebago	15-02-16	21:17:58	10.87	-0.61
Kennebago	15-02-17	9:17:58	10.87	-0.61
Kennebago	15-02-17	21:17:58	10.82	-0.66
Kennebago	15-02-18	9:17:58	10.83	-0.65
Kennebago	15-02-18	21:17:58	10.79	-0.69
Kennebago	15-02-19	9:17:58	10.72	-0.76
Kennebago	15-02-19	21:17:58	10.69	-0.79
Kennebago	15-02-20	9:17:58	10.74	-0.74
Kennebago	15-02-20	21:17:58	10.89	-0.59
Kennebago	15-02-21	9:17:58	10.95	-0.53
Kennebago	15-02-21	21:17:58	10.88	-0.60
Kennebago	15-02-22	9:17:58	10.87	-0.61
Kennebago	15-02-22	21:17:58	10.86	-0.62
Kennebago	15-02-23	9:17:58	10.84	-0.64
Kennebago	15-02-23	21:17:58	10.85	-0.63
Kennebago	15-02-24	9:17:58	10.84	-0.64
Kennebago	15-02-24	21:17:58	10.75	-0.73
Kennebago	15-02-25	9:17:58	10.69	-0.79
Kennebago	15-02-25	21:17:58	10.72	-0.76
Kennebago	15-02-26	9:17:58	10.77	-0.71

Kennebago	15-02-26	21:17:58	10.75	-0.73
Kennebago	15-02-27	9:17:58	10.79	-0.69
Kennebago	15-02-27	21:17:58	10.82	-0.66
Kennebago	15-02-28	9:17:58	10.89	-0.59
Kennebago	15-02-28	21:17:58	10.88	-0.60
Kennebago	15-03-01	9:17:58	10.86	-0.62
Kennebago	15-03-01	21:17:58	10.72	-0.76
Kennebago	15-03-02	9:17:58	10.61	-0.87
Kennebago	15-03-02	21:17:58	10.67	-0.81
Kennebago	15-03-03	9:17:58	10.74	-0.74
Kennebago	15-03-03	21:17:58	10.59	-0.89
Kennebago	15-03-04	9:17:58	10.51	-0.97
Kennebago	15-03-04	21:17:58	10.51	-0.97
Kennebago	15-03-05	9:17:58	10.60	-0.88
Kennebago	15-03-05	21:17:58	10.64	-0.84
Kennebago	15-03-06	9:17:58	10.68	-0.80
Kennebago	15-03-06	21:17:58	10.61	-0.87
Kennebago	15-03-07	9:17:58	10.55	-0.93
Kennebago	15-03-07	21:17:58	10.51	-0.97
Kennebago	15-03-08	9:17:58	10.50	-0.98
Kennebago	15-03-08	21:17:58	10.51	-0.97
Kennebago	15-03-09	9:17:58	10.50	-0.98
Kennebago	15-03-09	21:17:58	10.53	-0.95
Kennebago	15-03-10	9:17:58	10.57	-0.91
Kennebago	15-03-10	21:17:58	10.45	-1.03
Kennebago	15-03-11	9:17:58	10.36	-1.12
Kennebago	15-03-11	21:17:58	10.39	-1.09
Kennebago	15-03-12	9:17:58	10.49	-0.99
Kennebago	15-03-12	21:17:58	10.56	-0.92
Kennebago	15-03-13	9:17:58	10.57	-0.91
Kennebago	15-03-13	21:17:58	10.50	-0.98
Kennebago	15-03-14	9:17:58	10.44	-1.04
Kennebago	15-03-14	21:17:58	10.33	-1.15
Kennebago	15-03-15	9:17:58	10.26	-1.23
Kennebago	15-03-15	21:17:58	10.34	-1.14
Kennebago	15-03-16	9:17:58	10.33	-1.15
Kennebago	15-03-16	21:17:58	10.28	-1.20
Kennebago	15-03-17	9:17:58	10.18	-1.30
Kennebago	15-03-17	21:17:58	10.21	-1.27
Kennebago	15-03-18	9:17:58	10.23	-1.25
Kennebago	15-03-18	21:17:58	10.29	-1.19

Kennebago	15-03-19	9:17:58	10.33	-1.15
Kennebago	15-03-19	21:17:58	10.38	-1.10
Kennebago	15-03-20	9:17:58	10.39	-1.09
Kennebago	15-03-20	21:17:58	10.34	-1.14
Kennebago	15-03-21	9:17:58	10.28	-1.20
Kennebago	15-03-21	21:17:58	10.18	-1.30
Kennebago	15-03-22	9:17:58	10.21	-1.27
Kennebago	15-03-22	21:17:58	10.22	-1.26
Kennebago	15-03-23	9:17:58	10.25	-1.23
Kennebago	15-03-23	21:17:58	10.33	-1.15
Kennebago	15-03-24	9:17:58	10.35	-1.13
Kennebago	15-03-24	21:17:58	10.36	-1.12
Kennebago	15-03-25	9:17:58	10.38	-1.10
Kennebago	15-03-25	21:17:58	10.27	-1.21
Kennebago	15-03-26	9:17:58	10.20	-1.28
Kennebago	15-03-26	21:17:58	10.16	-1.32
Kennebago	15-03-27	9:17:58	10.17	-1.31
Kennebago	15-03-27	21:17:58	10.20	-1.28
Kennebago	15-03-28	9:17:58	10.22	-1.26
Kennebago	15-03-28	21:17:58	10.26	-1.22
Kennebago	15-03-29	9:17:58	10.32	-1.16
Kennebago	15-03-29	21:17:58	10.29	-1.19
Kennebago	15-03-30	9:17:58	10.20	-1.28
Kennebago	15-03-30	21:17:58	10.17	-1.31
Kennebago	15-03-31	9:17:58	10.19	-1.29
Kennebago	15-03-31	21:17:58	10.22	-1.26
Kennebago	15-04-01	9:17:58	10.27	-1.21
Kennebago	15-04-01	21:17:58	10.31	-1.17
Kennebago	15-04-02	9:17:58	10.31	-1.17
Kennebago	15-04-02	21:17:58	10.22	-1.26
Kennebago	15-04-03	9:17:58	10.19	-1.29
Kennebago	15-04-03	21:17:58	10.20	-1.28
Kennebago	15-04-04	9:17:58	10.13	-1.35
Kennebago	15-04-04	21:17:58	10.28	-1.20
Kennebago	15-04-05	9:17:58	10.31	-1.17
Kennebago	15-04-05	21:17:58	10.40	-1.08
Kennebago	15-04-06	9:17:58	10.48	-1.00
Kennebago	15-04-06	21:17:58	10.46	-1.02
Kennebago	15-04-07	9:17:58	10.48	-1.00
Kennebago	15-04-07	21:17:58	10.51	-0.97
Kennebago	15-04-08	9:17:58	10.54	-0.94

Kennebago	15-04-08	21:17:58	10.51	-0.97
Kennebago	15-04-09	9:17:58	10.51	-0.97
Kennebago	15-04-09	21:17:58	10.47	-1.01
Kennebago	15-04-10	9:17:58	10.35	-1.13
Kennebago	15-04-10	21:17:58	10.23	-1.25
Kennebago	15-04-11	9:17:58	10.25	-1.23
Kennebago	15-04-11	21:17:58	10.38	-1.10
Kennebago	15-04-12	9:17:58	10.46	-1.02
Kennebago	15-04-12	21:17:58	10.52	-0.96
Kennebago	15-04-13	9:17:58	10.56	-0.92
Kennebago	15-04-13	21:17:58	10.48	-1.00
Kennebago	15-04-14	9:17:58	10.51	-0.97
Kennebago	15-04-14	21:17:58	10.60	-0.88
Kennebago	15-04-15	9:17:58	10.72	-0.76
Kennebago	15-04-15	21:17:58	10.89	-0.59
Kennebago	15-04-16	9:17:58	10.99	-0.49
Kennebago	15-04-16	21:17:58	10.96	-0.52
Kennebago	15-04-17	9:17:58	10.92	-0.56
Kennebago	15-04-17	21:17:58	10.92	-0.56
Kennebago	15-04-18	9:17:58	11.01	-0.47
Kennebago	15-04-18	21:17:58	11.09	-0.39
Kennebago	15-04-19	9:17:58	11.19	-0.29
Kennebago	15-04-19	21:17:58	11.20	-0.28
Kennebago	15-04-20	9:17:58	11.17	-0.31
Kennebago	15-04-20	21:17:58	11.10	-0.38
Kennebago	15-04-21	9:17:58	10.98	-0.50
Kennebago	15-04-21	21:17:58	11.04	-0.44
Kennebago	15-04-22	9:17:58	11.09	-0.39
Kennebago	15-04-22	21:17:58	11.04	-0.44
Kennebago	15-04-23	9:17:58	11.03	-0.45
Kennebago	15-04-23	21:17:58	11.07	-0.41
Kennebago	15-04-24	9:17:58	11.07	-0.41
Kennebago	15-04-24	21:17:58	11.05	-0.43
Kennebago	15-04-25	9:17:58	11.00	-0.48
Kennebago	15-04-25	21:17:58	10.97	-0.51
Kennebago	15-04-26	9:17:58	10.97	-0.51
Kennebago	15-04-26	21:17:58	10.97	-0.51
Kennebago	15-04-27	9:17:58	10.97	-0.51
Kennebago	15-04-27	21:17:58	11.03	-0.46
Kennebago	15-04-28	9:17:58	11.10	-0.38
Kennebago	15-04-28	21:17:58	11.08	-0.40

Kennebago	15-04-29	9:17:58	11.14	-0.34
Kennebago	15-04-29	21:17:58	11.21	-0.27
Kennebago	15-04-30	9:17:58	11.26	-0.22
Kennebago	15-04-30	21:17:58	11.32	-0.16
Kennebago	15-05-01	9:17:58	11.35	-0.13
Kennebago	15-05-01	21:17:58	11.35	-0.13
Kennebago	15-05-02	9:17:58	11.37	-0.11
Kennebago	15-05-02	21:17:58	11.37	-0.11
Kennebago	15-05-03	9:17:58	11.41	-0.07
Kennebago	15-05-03	21:17:58	11.44	-0.04
Kennebago	15-05-04	9:17:58	11.47	-0.01
Kennebago	15-05-04	21:17:58	11.44	-0.04
Kennebago	15-05-05	9:17:58	11.53	0.05
Kennebago	15-05-05	21:17:58	11.56	0.08
Kennebago	15-05-06	9:17:58	11.60	0.12
Kennebago	15-05-06	21:17:58	11.56	0.08
Kennebago	15-05-07	9:17:58	11.55	0.07
Kennebago	15-05-07	21:17:58	11.52	0.04
Kennebago	15-05-08	9:17:58	11.54	0.06
Kennebago	15-05-08	21:17:58	11.57	0.09
Kennebago	15-05-09	9:17:58	11.57	0.09
Kennebago	15-05-09	21:17:58	11.55	0.07
Kennebago	15-05-10	9:17:58	11.52	0.04
Kennebago	15-05-10	21:17:58	11.52	0.04
Kennebago	15-05-11	9:17:58	11.55	0.07
Kennebago	15-05-11	21:17:58	11.52	0.04
Kennebago	15-05-12	9:17:58	11.42	-0.06
Kennebago	15-05-12	21:17:58	11.40	-0.08
Kennebago	15-05-13	9:17:58	11.48	0.00
Kennebago	15-05-13	21:17:58	11.54	0.06
Kennebago	15-05-14	9:17:58	11.56	0.08
Kennebago	15-05-14	21:17:58	11.55	0.07
Kennebago	15-05-15	9:17:58	11.57	0.09
Kennebago	15-05-15	21:17:58	11.54	0.06
Kennebago	15-05-16	9:17:58	11.53	0.05
Kennebago	15-05-16	21:17:58	11.52	0.04
Kennebago	15-05-17	9:17:58	11.52	0.04
Kennebago	15-05-17	21:17:58	11.52	0.04
Kennebago	15-05-18	9:17:58	11.52	0.04
Kennebago	15-05-18	21:17:58	11.47	-0.01
Kennebago	15-05-19	9:17:58	11.40	-0.08

Kennebago	15-05-19	21:17:58	11.35	-0.13
Kennebago	15-05-20	9:17:58	11.35	-0.13
Kennebago	15-05-20	21:17:58	11.38	-0.10
Kennebago	15-05-21	9:17:58	11.40	-0.08
Kennebago	15-05-21	21:17:58	11.38	-0.10
Kennebago	15-05-22	9:17:58	11.35	-0.13
Kennebago	15-05-22	21:17:58	11.40	-0.08
Kennebago	15-05-23	9:17:58	11.46	-0.02
Kennebago	15-05-23	21:17:58	11.45	-0.03
Kennebago	15-05-24	9:17:58	11.42	-0.06
Kennebago	15-05-24	21:17:58	11.42	-0.06
Kennebago	15-05-25	9:17:58	11.44	-0.04
Kennebago	15-05-25	21:17:58	11.41	-0.07
Kennebago	15-05-26	9:17:58	11.39	-0.09
Kennebago	15-05-26	21:17:58	11.40	-0.08
Kennebago	15-05-27	9:17:58	11.40	-0.08
Kennebago	15-05-27	21:17:58	11.40	-0.08
Kennebago	15-05-28	9:17:58	11.42	-0.06
Kennebago	15-05-28	21:17:58	11.49	0.01
Kennebago	15-05-29	9:17:58	11.58	0.10
Kennebago	15-05-29	21:17:58	11.53	0.05
Kennebago	15-05-30	9:17:58	11.47	-0.01
Kennebago	15-05-30	21:17:58	11.39	-0.09
Kennebago	15-05-31	9:17:58	11.45	-0.03
Kennebago	15-05-31	21:17:58	11.49	0.01
Kennebago	15-06-01	9:17:58	11.49	0.01
Kennebago	15-06-01	21:17:58	11.51	0.03
Kennebago	15-06-02	9:17:58	11.49	0.01
Kennebago	15-06-02	21:17:58	11.48	0.00
Kennebago	15-06-03	9:17:58	11.51	0.03
Kennebago	15-06-03	21:17:58	11.51	0.03
Kennebago	15-06-04	9:17:58	11.50	0.02
Kennebago	15-06-04	21:17:58	11.46	-0.02
Kennebago	15-06-05	9:17:58	11.40	-0.08
Massawippi	*see text for data source*			
Mooselookmeguntic	14-08-27	2:33:16	12.84	-0.45
Mooselookmeguntic	14-08-27	14:33:16	12.81	-0.48
Mooselookmeguntic	14-08-28	2:33:16	12.79	-0.50
Mooselookmeguntic	14-08-28	14:33:16	12.78	-0.51
Mooselookmeguntic	14-08-29	2:33:16	12.84	-0.45
Mooselookmeguntic	14-08-29	14:33:16	12.88	-0.41

Mooselookmeguntic	14-08-30	2:33:16	12.89	-0.40
Mooselookmeguntic	14-08-30	14:33:16	12.83	-0.46
Mooselookmeguntic	14-08-31	2:33:16	12.80	-0.49
Mooselookmeguntic	14-08-31	14:33:16	12.76	-0.54
Mooselookmeguntic	14-09-01	2:33:16	12.75	-0.55
Mooselookmeguntic	14-09-01	14:33:16	12.74	-0.55
Mooselookmeguntic	14-09-02	2:33:16	12.73	-0.56
Mooselookmeguntic	14-09-02	14:33:16	12.67	-0.62
Mooselookmeguntic	14-09-03	2:33:16	12.65	-0.64
Mooselookmeguntic	14-09-03	14:33:16	12.71	-0.59
Mooselookmeguntic	14-09-04	2:33:16	12.76	-0.53
Mooselookmeguntic	14-09-04	14:33:16	12.75	-0.54
Mooselookmeguntic	14-09-05	2:33:16	12.75	-0.54
Mooselookmeguntic	14-09-05	14:33:16	12.70	-0.59
Mooselookmeguntic	14-09-06	2:33:16	12.64	-0.65
Mooselookmeguntic	14-09-06	14:33:16	12.61	-0.69
Mooselookmeguntic	14-09-07	2:33:16	12.65	-0.64
Mooselookmeguntic	14-09-07	14:33:16	12.69	-0.60
Mooselookmeguntic	14-09-08	2:33:16	12.75	-0.54
Mooselookmeguntic	14-09-08	14:33:16	12.77	-0.52
Mooselookmeguntic	14-09-09	2:33:16	12.76	-0.53
Mooselookmeguntic	14-09-09	14:33:16	12.72	-0.57
Mooselookmeguntic	14-09-10	2:33:16	12.68	-0.61
Mooselookmeguntic	14-09-10	14:33:16	12.64	-0.65
Mooselookmeguntic	14-09-11	2:33:16	12.58	-0.71
Mooselookmeguntic	14-09-11	14:33:16	12.51	-0.78
Mooselookmeguntic	14-09-12	2:33:16	12.56	-0.73
Mooselookmeguntic	14-09-12	14:33:16	12.63	-0.66
Mooselookmeguntic	14-09-13	2:33:16	12.65	-0.64
Mooselookmeguntic	14-09-13	14:33:16	12.62	-0.67
Mooselookmeguntic	14-09-14	2:33:16	12.57	-0.72
Mooselookmeguntic	14-09-14	14:33:16	12.58	-0.71
Mooselookmeguntic	14-09-15	2:33:16	12.57	-0.72
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Mooselookmeguntic	14-09-16	2:33:16	12.50	-0.79
Mooselookmeguntic	14-09-16	14:33:16	12.45	-0.84
Mooselookmeguntic	14-09-17	2:33:16	12.45	-0.84
Mooselookmeguntic	14-09-17	14:33:16	12.43	-0.86
Mooselookmeguntic	14-09-18	2:33:16	12.41	-0.88
Mooselookmeguntic	14-09-18	14:33:16	12.43	-0.86
Mooselookmeguntic	14-09-19	2:33:16	12.48	-0.81

Mooselookmeguntic	14-09-19	14:33:16	12.51	-0.78
Mooselookmeguntic	14-09-20	2:33:16	12.49	-0.80
Mooselookmeguntic	14-09-20	14:33:16	12.41	-0.88
Mooselookmeguntic	14-09-21	2:33:16	12.35	-0.94
Mooselookmeguntic	14-09-21	14:33:16	12.28	-1.01
Mooselookmeguntic	14-09-22	2:33:16	12.17	-1.12
Mooselookmeguntic	14-09-22	14:33:16	12.24	-1.05
Mooselookmeguntic	14-09-23	2:33:16	12.34	-0.95
Mooselookmeguntic	14-09-23	14:33:16	12.37	-0.92
Mooselookmeguntic	14-09-24	2:33:16	12.45	-0.84
Mooselookmeguntic	14-09-24	14:33:16	12.48	-0.81
Mooselookmeguntic	14-09-25	2:33:16	12.45	-0.85
Mooselookmeguntic	14-09-25	14:33:16	12.38	-0.91
Mooselookmeguntic	14-09-26	2:33:16	12.34	-0.95
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Mooselookmeguntic	14-09-27	2:33:16	12.29	-1.00
Mooselookmeguntic	14-09-27	14:33:16	12.27	-1.02
Mooselookmeguntic	14-09-28	2:33:16	12.27	-1.03
Mooselookmeguntic	14-09-28	14:33:16	12.21	-1.09
Mooselookmeguntic	14-09-29	2:33:16	12.18	-1.11
Mooselookmeguntic	14-09-29	14:33:16	12.17	-1.12
Mooselookmeguntic	14-09-30	2:33:16	12.17	-1.12
Mooselookmeguntic	14-09-30	14:33:16	12.15	-1.15
Mooselookmeguntic	14-10-01	2:33:16	12.16	-1.13
Mooselookmeguntic	14-10-01	14:33:16	12.15	-1.14
Mooselookmeguntic	14-10-02	2:33:16	12.16	-1.13
Mooselookmeguntic	14-10-02	14:33:16	12.14	-1.15
Mooselookmeguntic	14-10-03	2:33:16	12.13	-1.16
Mooselookmeguntic	14-10-03	14:33:16	12.07	-1.22
Mooselookmeguntic	14-10-04	2:33:16	12.01	-1.28
Mooselookmeguntic	14-10-04	14:33:16	11.94	-1.36
Mooselookmeguntic	14-10-05	2:33:16	11.89	-1.40
Mooselookmeguntic	14-10-05	14:33:16	11.93	-1.36
Mooselookmeguntic	14-10-06	2:33:16	12.00	-1.29
Mooselookmeguntic	14-10-06	14:33:16	12.02	-1.27
Mooselookmeguntic	14-10-07	2:33:16	12.04	-1.25
Mooselookmeguntic	14-10-07	14:33:16	12.01	-1.28
Mooselookmeguntic	14-10-08	2:33:16	11.98	-1.32
Mooselookmeguntic	14-10-08	14:33:16	11.89	-1.40
Mooselookmeguntic	14-10-09	2:33:16	11.94	-1.35
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Mooselookmeguntic	14-10-11	2:33:16	12.04	-1.25
Mooselookmeguntic	14-10-11	14:33:16	12.02	-1.27
Mooselookmeguntic	14-10-12	2:33:16	12.04	-1.25
Mooselookmeguntic	14-10-12	14:33:16	12.06	-1.23
Mooselookmeguntic	14-10-13	2:33:16	12.08	-1.21
Mooselookmeguntic	14-10-13	14:33:16	12.06	-1.23
Mooselookmeguntic	14-10-14	2:33:16	12.05	-1.24
Mooselookmeguntic	14-10-14	14:33:16	12.02	-1.27
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Mooselookmeguntic	14-10-15	14:33:16	11.99	-1.30
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Mooselookmeguntic	14-10-17	2:33:16	11.88	-1.41
Mooselookmeguntic	14-10-17	14:33:16	11.86	-1.43
Mooselookmeguntic	14-10-18	2:33:16	11.88	-1.41
Mooselookmeguntic	14-10-18	14:33:16	11.86	-1.44
Mooselookmeguntic	14-10-19	2:33:16	11.90	-1.39
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Mooselookmeguntic	14-10-20	2:33:16	11.98	-1.31
Mooselookmeguntic	14-10-20	14:33:16	11.98	-1.31
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Mooselookmeguntic	14-10-21	14:33:16	12.03	-1.26
Mooselookmeguntic	14-10-22	2:33:16	12.07	-1.22
Mooselookmeguntic	14-10-22	14:33:16	12.08	-1.21
Mooselookmeguntic	14-10-23	2:33:16	12.05	-1.24
Mooselookmeguntic	14-10-23	14:33:16	12.01	-1.29
Mooselookmeguntic	14-10-24	2:33:16	12.00	-1.29
Mooselookmeguntic	14-10-24	14:33:16	12.00	-1.29
Mooselookmeguntic	14-10-25	2:33:16	12.02	-1.27
Mooselookmeguntic	14-10-25	14:33:16	11.98	-1.31
Mooselookmeguntic	14-10-26	2:33:16	11.93	-1.36
Mooselookmeguntic	14-10-26	14:33:16	11.94	-1.35
Mooselookmeguntic	14-10-27	2:33:16	12.01	-1.28
Mooselookmeguntic	14-10-27	14:33:16	12.08	-1.21
Mooselookmeguntic	14-10-28	2:33:16	12.15	-1.14
Mooselookmeguntic	14-10-28	14:33:16	12.15	-1.14
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Mooselookmeguntic	14-10-30	2:33:16	12.10	-1.19

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Mooselookmeguntic	14-10-31	2:33:16	12.17	-1.12
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Mooselookmeguntic	14-11-01	14:33:16	12.18	-1.11
Mooselookmeguntic	14-11-02	2:33:16	12.17	-1.12
Mooselookmeguntic	14-11-02	14:33:16	12.08	-1.21
Mooselookmeguntic	14-11-03	2:33:16	12.08	-1.21
Mooselookmeguntic	14-11-03	14:33:16	12.12	-1.18
Mooselookmeguntic	14-11-04	2:33:16	12.18	-1.11
Mooselookmeguntic	14-11-04	14:33:16	12.19	-1.10
Mooselookmeguntic	14-11-05	2:33:16	12.15	-1.14
Mooselookmeguntic	14-11-05	14:33:16	12.16	-1.14
Mooselookmeguntic	14-11-06	2:33:16	12.20	-1.09
Mooselookmeguntic	14-11-06	14:33:16	12.14	-1.15
Mooselookmeguntic	14-11-07	2:33:16	12.04	-1.25
Mooselookmeguntic	14-11-07	14:33:16	12.01	-1.29
Mooselookmeguntic	14-11-08	2:33:16	12.08	-1.21
Mooselookmeguntic	14-11-08	14:33:16	12.13	-1.16
Mooselookmeguntic	14-11-09	2:33:16	12.12	-1.17
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Mooselookmeguntic	14-11-10	2:33:16	12.17	-1.12
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Mooselookmeguntic	14-11-12	2:33:16	12.17	-1.13
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Mooselookmeguntic	14-11-13	2:33:16	12.17	-1.12
Mooselookmeguntic	14-11-13	14:33:16	12.17	-1.13
Mooselookmeguntic	14-11-14	2:33:16	12.15	-1.14
Mooselookmeguntic	14-11-14	14:33:16	12.14	-1.16
Mooselookmeguntic	14-11-15	2:33:16	12.19	-1.10
Mooselookmeguntic	14-11-15	14:33:16	12.23	-1.06
Mooselookmeguntic	14-11-16	2:33:16	12.26	-1.03
Mooselookmeguntic	14-11-16	14:33:16	12.24	-1.06
Mooselookmeguntic	14-11-17	2:33:16	12.20	-1.09
Mooselookmeguntic	14-11-17	14:33:16	12.11	-1.18
Mooselookmeguntic	14-11-18	2:33:16	12.01	-1.29
Mooselookmeguntic	14-11-18	14:33:16	12.02	-1.27
Mooselookmeguntic	14-11-19	2:33:16	12.08	-1.21
Mooselookmeguntic	14-11-19	14:33:16	12.17	-1.12

Mooselookmeguntic	14-11-20	2:33:16	12.15	-1.14
Mooselookmeguntic	14-11-20	14:33:16	12.08	-1.21
Mooselookmeguntic	14-11-21	2:33:16	12.11	-1.18
Mooselookmeguntic	14-11-21	14:33:16	12.19	-1.10
Mooselookmeguntic	14-11-22	2:33:16	12.25	-1.04
Mooselookmeguntic	14-11-22	14:33:16	12.17	-1.12
Mooselookmeguntic	14-11-23	2:33:16	12.14	-1.15
Mooselookmeguntic	14-11-23	14:33:16	12.19	-1.10
Mooselookmeguntic	14-11-24	2:33:16	12.18	-1.11
Mooselookmeguntic	14-11-24	14:33:16	12.02	-1.27
Mooselookmeguntic	14-11-25	2:33:16	12.06	-1.23
Mooselookmeguntic	14-11-25	14:33:16	12.13	-1.16
Mooselookmeguntic	14-11-26	2:33:16	12.22	-1.07
Mooselookmeguntic	14-11-26	14:33:16	12.26	-1.04
Mooselookmeguntic	14-11-27	2:33:16	12.16	-1.13
Mooselookmeguntic	14-11-27	14:33:16	12.20	-1.09
Mooselookmeguntic	14-11-28	2:33:16	12.22	-1.08
Mooselookmeguntic	14-11-28	14:33:16	12.22	-1.08
Mooselookmeguntic	14-11-29	2:33:16	12.27	-1.03
Mooselookmeguntic	14-11-29	14:33:16	12.29	-1.00
Mooselookmeguntic	14-11-30	2:33:16	12.26	-1.03
Mooselookmeguntic	14-11-30	14:33:16	12.21	-1.08
Mooselookmeguntic	14-12-01	2:33:16	12.19	-1.10
Mooselookmeguntic	14-12-01	14:33:16	12.25	-1.04
Mooselookmeguntic	14-12-02	2:33:16	12.38	-0.91
Mooselookmeguntic	14-12-02	14:33:16	12.43	-0.86
Mooselookmeguntic	14-12-03	2:33:16	12.36	-0.93
Mooselookmeguntic	14-12-03	14:33:16	12.19	-1.10
Mooselookmeguntic	14-12-04	2:33:16	12.23	-1.07
Mooselookmeguntic	14-12-04	14:33:16	12.34	-0.95
Mooselookmeguntic	14-12-05	2:33:16	12.43	-0.86
Mooselookmeguntic	14-12-05	14:33:16	12.44	-0.85
Mooselookmeguntic	14-12-06	2:33:16	12.39	-0.90
Mooselookmeguntic	14-12-06	14:33:16	12.31	-0.98
Mooselookmeguntic	14-12-07	2:33:16	12.37	-0.92
Mooselookmeguntic	14-12-07	14:33:16	12.44	-0.85
Mooselookmeguntic	14-12-08	2:33:16	12.49	-0.80
Mooselookmeguntic	14-12-08	14:33:16	12.47	-0.82
Mooselookmeguntic	14-12-09	2:33:16	12.42	-0.87
Mooselookmeguntic	14-12-09	14:33:16	12.33	-0.96
Mooselookmeguntic	14-12-10	2:33:16	12.22	-1.07

Mooselookmeguntic	14-12-10	14:33:16	12.17	-1.12
Mooselookmeguntic	14-12-11	2:33:16	12.12	-1.18
Mooselookmeguntic	14-12-11	14:33:16	12.15	-1.14
Mooselookmeguntic	14-12-12	2:33:16	12.21	-1.08
Mooselookmeguntic	14-12-12	14:33:16	12.24	-1.05
Mooselookmeguntic	14-12-13	2:33:16	12.25	-1.04
Mooselookmeguntic	14-12-13	14:33:16	12.23	-1.06
Mooselookmeguntic	14-12-14	2:33:16	12.25	-1.04
Mooselookmeguntic	14-12-14	14:33:16	12.26	-1.03
Mooselookmeguntic	14-12-15	2:33:16	12.30	-0.99
Mooselookmeguntic	14-12-15	14:33:16	12.33	-0.96
Mooselookmeguntic	14-12-16	2:33:16	12.36	-0.94
Mooselookmeguntic	14-12-16	14:33:16	12.33	-0.96
Mooselookmeguntic	14-12-17	2:33:16	12.29	-1.00
Mooselookmeguntic	14-12-17	14:33:16	12.24	-1.05
Mooselookmeguntic	14-12-18	2:33:16	12.21	-1.08
Mooselookmeguntic	14-12-18	14:33:16	12.23	-1.06
Mooselookmeguntic	14-12-19	2:33:16	12.26	-1.03
Mooselookmeguntic	14-12-19	14:33:16	12.31	-0.98
Mooselookmeguntic	14-12-20	2:33:16	12.37	-0.92
Mooselookmeguntic	14-12-20	14:33:16	12.39	-0.90
Mooselookmeguntic	14-12-21	2:33:16	12.41	-0.88
Mooselookmeguntic	14-12-21	14:33:16	12.40	-0.89
Mooselookmeguntic	14-12-22	2:33:16	12.42	-0.87
Mooselookmeguntic	14-12-22	14:33:16	12.41	-0.88
Mooselookmeguntic	14-12-23	2:33:16	12.40	-0.89
Mooselookmeguntic	14-12-23	14:33:16	12.38	-0.91
Mooselookmeguntic	14-12-24	2:33:16	12.36	-0.93
Mooselookmeguntic	14-12-24	14:33:16	12.27	-1.02
Mooselookmeguntic	14-12-25	2:33:16	12.14	-1.15
Mooselookmeguntic	14-12-25	14:33:16	12.15	-1.14
Mooselookmeguntic	14-12-26	2:33:16	12.30	-0.99
Mooselookmeguntic	14-12-26	14:33:16	12.37	-0.92
Mooselookmeguntic	14-12-27	2:33:16	12.40	-0.90
Mooselookmeguntic	14-12-27	14:33:16	12.42	-0.87
Mooselookmeguntic	14-12-28	2:33:16	12.35	-0.94
Mooselookmeguntic	14-12-28	14:33:16	12.33	-0.96
Mooselookmeguntic	14-12-29	2:33:16	12.41	-0.88
Mooselookmeguntic	14-12-29	14:33:16	12.45	-0.84
Mooselookmeguntic	14-12-30	2:33:16	12.50	-0.79
Mooselookmeguntic	14-12-30	14:33:16	12.52	-0.78

Mooselookmeguntic	14-12-31	2:33:16	12.50	-0.79
Mooselookmeguntic	14-12-31	14:33:16	12.49	-0.81
Mooselookmeguntic	15-01-01	2:33:16	12.42	-0.87
Mooselookmeguntic	15-01-01	14:33:16	12.39	-0.90
Mooselookmeguntic	15-01-02	2:33:16	12.39	-0.90
Mooselookmeguntic	15-01-02	14:33:16	12.47	-0.82
Mooselookmeguntic	15-01-03	2:33:16	12.60	-0.69
Mooselookmeguntic	15-01-03	14:33:16	12.64	-0.65
Mooselookmeguntic	15-01-04	2:33:16	12.54	-0.75
Mooselookmeguntic	15-01-04	14:33:16	12.34	-0.95
Mooselookmeguntic	15-01-05	2:33:16	12.28	-1.01
Mooselookmeguntic	15-01-05	14:33:16	12.40	-0.89
Mooselookmeguntic	15-01-06	2:33:16	12.49	-0.80
Mooselookmeguntic	15-01-06	14:33:16	12.45	-0.84
Mooselookmeguntic	15-01-07	2:33:16	12.36	-0.93
Mooselookmeguntic	15-01-07	14:33:16	12.30	-0.99
Mooselookmeguntic	15-01-08	2:33:16	12.43	-0.87
Mooselookmeguntic	15-01-08	14:33:16	12.42	-0.87
Mooselookmeguntic	15-01-09	2:33:16	12.37	-0.92
Mooselookmeguntic	15-01-09	14:33:16	12.29	-1.00
Mooselookmeguntic	15-01-10	2:33:16	12.38	-0.91
Mooselookmeguntic	15-01-10	14:33:16	12.43	-0.86
Mooselookmeguntic	15-01-11	2:33:16	12.47	-0.82
Mooselookmeguntic	15-01-11	14:33:16	12.49	-0.80
Mooselookmeguntic	15-01-12	2:33:16	12.46	-0.83
Mooselookmeguntic	15-01-12	14:33:16	12.37	-0.92
Mooselookmeguntic	15-01-13	2:33:16	12.43	-0.87
Mooselookmeguntic	15-01-13	14:33:16	12.51	-0.78
Mooselookmeguntic	15-01-14	2:33:16	12.50	-0.79
Mooselookmeguntic	15-01-14	14:33:16	12.40	-0.89
Mooselookmeguntic	15-01-15	2:33:16	12.34	-0.95
Mooselookmeguntic	15-01-15	14:33:16	12.25	-1.04
Mooselookmeguntic	15-01-16	2:33:16	12.13	-1.16
Mooselookmeguntic	15-01-16	14:33:16	12.10	-1.19
Mooselookmeguntic	15-01-17	2:33:16	12.23	-1.06
Mooselookmeguntic	15-01-17	14:33:16	12.28	-1.02
Mooselookmeguntic	15-01-18	2:33:16	12.21	-1.08
Mooselookmeguntic	15-01-18	14:33:16	12.15	-1.15
Mooselookmeguntic	15-01-19	2:33:16	12.00	-1.30
Mooselookmeguntic	15-01-19	14:33:16	12.02	-1.27
Mooselookmeguntic	15-01-20	2:33:16	12.05	-1.24

Mooselookmeguntic	15-01-20	14:33:16	12.05	-1.24
Mooselookmeguntic	15-01-21	2:33:16	12.14	-1.15
Mooselookmeguntic	15-01-21	14:33:16	12.18	-1.11
Mooselookmeguntic	15-01-22	2:33:16	12.19	-1.10
Mooselookmeguntic	15-01-22	14:33:16	12.15	-1.14
Mooselookmeguntic	15-01-23	2:33:16	12.15	-1.14
Mooselookmeguntic	15-01-23	14:33:16	12.09	-1.20
Mooselookmeguntic	15-01-24	2:33:16	12.01	-1.28
Mooselookmeguntic	15-01-24	14:33:16	11.88	-1.41
Mooselookmeguntic	15-01-25	2:33:16	11.79	-1.50
Mooselookmeguntic	15-01-25	14:33:16	11.91	-1.38
Mooselookmeguntic	15-01-26	2:33:16	12.03	-1.27
Mooselookmeguntic	15-01-26	14:33:16	12.04	-1.26
Mooselookmeguntic	15-01-27	2:33:16	12.00	-1.29
Mooselookmeguntic	15-01-27	14:33:16	11.88	-1.41
Mooselookmeguntic	15-01-28	2:33:16	11.90	-1.39
Mooselookmeguntic	15-01-28	14:33:16	11.95	-1.34
Mooselookmeguntic	15-01-29	2:33:16	12.04	-1.26
Mooselookmeguntic	15-01-29	14:33:16	11.98	-1.31
Mooselookmeguntic	15-01-30	2:33:16	11.90	-1.39
Mooselookmeguntic	15-01-30	14:33:16	11.83	-1.46
Mooselookmeguntic	15-01-31	2:33:16	11.87	-1.42
Mooselookmeguntic	15-01-31	14:33:16	11.85	-1.44
Mooselookmeguntic	15-02-01	2:33:16	11.87	-1.43
Mooselookmeguntic	15-02-01	14:33:16	11.88	-1.41
Mooselookmeguntic	15-02-02	2:33:16	11.88	-1.41
Mooselookmeguntic	15-02-02	14:33:16	11.75	-1.54
Mooselookmeguntic	15-02-03	2:33:16	11.77	-1.53
Mooselookmeguntic	15-02-03	14:33:16	11.82	-1.47
Mooselookmeguntic	15-02-04	2:33:16	11.86	-1.43
Mooselookmeguntic	15-02-04	14:33:16	11.79	-1.50
Mooselookmeguntic	15-02-05	2:33:16	11.72	-1.57
Mooselookmeguntic	15-02-05	14:33:16	11.75	-1.54
Mooselookmeguntic	15-02-06	2:33:16	11.76	-1.53
Mooselookmeguntic	15-02-06	14:33:16	11.71	-1.59
Mooselookmeguntic	15-02-07	2:33:16	11.68	-1.61
Mooselookmeguntic	15-02-07	14:33:16	11.68	-1.61
Mooselookmeguntic	15-02-08	2:33:16	11.72	-1.57
Mooselookmeguntic	15-02-08	14:33:16	11.72	-1.57
Mooselookmeguntic	15-02-09	2:33:16	11.74	-1.55
Mooselookmeguntic	15-02-09	14:33:16	11.74	-1.55

Mooselookmeguntic	15-02-10	2:33:16	11.71	-1.58
Mooselookmeguntic	15-02-10	14:33:16	11.67	-1.62
Mooselookmeguntic	15-02-11	2:33:16	11.68	-1.61
Mooselookmeguntic	15-02-11	14:33:16	11.60	-1.69
Mooselookmeguntic	15-02-12	2:33:16	11.54	-1.76
Mooselookmeguntic	15-02-12	14:33:16	11.45	-1.84
Mooselookmeguntic	15-02-13	2:33:16	11.46	-1.83
Mooselookmeguntic	15-02-13	14:33:16	11.50	-1.80
Mooselookmeguntic	15-02-14	2:33:16	11.51	-1.78
Mooselookmeguntic	15-02-14	14:33:16	11.43	-1.86
Mooselookmeguntic	15-02-15	2:33:16	11.38	-1.91
Mooselookmeguntic	15-02-15	14:33:16	11.35	-1.94
Mooselookmeguntic	15-02-16	2:33:16	11.37	-1.92
Mooselookmeguntic	15-02-16	14:33:16	11.39	-1.91
Mooselookmeguntic	15-02-17	2:33:16	11.43	-1.86
Mooselookmeguntic	15-02-17	14:33:16	11.37	-1.92
Mooselookmeguntic	15-02-18	2:33:16	11.36	-1.94
Mooselookmeguntic	15-02-18	14:33:16	11.31	-1.98
Mooselookmeguntic	15-02-19	2:33:16	11.25	-2.04
Mooselookmeguntic	15-02-19	14:33:16	11.17	-2.12
Mooselookmeguntic	15-02-20	2:33:16	11.18	-2.11
Mooselookmeguntic	15-02-20	14:33:16	11.26	-2.03
Mooselookmeguntic	15-02-21	2:33:16	11.39	-1.90
Mooselookmeguntic	15-02-21	14:33:16	11.34	-1.96
Mooselookmeguntic	15-02-22	2:33:16	11.29	-2.00
Mooselookmeguntic	15-02-22	14:33:16	11.27	-2.02
Mooselookmeguntic	15-02-23	2:33:16	11.23	-2.06
Mooselookmeguntic	15-02-23	14:33:16	11.23	-2.06
Mooselookmeguntic	15-02-24	2:33:16	11.23	-2.06
Mooselookmeguntic	15-02-24	14:33:16	11.17	-2.12
Mooselookmeguntic	15-02-25	2:33:16	11.07	-2.22
Mooselookmeguntic	15-02-25	14:33:16	11.00	-2.29
Mooselookmeguntic	15-02-26	2:33:16	11.11	-2.18
Mooselookmeguntic	15-02-26	14:33:16	11.10	-2.19
Mooselookmeguntic	15-02-27	2:33:16	11.12	-2.17
Mooselookmeguntic	15-02-27	14:33:16	11.16	-2.13
Mooselookmeguntic	15-02-28	2:33:16	11.22	-2.07
Mooselookmeguntic	15-02-28	14:33:16	11.23	-2.06
Mooselookmeguntic	15-03-01	2:33:16	11.23	-2.06
Mooselookmeguntic	15-03-01	14:33:16	11.12	-2.17
Mooselookmeguntic	15-03-02	2:33:16	10.98	-2.31

Mooselookmeguntic	15-03-02	14:33:16	10.92	-2.37
Mooselookmeguntic	15-03-03	2:33:16	11.02	-2.27
Mooselookmeguntic	15-03-03	14:33:16	11.01	-2.28
Mooselookmeguntic	15-03-04	2:33:16	10.80	-2.49
Mooselookmeguntic	15-03-04	14:33:16	10.81	-2.48
Mooselookmeguntic	15-03-05	2:33:16	10.84	-2.46
Mooselookmeguntic	15-03-05	14:33:16	10.91	-2.38
Mooselookmeguntic	15-03-06	2:33:16	10.97	-2.32
Mooselookmeguntic	15-03-06	14:33:16	10.95	-2.34
Mooselookmeguntic	15-03-07	2:33:16	10.88	-2.41
Mooselookmeguntic	15-03-07	14:33:16	10.80	-2.49
Mooselookmeguntic	15-03-08	2:33:16	10.79	-2.50
Mooselookmeguntic	15-03-08	14:33:16	10.75	-2.54
Mooselookmeguntic	15-03-09	2:33:16	10.78	-2.52
Mooselookmeguntic	15-03-09	14:33:16	10.76	-2.53
Mooselookmeguntic	15-03-10	2:33:16	10.81	-2.48
Mooselookmeguntic	15-03-10	14:33:16	10.79	-2.50
Mooselookmeguntic	15-03-11	2:33:16	10.68	-2.61
Mooselookmeguntic	15-03-11	14:33:16	10.67	-2.62
Mooselookmeguntic	15-03-12	2:33:16	10.69	-2.61
Mooselookmeguntic	15-03-12	14:33:16	10.81	-2.48
Mooselookmeguntic	15-03-13	2:33:16	10.86	-2.43
Mooselookmeguntic	15-03-13	14:33:16	10.83	-2.46
Mooselookmeguntic	15-03-14	2:33:16	10.78	-2.52
Mooselookmeguntic	15-03-14	14:33:16	10.69	-2.60
Mooselookmeguntic	15-03-15	2:33:16	10.55	-2.74
Mooselookmeguntic	15-03-15	14:33:16	10.56	-2.73
Mooselookmeguntic	15-03-16	2:33:16	10.62	-2.67
Mooselookmeguntic	15-03-16	14:33:16	10.60	-2.69
Mooselookmeguntic	15-03-17	2:33:16	10.54	-2.75
Mooselookmeguntic	15-03-17	14:33:16	10.43	-2.86
Mooselookmeguntic	15-03-18	2:33:16	10.51	-2.79
Mooselookmeguntic	15-03-18	14:33:16	10.55	-2.74
Mooselookmeguntic	15-03-19	2:33:16	10.60	-2.69
Mooselookmeguntic	15-03-19	14:33:16	10.64	-2.65
Mooselookmeguntic	15-03-20	2:33:16	10.69	-2.60
Mooselookmeguntic	15-03-20	14:33:16	10.64	-2.65
Mooselookmeguntic	15-03-21	2:33:16	10.59	-2.70
Mooselookmeguntic	15-03-21	14:33:16	10.50	-2.80
Mooselookmeguntic	15-03-22	2:33:16	10.48	-2.82
Mooselookmeguntic	15-03-22	14:33:16	10.48	-2.81

Mooselookmeguntic	15-03-23	2:33:16	10.50	-2.80
Mooselookmeguntic	15-03-23	14:33:16	10.53	-2.76
Mooselookmeguntic	15-03-24	2:33:16	10.59	-2.70
Mooselookmeguntic	15-03-24	14:33:16	10.58	-2.71
Mooselookmeguntic	15-03-25	2:33:16	10.61	-2.68
Mooselookmeguntic	15-03-25	14:33:16	10.57	-2.72
Mooselookmeguntic	15-03-26	2:33:16	10.46	-2.83
Mooselookmeguntic	15-03-26	14:33:16	10.40	-2.89
Mooselookmeguntic	15-03-27	2:33:16	10.39	-2.90
Mooselookmeguntic	15-03-27	14:33:16	10.39	-2.90
Mooselookmeguntic	15-03-28	2:33:16	10.42	-2.87
Mooselookmeguntic	15-03-28	14:33:16	10.41	-2.88
Mooselookmeguntic	15-03-29	2:33:16	10.48	-2.81
Mooselookmeguntic	15-03-29	14:33:16	10.49	-2.80
Mooselookmeguntic	15-03-30	2:33:16	10.43	-2.86
Mooselookmeguntic	15-03-30	14:33:16	10.33	-2.96
Mooselookmeguntic	15-03-31	2:33:16	10.32	-2.97
Mooselookmeguntic	15-03-31	14:33:16	10.34	-2.95
Mooselookmeguntic	15-04-01	2:33:16	10.39	-2.90
Mooselookmeguntic	15-04-01	14:33:16	10.43	-2.86
Mooselookmeguntic	15-04-02	2:33:16	10.47	-2.82
Mooselookmeguntic	15-04-02	14:33:16	10.43	-2.87
Mooselookmeguntic	15-04-03	2:33:16	10.33	-2.96
Mooselookmeguntic	15-04-03	14:33:16	10.35	-2.94
Mooselookmeguntic	15-04-04	2:33:16	10.31	-2.98
Mooselookmeguntic	15-04-04	14:33:16	10.33	-2.96
Mooselookmeguntic	15-04-05	2:33:16	10.42	-2.87
Mooselookmeguntic	15-04-05	14:33:16	10.45	-2.84
Mooselookmeguntic	15-04-06	2:33:16	10.52	-2.77
Mooselookmeguntic	15-04-06	14:33:16	10.53	-2.76
Mooselookmeguntic	15-04-07	2:33:16	10.52	-2.77
Mooselookmeguntic	15-04-07	14:33:16	10.55	-2.74
Mooselookmeguntic	15-04-08	2:33:16	10.60	-2.69
Mooselookmeguntic	15-04-08	14:33:16	10.59	-2.70
Mooselookmeguntic	15-04-09	2:33:16	10.60	-2.69
Mooselookmeguntic	15-04-09	14:33:16	10.59	-2.70
Mooselookmeguntic	15-04-10	2:33:16	10.51	-2.78
Mooselookmeguntic	15-04-10	14:33:16	10.39	-2.90
Mooselookmeguntic	15-04-11	2:33:16	10.34	-2.95
Mooselookmeguntic	15-04-11	14:33:16	10.43	-2.86
Mooselookmeguntic	15-04-12	2:33:16	10.52	-2.77

Mooselookmeguntic	15-04-12	14:33:16	10.56	-2.73
Mooselookmeguntic	15-04-13	2:33:16	10.61	-2.68
Mooselookmeguntic	15-04-13	14:33:16	10.59	-2.70
Mooselookmeguntic	15-04-14	2:33:16	10.51	-2.78
Mooselookmeguntic	15-04-14	14:33:16	10.59	-2.70
Mooselookmeguntic	15-04-15	2:33:16	10.64	-2.65
Mooselookmeguntic	15-04-15	14:33:16	10.71	-2.58
Mooselookmeguntic	15-04-16	2:33:16	10.82	-2.47
Mooselookmeguntic	15-04-16	14:33:16	10.83	-2.47
Mooselookmeguntic	15-04-17	2:33:16	10.78	-2.51
Mooselookmeguntic	15-04-17	14:33:16	10.75	-2.54
Mooselookmeguntic	15-04-18	2:33:16	10.83	-2.46
Mooselookmeguntic	15-04-18	14:33:16	10.86	-2.43
Mooselookmeguntic	15-04-19	2:33:16	11.01	-2.28
Mooselookmeguntic	15-04-19	14:33:16	11.10	-2.19
Mooselookmeguntic	15-04-20	2:33:16	11.15	-2.14
Mooselookmeguntic	15-04-20	14:33:16	11.16	-2.13
Mooselookmeguntic	15-04-21	2:33:16	11.13	-2.16
Mooselookmeguntic	15-04-21	14:33:16	11.12	-2.18
Mooselookmeguntic	15-04-22	2:33:16	11.24	-2.05
Mooselookmeguntic	15-04-22	14:33:16	11.27	-2.02
Mooselookmeguntic	15-04-23	2:33:16	11.27	-2.02
Mooselookmeguntic	15-04-23	14:33:16	11.38	-1.91
Mooselookmeguntic	15-04-24	2:33:16	11.45	-1.84
Mooselookmeguntic	15-04-24	14:33:16	11.53	-1.76
Mooselookmeguntic	15-04-25	2:33:16	11.58	-1.71
Mooselookmeguntic	15-04-25	14:33:16	11.63	-1.66
Mooselookmeguntic	15-04-26	2:33:16	11.66	-1.63
Mooselookmeguntic	15-04-26	14:33:16	11.68	-1.61
Mooselookmeguntic	15-04-27	2:33:16	11.70	-1.59
Mooselookmeguntic	15-04-27	14:33:16	11.74	-1.55
Mooselookmeguntic	15-04-28	2:33:16	11.82	-1.47
Mooselookmeguntic	15-04-28	14:33:16	11.85	-1.44
Mooselookmeguntic	15-04-29	2:33:16	11.85	-1.45
Mooselookmeguntic	15-04-29	14:33:16	11.92	-1.37
Mooselookmeguntic	15-04-30	2:33:16	12.00	-1.29
Mooselookmeguntic	15-04-30	14:33:16	12.05	-1.24
Mooselookmeguntic	15-05-01	2:33:16	12.13	-1.16
Mooselookmeguntic	15-05-01	14:33:16	12.17	-1.12
Mooselookmeguntic	15-05-02	2:33:16	12.21	-1.08
Mooselookmeguntic	15-05-02	14:33:16	12.24	-1.05

Mooselookmeguntic	15-05-03	2:33:16	12.31	-0.98
Mooselookmeguntic	15-05-03	14:33:16	12.36	-0.94
Mooselookmeguntic	15-05-04	2:33:16	12.41	-0.88
Mooselookmeguntic	15-05-04	14:33:16	12.41	-0.88
Mooselookmeguntic	15-05-05	2:33:16	12.44	-0.86
Mooselookmeguntic	15-05-05	14:33:16	12.52	-0.77
Mooselookmeguntic	15-05-06	2:33:16	12.56	-0.73
Mooselookmeguntic	15-05-06	14:33:16	12.57	-0.73
Mooselookmeguntic	15-05-07	2:33:16	12.58	-0.71
Mooselookmeguntic	15-05-07	14:33:16	12.58	-0.71
Mooselookmeguntic	15-05-08	2:33:16	12.60	-0.69
Mooselookmeguntic	15-05-08	14:33:16	12.65	-0.64
Mooselookmeguntic	15-05-09	2:33:16	12.71	-0.59
Mooselookmeguntic	15-05-09	14:33:16	12.69	-0.60
Mooselookmeguntic	15-05-10	2:33:16	12.70	-0.60
Mooselookmeguntic	15-05-10	14:33:16	12.70	-0.59
Mooselookmeguntic	15-05-11	2:33:16	12.74	-0.55
Mooselookmeguntic	15-05-11	14:33:16	12.80	-0.49
Mooselookmeguntic	15-05-12	2:33:16	12.75	-0.54
Mooselookmeguntic	15-05-12	14:33:16	12.68	-0.61
Mooselookmeguntic	15-05-13	2:33:16	12.71	-0.58
Mooselookmeguntic	15-05-13	14:33:16	12.85	-0.44
Mooselookmeguntic	15-05-14	2:33:16	12.94	-0.35
Mooselookmeguntic	15-05-14	14:33:16	12.98	-0.31
Mooselookmeguntic	15-05-15	2:33:16	13.00	-0.30
Mooselookmeguntic	15-05-15	14:33:16	12.99	-0.30
Mooselookmeguntic	15-05-16	2:33:16	13.00	-0.29
Mooselookmeguntic	15-05-16	14:33:16	13.00	-0.29
Mooselookmeguntic	15-05-17	2:33:16	13.01	-0.28
Mooselookmeguntic	15-05-17	14:33:16	13.04	-0.25
Mooselookmeguntic	15-05-18	2:33:16	13.09	-0.21
Mooselookmeguntic	15-05-18	14:33:16	13.08	-0.21
Mooselookmeguntic	15-05-19	2:33:16	13.03	-0.26
Mooselookmeguntic	15-05-19	14:33:16	12.99	-0.30
Mooselookmeguntic	15-05-20	2:33:16	12.99	-0.30
Mooselookmeguntic	15-05-20	14:33:16	13.01	-0.28
Mooselookmeguntic	15-05-21	2:33:16	13.06	-0.23
Mooselookmeguntic	15-05-21	14:33:16	13.05	-0.24
Mooselookmeguntic	15-05-22	2:33:16	13.05	-0.24
Mooselookmeguntic	15-05-22	14:33:16	13.07	-0.22
Mooselookmeguntic	15-05-23	2:33:16	13.16	-0.13

Mooselookmeguntic	15-05-23	14:33:16	13.21	-0.08
Mooselookmeguntic	15-05-24	2:33:16	13.19	-0.10
Mooselookmeguntic	15-05-24	14:33:16	13.19	-0.10
Mooselookmeguntic	15-05-25	2:33:16	13.22	-0.07
Mooselookmeguntic	15-05-25	14:33:16	13.23	-0.06
Mooselookmeguntic	15-05-26	2:33:16	13.20	-0.09
Mooselookmeguntic	15-05-26	14:33:16	13.22	-0.08
Mooselookmeguntic	15-05-27	2:33:16	13.24	-0.05
Mooselookmeguntic	15-05-27	14:33:16	13.20	-0.09
Mooselookmeguntic	15-05-28	2:33:16	13.23	-0.06
Mooselookmeguntic	15-05-28	14:33:16	13.24	-0.05
Mooselookmeguntic	15-05-29	2:33:16	13.33	0.04
Mooselookmeguntic	15-05-29	14:33:16	13.34	0.05
Mooselookmeguntic	15-05-30	2:33:16	13.30	0.01
Mooselookmeguntic	15-05-30	14:33:16	13.24	-0.05
Mooselookmeguntic	15-05-31	2:33:16	13.21	-0.08
Mooselookmeguntic	15-05-31	14:33:16	13.30	0.01
Mooselookmeguntic	15-06-01	2:33:16	13.32	0.03
Mooselookmeguntic	15-06-01	14:33:16	13.34	0.05
Mooselookmeguntic	15-06-02	2:33:16	13.33	0.03
Mooselookmeguntic	15-06-02	14:33:16	13.29	0.00
Mooselookmeguntic	15-06-03	2:33:16	13.28	-0.01
Mooselookmeguntic	15-06-03	14:33:16	13.30	0.01
Mooselookmeguntic	15-06-04	2:33:16	13.30	0.01
Mooselookmeguntic	15-06-04	14:33:16	13.27	-0.02
Mooselookmeguntic	15-06-05	2:33:16	13.25	-0.04
Poisson Blanc	*see text for data source*			
Rangeley	14-08-26	23:31:53	9.19	-0.21
Rangeley	14-08-27	11:31:53	9.16	-0.24
Rangeley	14-08-27	23:31:53	9.15	-0.25
Rangeley	14-08-28	11:31:53	9.13	-0.27
Rangeley	14-08-28	23:31:53	9.16	-0.24
Rangeley	14-08-29	11:31:53	9.23	-0.17
Rangeley	14-08-29	23:31:53	9.24	-0.16
Rangeley	14-08-30	11:31:53	9.22	-0.18
Rangeley	14-08-30	23:31:53	9.18	-0.23
Rangeley	14-08-31	11:31:53	9.13	-0.27
Rangeley	14-08-31	23:31:53	9.12	-0.28
Rangeley	14-09-01	11:31:53	9.14	-0.27
Rangeley	14-09-01	23:31:53	9.13	-0.27
Rangeley	14-09-02	11:31:53	9.10	-0.30

Rangeley	14-09-02	23:31:53	9.05	-0.36
Rangeley	14-09-03	11:31:53	9.11	-0.29
Rangeley	14-09-03	23:31:53	9.16	-0.25
Rangeley	14-09-04	11:31:53	9.18	-0.23
Rangeley	14-09-04	23:31:53	9.17	-0.24
Rangeley	14-09-05	11:31:53	9.16	-0.25
Rangeley	14-09-05	23:31:53	9.10	-0.30
Rangeley	14-09-06	11:31:53	9.05	-0.35
Rangeley	14-09-06	23:31:53	9.08	-0.32
Rangeley	14-09-07	11:31:53	9.14	-0.26
Rangeley	14-09-07	23:31:53	9.17	-0.23
Rangeley	14-09-08	11:31:53	9.23	-0.17
Rangeley	14-09-08	23:31:53	9.23	-0.17
Rangeley	14-09-09	11:31:53	9.21	-0.19
Rangeley	14-09-09	23:31:53	9.17	-0.24
Rangeley	14-09-10	11:31:53	9.13	-0.27
Rangeley	14-09-10	23:31:53	9.08	-0.32
Rangeley	14-09-11	11:31:53	9.00	-0.40
Rangeley	14-09-11	23:31:53	9.01	-0.39
Rangeley	14-09-12	11:31:53	9.09	-0.31
Rangeley	14-09-12	23:31:53	9.15	-0.26
Rangeley	14-09-13	11:31:53	9.14	-0.26
Rangeley	14-09-13	23:31:53	9.07	-0.33
Rangeley	14-09-14	11:31:53	9.11	-0.30
Rangeley	14-09-14	23:31:53	9.10	-0.31
Rangeley	14-09-15	11:31:53	9.08	-0.32
Rangeley	14-09-15	23:31:53	9.04	-0.36
Rangeley	14-09-16	11:31:53	9.01	-0.40
Rangeley	14-09-16	23:31:53	9.00	-0.40
Rangeley	14-09-17	11:31:53	9.00	-0.40
Rangeley	14-09-17	23:31:53	8.98	-0.42
Rangeley	14-09-18	11:31:53	9.00	-0.41
Rangeley	14-09-18	23:31:53	9.05	-0.36
Rangeley	14-09-19	11:31:53	9.10	-0.30
Rangeley	14-09-19	23:31:53	9.08	-0.32
Rangeley	14-09-20	11:31:53	9.03	-0.37
Rangeley	14-09-20	23:31:53	8.97	-0.43
Rangeley	14-09-21	11:31:53	8.92	-0.48
Rangeley	14-09-21	23:31:53	8.83	-0.57
Rangeley	14-09-22	11:31:53	8.85	-0.55
Rangeley	14-09-22	23:31:53	8.95	-0.45

Rangeley	14-09-23	11:31:53	9.01	-0.39
Rangeley	14-09-23	23:31:53	9.08	-0.32
Rangeley	14-09-24	11:31:53	9.15	-0.25
Rangeley	14-09-24	23:31:53	9.12	-0.28
Rangeley	14-09-25	11:31:53	9.08	-0.32
Rangeley	14-09-25	23:31:53	9.02	-0.38
Rangeley	14-09-26	11:31:53	9.01	-0.39
Rangeley	14-09-26	23:31:53	8.99	-0.41
Rangeley	14-09-27	11:31:53	8.99	-0.41
Rangeley	14-09-27	23:31:53	8.99	-0.41
Rangeley	14-09-28	11:31:53	8.96	-0.45
Rangeley	14-09-28	23:31:53	8.92	-0.48
Rangeley	14-09-29	11:31:53	8.93	-0.48
Rangeley	14-09-29	23:31:53	8.94	-0.47
Rangeley	14-09-30	11:31:53	8.92	-0.48
Rangeley	14-09-30	23:31:53	8.93	-0.47
Rangeley	14-10-01	11:31:53	8.95	-0.45
Rangeley	14-10-01	23:31:53	8.96	-0.44
Rangeley	14-10-02	11:31:53	8.96	-0.45
Rangeley	14-10-02	23:31:53	8.95	-0.45
Rangeley	14-10-03	11:31:53	8.91	-0.49
Rangeley	14-10-03	23:31:53	8.85	-0.55
Rangeley	14-10-04	11:31:53	8.79	-0.61
Rangeley	14-10-04	23:31:53	8.74	-0.67
Rangeley	14-10-05	11:31:53	8.77	-0.63
Rangeley	14-10-05	23:31:53	8.84	-0.56
Rangeley	14-10-06	11:31:53	8.89	-0.52
Rangeley	14-10-06	23:31:53	8.91	-0.50
Rangeley	14-10-07	11:31:53	8.87	-0.53
Rangeley	14-10-07	23:31:53	8.87	-0.53
Rangeley	14-10-08	11:31:53	8.78	-0.62
Rangeley	14-10-08	23:31:53	8.80	-0.60
Rangeley	14-10-09	11:31:53	8.83	-0.57
Rangeley	14-10-09	23:31:53	8.84	-0.57
Rangeley	14-10-10	11:31:53	8.87	-0.53
Rangeley	14-10-10	23:31:53	8.91	-0.49
Rangeley	14-10-11	11:31:53	8.91	-0.49
Rangeley	14-10-11	23:31:53	8.91	-0.50
Rangeley	14-10-12	11:31:53	8.95	-0.45
Rangeley	14-10-12	23:31:53	8.96	-0.44
Rangeley	14-10-13	11:31:53	8.95	-0.45

Rangeley	14-10-13	23:31:53	8.92	-0.48
Rangeley	14-10-14	11:31:53	8.91	-0.50
Rangeley	14-10-14	23:31:53	8.88	-0.52
Rangeley	14-10-15	11:31:53	8.89	-0.51
Rangeley	14-10-15	23:31:53	8.86	-0.54
Rangeley	14-10-16	11:31:53	8.84	-0.57
Rangeley	14-10-16	23:31:53	8.78	-0.62
Rangeley	14-10-17	11:31:53	8.74	-0.66
Rangeley	14-10-17	23:31:53	8.78	-0.62
Rangeley	14-10-18	11:31:53	8.76	-0.64
Rangeley	14-10-18	23:31:53	8.76	-0.64
Rangeley	14-10-19	11:31:53	8.85	-0.55
Rangeley	14-10-19	23:31:53	8.87	-0.54
Rangeley	14-10-20	11:31:53	8.89	-0.51
Rangeley	14-10-20	23:31:53	8.91	-0.50
Rangeley	14-10-21	11:31:53	8.94	-0.47
Rangeley	14-10-21	23:31:53	8.98	-0.43
Rangeley	14-10-22	11:31:53	9.00	-0.40
Rangeley	14-10-22	23:31:53	8.96	-0.44
Rangeley	14-10-23	11:31:53	8.92	-0.49
Rangeley	14-10-23	23:31:53	8.93	-0.48
Rangeley	14-10-24	11:31:53	8.96	-0.44
Rangeley	14-10-24	23:31:53	8.98	-0.42
Rangeley	14-10-25	11:31:53	8.97	-0.43
Rangeley	14-10-25	23:31:53	8.91	-0.49
Rangeley	14-10-26	11:31:53	8.92	-0.48
Rangeley	14-10-26	23:31:53	8.99	-0.41
Rangeley	14-10-27	11:31:53	9.06	-0.34
Rangeley	14-10-27	23:31:53	9.13	-0.27
Rangeley	14-10-28	11:31:53	9.15	-0.25
Rangeley	14-10-28	23:31:53	9.13	-0.27
Rangeley	14-10-29	11:31:53	9.09	-0.32
Rangeley	14-10-29	23:31:53	9.09	-0.31
Rangeley	14-10-30	11:31:53	9.12	-0.28
Rangeley	14-10-30	23:31:53	9.14	-0.26
Rangeley	14-10-31	11:31:53	9.16	-0.24
Rangeley	14-10-31	23:31:53	9.17	-0.23
Rangeley	14-11-01	11:31:53	9.15	-0.25
Rangeley	14-11-01	23:31:53	9.12	-0.28
Rangeley	14-11-02	11:31:53	9.07	-0.33
Rangeley	14-11-02	23:31:53	9.03	-0.37

Rangeley	14-11-03	11:31:53	9.06	-0.34
Rangeley	14-11-03	23:31:53	9.12	-0.28
Rangeley	14-11-04	11:31:53	9.16	-0.25
Rangeley	14-11-04	23:31:53	9.11	-0.29
Rangeley	14-11-05	11:31:53	9.09	-0.31
Rangeley	14-11-05	23:31:53	9.13	-0.27
Rangeley	14-11-06	11:31:53	9.11	-0.30
Rangeley	14-11-06	23:31:53	8.99	-0.41
Rangeley	14-11-07	11:31:53	8.93	-0.47
Rangeley	14-11-07	23:31:53	8.98	-0.42
Rangeley	14-11-08	11:31:53	9.06	-0.34
Rangeley	14-11-08	23:31:53	9.05	-0.36
Rangeley	14-11-09	11:31:53	9.05	-0.36
Rangeley	14-11-09	23:31:53	9.07	-0.33
Rangeley	14-11-10	11:31:53	9.12	-0.29
Rangeley	14-11-10	23:31:53	9.14	-0.26
Rangeley	14-11-11	11:31:53	9.10	-0.30
Rangeley	14-11-11	23:31:53	9.07	-0.33
Rangeley	14-11-12	11:31:53	9.03	-0.37
Rangeley	14-11-12	23:31:53	9.06	-0.34
Rangeley	14-11-13	11:31:53	9.07	-0.34
Rangeley	14-11-13	23:31:53	9.04	-0.36
Rangeley	14-11-14	11:31:53	9.02	-0.39
Rangeley	14-11-14	23:31:53	9.04	-0.36
Rangeley	14-11-15	11:31:53	9.09	-0.31
Rangeley	14-11-15	23:31:53	9.11	-0.29
Rangeley	14-11-16	11:31:53	9.10	-0.30
Rangeley	14-11-16	23:31:53	9.05	-0.35
Rangeley	14-11-17	11:31:53	8.99	-0.41
Rangeley	14-11-17	23:31:53	8.83	-0.58
Rangeley	14-11-18	11:31:53	8.86	-0.54
Rangeley	14-11-18	23:31:53	8.90	-0.50
Rangeley	14-11-19	11:31:53	9.00	-0.41
Rangeley	14-11-19	23:31:53	8.99	-0.41
Rangeley	14-11-20	11:31:53	8.91	-0.49
Rangeley	14-11-20	23:31:53	8.91	-0.49
Rangeley	14-11-21	11:31:53	8.98	-0.42
Rangeley	14-11-21	23:31:53	9.06	-0.34
Rangeley	14-11-22	11:31:53	9.01	-0.39
Rangeley	14-11-22	23:31:53	8.94	-0.47
Rangeley	14-11-23	11:31:53	8.99	-0.42

Rangeley	14-11-23	23:31:53	9.00	-0.40
Rangeley	14-11-24	11:31:53	8.87	-0.54
Rangeley	14-11-24	23:31:53	8.82	-0.59
Rangeley	14-11-25	11:31:53	8.91	-0.49
Rangeley	14-11-25	23:31:53	8.96	-0.44
Rangeley	14-11-26	11:31:53	9.04	-0.37
Rangeley	14-11-26	23:31:53	8.94	-0.46
Rangeley	14-11-27	11:31:53	8.94	-0.46
Rangeley	14-11-27	23:31:53	8.98	-0.42
Rangeley	14-11-28	11:31:53	8.98	-0.43
Rangeley	14-11-28	23:31:53	9.00	-0.40
Rangeley	14-11-29	11:31:53	9.05	-0.35
Rangeley	14-11-29	23:31:53	9.02	-0.38
Rangeley	14-11-30	11:31:53	8.98	-0.43
Rangeley	14-11-30	23:31:53	8.94	-0.47
Rangeley	14-12-01	11:31:53	8.96	-0.44
Rangeley	14-12-01	23:31:53	9.08	-0.32
Rangeley	14-12-02	11:31:53	9.18	-0.22
Rangeley	14-12-02	23:31:53	9.13	-0.28
Rangeley	14-12-03	11:31:53	8.95	-0.45
Rangeley	14-12-03	23:31:53	8.92	-0.49
Rangeley	14-12-04	11:31:53	9.03	-0.37
Rangeley	14-12-04	23:31:53	9.13	-0.28
Rangeley	14-12-05	11:31:53	9.16	-0.24
Rangeley	14-12-05	23:31:53	9.11	-0.30
Rangeley	14-12-06	11:31:53	9.04	-0.36
Rangeley	14-12-06	23:31:53	9.04	-0.36
Rangeley	14-12-07	11:31:53	9.13	-0.27
Rangeley	14-12-07	23:31:53	9.18	-0.22
Rangeley	14-12-08	11:31:53	9.18	-0.23
Rangeley	14-12-08	23:31:53	9.13	-0.28
Rangeley	14-12-09	11:31:53	9.05	-0.35
Rangeley	14-12-09	23:31:53	8.91	-0.49
Rangeley	14-12-10	11:31:53	8.87	-0.53
Rangeley	14-12-10	23:31:53	8.82	-0.58
Rangeley	14-12-11	11:31:53	8.83	-0.57
Rangeley	14-12-11	23:31:53	8.88	-0.53
Rangeley	14-12-12	11:31:53	8.93	-0.47
Rangeley	14-12-12	23:31:53	8.93	-0.47
Rangeley	14-12-13	11:31:53	8.92	-0.49
Rangeley	14-12-13	23:31:53	8.92	-0.49

Rangeley	14-12-14	11:31:53	8.93	-0.47
Rangeley	14-12-14	23:31:53	8.96	-0.44
Rangeley	14-12-15	11:31:53	9.01	-0.39
Rangeley	14-12-15	23:31:53	9.02	-0.38
Rangeley	14-12-16	11:31:53	9.02	-0.39
Rangeley	14-12-16	23:31:53	8.97	-0.43
Rangeley	14-12-17	11:31:53	8.93	-0.48
Rangeley	14-12-17	23:31:53	8.89	-0.52
Rangeley	14-12-18	11:31:53	8.90	-0.51
Rangeley	14-12-18	23:31:53	8.93	-0.47
Rangeley	14-12-19	11:31:53	8.98	-0.43
Rangeley	14-12-19	23:31:53	9.04	-0.36
Rangeley	14-12-20	11:31:53	9.09	-0.32
Rangeley	14-12-20	23:31:53	9.09	-0.31
Rangeley	14-12-21	11:31:53	9.10	-0.31
Rangeley	14-12-21	23:31:53	9.10	-0.30
Rangeley	14-12-22	11:31:53	9.11	-0.30
Rangeley	14-12-22	23:31:53	9.09	-0.31
Rangeley	14-12-23	11:31:53	9.08	-0.33
Rangeley	14-12-23	23:31:53	9.04	-0.36
Rangeley	14-12-24	11:31:53	8.98	-0.43
Rangeley	14-12-24	23:31:53	8.83	-0.57
Rangeley	14-12-25	11:31:53	8.79	-0.62
Rangeley	14-12-25	23:31:53	8.93	-0.47
Rangeley	14-12-26	11:31:53	9.02	-0.38
Rangeley	14-12-26	23:31:53	9.03	-0.37
Rangeley	14-12-27	11:31:53	9.06	-0.34
Rangeley	14-12-27	23:31:53	9.01	-0.40
Rangeley	14-12-28	11:31:53	8.93	-0.47
Rangeley	14-12-28	23:31:53	9.00	-0.40
Rangeley	14-12-29	11:31:53	9.04	-0.36
Rangeley	14-12-29	23:31:53	9.08	-0.32
Rangeley	14-12-30	11:31:53	9.11	-0.29
Rangeley	14-12-30	23:31:53	9.09	-0.31
Rangeley	14-12-31	11:31:53	9.07	-0.34
Rangeley	14-12-31	23:31:53	9.01	-0.40
Rangeley	15-01-01	11:31:53	8.96	-0.45
Rangeley	15-01-01	23:31:53	8.92	-0.48
Rangeley	15-01-02	11:31:53	9.00	-0.41
Rangeley	15-01-02	23:31:53	9.10	-0.30
Rangeley	15-01-03	11:31:53	9.19	-0.21

Rangeley	15-01-03	23:31:53	9.10	-0.30
Rangeley	15-01-04	11:31:53	8.92	-0.48
Rangeley	15-01-04	23:31:53	8.80	-0.60
Rangeley	15-01-05	11:31:53	8.92	-0.49
Rangeley	15-01-05	23:31:53	9.00	-0.40
Rangeley	15-01-06	11:31:53	9.01	-0.40
Rangeley	15-01-06	23:31:53	8.91	-0.49
Rangeley	15-01-07	11:31:53	8.84	-0.57
Rangeley	15-01-07	23:31:53	8.93	-0.47
Rangeley	15-01-08	11:31:53	8.96	-0.44
Rangeley	15-01-08	23:31:53	8.92	-0.48
Rangeley	15-01-09	11:31:53	8.82	-0.58
Rangeley	15-01-09	23:31:53	8.89	-0.51
Rangeley	15-01-10	11:31:53	8.95	-0.45
Rangeley	15-01-10	23:31:53	8.98	-0.42
Rangeley	15-01-11	11:31:53	9.05	-0.36
Rangeley	15-01-11	23:31:53	9.00	-0.40
Rangeley	15-01-12	11:31:53	8.93	-0.47
Rangeley	15-01-12	23:31:53	8.92	-0.49
Rangeley	15-01-13	11:31:53	9.05	-0.35
Rangeley	15-01-13	23:31:53	9.05	-0.35
Rangeley	15-01-14	11:31:53	8.98	-0.42
Rangeley	15-01-14	23:31:53	8.92	-0.48
Rangeley	15-01-15	11:31:53	8.86	-0.55
Rangeley	15-01-15	23:31:53	8.74	-0.66
Rangeley	15-01-16	11:31:53	8.67	-0.73
Rangeley	15-01-16	23:31:53	8.80	-0.60
Rangeley	15-01-17	11:31:53	8.90	-0.50
Rangeley	15-01-17	23:31:53	8.85	-0.56
Rangeley	15-01-18	11:31:53	8.81	-0.59
Rangeley	15-01-18	23:31:53	8.70	-0.70
Rangeley	15-01-19	11:31:53	8.68	-0.72
Rangeley	15-01-19	23:31:53	8.71	-0.70
Rangeley	15-01-20	11:31:53	8.73	-0.67
Rangeley	15-01-20	23:31:53	8.80	-0.60
Rangeley	15-01-21	11:31:53	8.88	-0.52
Rangeley	15-01-21	23:31:53	8.90	-0.50
Rangeley	15-01-22	11:31:53	8.89	-0.51
Rangeley	15-01-22	23:31:53	8.89	-0.52
Rangeley	15-01-23	11:31:53	8.86	-0.54
Rangeley	15-01-23	23:31:53	8.76	-0.64

Rangeley	15-01-24	11:31:53	8.68	-0.72
Rangeley	15-01-24	23:31:53	8.55	-0.86
Rangeley	15-01-25	11:31:53	8.65	-0.75
Rangeley	15-01-25	23:31:53	8.79	-0.62
Rangeley	15-01-26	11:31:53	8.84	-0.56
Rangeley	15-01-26	23:31:53	8.83	-0.57
Rangeley	15-01-27	11:31:53	8.73	-0.67
Rangeley	15-01-27	23:31:53	8.71	-0.69
Rangeley	15-01-28	11:31:53	8.77	-0.63
Rangeley	15-01-28	23:31:53	8.85	-0.55
Rangeley	15-01-29	11:31:53	8.87	-0.53
Rangeley	15-01-29	23:31:53	8.78	-0.63
Rangeley	15-01-30	11:31:53	8.72	-0.69
Rangeley	15-01-30	23:31:53	8.73	-0.67
Rangeley	15-01-31	11:31:53	8.74	-0.66
Rangeley	15-01-31	23:31:53	8.75	-0.65
Rangeley	15-02-01	11:31:53	8.78	-0.63
Rangeley	15-02-01	23:31:53	8.79	-0.61
Rangeley	15-02-02	11:31:53	8.71	-0.70
Rangeley	15-02-02	23:31:53	8.64	-0.76
Rangeley	15-02-03	11:31:53	8.76	-0.65
Rangeley	15-02-03	23:31:53	8.79	-0.61
Rangeley	15-02-04	11:31:53	8.78	-0.62
Rangeley	15-02-04	23:31:53	8.69	-0.71
Rangeley	15-02-05	11:31:53	8.72	-0.69
Rangeley	15-02-05	23:31:53	8.72	-0.68
Rangeley	15-02-06	11:31:53	8.71	-0.70
Rangeley	15-02-06	23:31:53	8.67	-0.73
Rangeley	15-02-07	11:31:53	8.71	-0.70
Rangeley	15-02-07	23:31:53	8.72	-0.68
Rangeley	15-02-08	11:31:53	8.73	-0.67
Rangeley	15-02-08	23:31:53	8.75	-0.65
Rangeley	15-02-09	11:31:53	8.79	-0.62
Rangeley	15-02-09	23:31:53	8.76	-0.64
Rangeley	15-02-10	11:31:53	8.73	-0.68
Rangeley	15-02-10	23:31:53	8.73	-0.67
Rangeley	15-02-11	11:31:53	8.70	-0.70
Rangeley	15-02-11	23:31:53	8.63	-0.78
Rangeley	15-02-12	11:31:53	8.56	-0.85
Rangeley	15-02-12	23:31:53	8.55	-0.85
Rangeley	15-02-13	11:31:53	8.59	-0.81

Rangeley	15-02-13	23:31:53	8.62	-0.79
Rangeley	15-02-14	11:31:53	8.56	-0.84
Rangeley	15-02-14	23:31:53	8.52	-0.88
Rangeley	15-02-15	11:31:53	8.49	-0.91
Rangeley	15-02-15	23:31:53	8.51	-0.90
Rangeley	15-02-16	11:31:53	8.51	-0.89
Rangeley	15-02-16	23:31:53	8.57	-0.83
Rangeley	15-02-17	11:31:53	8.57	-0.84
Rangeley	15-02-17	23:31:53	8.54	-0.87
Rangeley	15-02-18	11:31:53	8.53	-0.87
Rangeley	15-02-18	23:31:53	8.49	-0.91
Rangeley	15-02-19	11:31:53	8.42	-0.99
Rangeley	15-02-19	23:31:53	8.41	-0.99
Rangeley	15-02-20	11:31:53	8.48	-0.92
Rangeley	15-02-20	23:31:53	8.63	-0.77
Rangeley	15-02-21	11:31:53	8.66	-0.75
Rangeley	15-02-21	23:31:53	8.59	-0.82
Rangeley	15-02-22	11:31:53	8.59	-0.81
Rangeley	15-02-22	23:31:53	8.57	-0.83
Rangeley	15-02-23	11:31:53	8.57	-0.83
Rangeley	15-02-23	23:31:53	8.58	-0.82
Rangeley	15-02-24	11:31:53	8.56	-0.84
Rangeley	15-02-24	23:31:53	8.46	-0.94
Rangeley	15-02-25	11:31:53	8.41	-0.99
Rangeley	15-02-25	23:31:53	8.48	-0.92
Rangeley	15-02-26	11:31:53	8.53	-0.87
Rangeley	15-02-26	23:31:53	8.53	-0.87
Rangeley	15-02-27	11:31:53	8.59	-0.81
Rangeley	15-02-27	23:31:53	8.64	-0.76
Rangeley	15-02-28	11:31:53	8.70	-0.70
Rangeley	15-02-28	23:31:53	8.69	-0.71
Rangeley	15-03-01	11:31:53	8.66	-0.75
Rangeley	15-03-01	23:31:53	8.51	-0.90
Rangeley	15-03-02	11:31:53	8.42	-0.98
Rangeley	15-03-02	23:31:53	8.52	-0.88
Rangeley	15-03-03	11:31:53	8.56	-0.84
Rangeley	15-03-03	23:31:53	8.37	-1.03
Rangeley	15-03-04	11:31:53	8.35	-1.05
Rangeley	15-03-04	23:31:53	8.37	-1.04
Rangeley	15-03-05	11:31:53	8.47	-0.93
Rangeley	15-03-05	23:31:53	8.52	-0.88

Rangeley	15-03-06	11:31:53	8.56	-0.84
Rangeley	15-03-06	23:31:53	8.49	-0.92
Rangeley	15-03-07	11:31:53	8.43	-0.97
Rangeley	15-03-07	23:31:53	8.41	-1.00
Rangeley	15-03-08	11:31:53	8.40	-1.00
Rangeley	15-03-08	23:31:53	8.42	-0.98
Rangeley	15-03-09	11:31:53	8.40	-1.00
Rangeley	15-03-09	23:31:53	8.46	-0.94
Rangeley	15-03-10	11:31:53	8.50	-0.90
Rangeley	15-03-10	23:31:53	8.38	-1.02
Rangeley	15-03-11	11:31:53	8.34	-1.06
Rangeley	15-03-11	23:31:53	8.36	-1.04
Rangeley	15-03-12	11:31:53	8.51	-0.89
Rangeley	15-03-12	23:31:53	8.56	-0.84
Rangeley	15-03-13	11:31:53	8.57	-0.84
Rangeley	15-03-13	23:31:53	8.51	-0.89
Rangeley	15-03-14	11:31:53	8.46	-0.95
Rangeley	15-03-14	23:31:53	8.33	-1.08
Rangeley	15-03-15	11:31:53	8.29	-1.11
Rangeley	15-03-15	23:31:53	8.38	-1.03
Rangeley	15-03-16	11:31:53	8.37	-1.03
Rangeley	15-03-16	23:31:53	8.33	-1.08
Rangeley	15-03-17	11:31:53	8.23	-1.17
Rangeley	15-03-17	23:31:53	8.29	-1.11
Rangeley	15-03-18	11:31:53	8.33	-1.08
Rangeley	15-03-18	23:31:53	8.39	-1.01
Rangeley	15-03-19	11:31:53	8.44	-0.97
Rangeley	15-03-19	23:31:53	8.49	-0.92
Rangeley	15-03-20	11:31:53	8.49	-0.92
Rangeley	15-03-20	23:31:53	8.43	-0.97
Rangeley	15-03-21	11:31:53	8.37	-1.03
Rangeley	15-03-21	23:31:53	8.29	-1.12
Rangeley	15-03-22	11:31:53	8.34	-1.06
Rangeley	15-03-22	23:31:53	8.35	-1.05
Rangeley	15-03-23	11:31:53	8.38	-1.02
Rangeley	15-03-23	23:31:53	8.46	-0.94
Rangeley	15-03-24	11:31:53	8.48	-0.92
Rangeley	15-03-24	23:31:53	8.49	-0.91
Rangeley	15-03-25	11:31:53	8.50	-0.91
Rangeley	15-03-25	23:31:53	8.38	-1.03
Rangeley	15-03-26	11:31:53	8.32	-1.09

Rangeley	15-03-26	23:31:53	8.29	-1.11
Rangeley	15-03-27	11:31:53	8.29	-1.11
Rangeley	15-03-27	23:31:53	8.32	-1.08
Rangeley	15-03-28	11:31:53	8.34	-1.06
Rangeley	15-03-28	23:31:53	8.38	-1.02
Rangeley	15-03-29	11:31:53	8.43	-0.98
Rangeley	15-03-29	23:31:53	8.38	-1.02
Rangeley	15-03-30	11:31:53	8.27	-1.13
Rangeley	15-03-30	23:31:53	8.25	-1.15
Rangeley	15-03-31	11:31:53	8.29	-1.12
Rangeley	15-03-31	23:31:53	8.32	-1.08
Rangeley	15-04-01	11:31:53	8.37	-1.03
Rangeley	15-04-01	23:31:53	8.41	-0.99
Rangeley	15-04-02	11:31:53	8.41	-1.00
Rangeley	15-04-02	23:31:53	8.30	-1.10
Rangeley	15-04-03	11:31:53	8.30	-1.11
Rangeley	15-04-03	23:31:53	8.29	-1.11
Rangeley	15-04-04	11:31:53	8.24	-1.16
Rangeley	15-04-04	23:31:53	8.37	-1.03
Rangeley	15-04-05	11:31:53	8.40	-1.01
Rangeley	15-04-05	23:31:53	8.46	-0.94
Rangeley	15-04-06	11:31:53	8.51	-0.90
Rangeley	15-04-06	23:31:53	8.49	-0.91
Rangeley	15-04-07	11:31:53	8.52	-0.88
Rangeley	15-04-07	23:31:53	8.55	-0.85
Rangeley	15-04-08	11:31:53	8.58	-0.83
Rangeley	15-04-08	23:31:53	8.55	-0.85
Rangeley	15-04-09	11:31:53	8.56	-0.84
Rangeley	15-04-09	23:31:53	8.51	-0.89
Rangeley	15-04-10	11:31:53	8.39	-1.01
Rangeley	15-04-10	23:31:53	8.30	-1.10
Rangeley	15-04-11	11:31:53	8.36	-1.05
Rangeley	15-04-11	23:31:53	8.46	-0.95
Rangeley	15-04-12	11:31:53	8.50	-0.90
Rangeley	15-04-12	23:31:53	8.54	-0.86
Rangeley	15-04-13	11:31:53	8.55	-0.85
Rangeley	15-04-13	23:31:53	8.47	-0.94
Rangeley	15-04-14	11:31:53	8.51	-0.89
Rangeley	15-04-14	23:31:53	8.56	-0.85
Rangeley	15-04-15	11:31:53	8.60	-0.80
Rangeley	15-04-15	23:31:53	8.69	-0.71

Rangeley	15-04-16	11:31:53	8.73	-0.67
Rangeley	15-04-16	23:31:53	8.66	-0.74
Rangeley	15-04-17	11:31:53	8.60	-0.80
Rangeley	15-04-17	23:31:53	8.63	-0.77
Rangeley	15-04-18	11:31:53	8.68	-0.72
Rangeley	15-04-18	23:31:53	8.77	-0.63
Rangeley	15-04-19	11:31:53	8.85	-0.55
Rangeley	15-04-19	23:31:53	8.87	-0.53
Rangeley	15-04-20	11:31:53	8.87	-0.53
Rangeley	15-04-20	23:31:53	8.82	-0.59
Rangeley	15-04-21	11:31:53	8.75	-0.65
Rangeley	15-04-21	23:31:53	8.85	-0.55
Rangeley	15-04-22	11:31:53	8.87	-0.53
Rangeley	15-04-22	23:31:53	8.82	-0.58
Rangeley	15-04-23	11:31:53	8.85	-0.55
Rangeley	15-04-23	23:31:53	8.89	-0.52
Rangeley	15-04-24	11:31:53	8.91	-0.49
Rangeley	15-04-24	23:31:53	8.92	-0.48
Rangeley	15-04-25	11:31:53	8.91	-0.49
Rangeley	15-04-25	23:31:53	8.91	-0.50
Rangeley	15-04-26	11:31:53	8.88	-0.52
Rangeley	15-04-26	23:31:53	8.86	-0.54
Rangeley	15-04-27	11:31:53	8.85	-0.55
Rangeley	15-04-27	23:31:53	8.89	-0.52
Rangeley	15-04-28	11:31:53	8.92	-0.48
Rangeley	15-04-28	23:31:53	8.88	-0.52
Rangeley	15-04-29	11:31:53	8.91	-0.49
Rangeley	15-04-29	23:31:53	8.96	-0.44
Rangeley	15-04-30	11:31:53	8.99	-0.42
Rangeley	15-04-30	23:31:53	9.03	-0.37
Rangeley	15-05-01	11:31:53	9.05	-0.35
Rangeley	15-05-01	23:31:53	9.05	-0.36
Rangeley	15-05-02	11:31:53	9.05	-0.35
Rangeley	15-05-02	23:31:53	9.07	-0.34
Rangeley	15-05-03	11:31:53	9.10	-0.30
Rangeley	15-05-03	23:31:53	9.13	-0.27
Rangeley	15-05-04	11:31:53	9.15	-0.25
Rangeley	15-05-04	23:31:53	9.13	-0.27
Rangeley	15-05-05	11:31:53	9.21	-0.19
Rangeley	15-05-05	23:31:53	9.23	-0.17
Rangeley	15-05-06	11:31:53	9.24	-0.16

Rangeley	15-05-06	23:31:53	9.23	-0.17
Rangeley	15-05-07	11:31:53	9.24	-0.16
Rangeley	15-05-07	23:31:53	9.24	-0.16
Rangeley	15-05-08	11:31:53	9.29	-0.12
Rangeley	15-05-08	23:31:53	9.32	-0.08
Rangeley	15-05-09	11:31:53	9.31	-0.09
Rangeley	15-05-09	23:31:53	9.31	-0.10
Rangeley	15-05-10	11:31:53	9.28	-0.12
Rangeley	15-05-10	23:31:53	9.30	-0.11
Rangeley	15-05-11	11:31:53	9.36	-0.05
Rangeley	15-05-11	23:31:53	9.32	-0.08
Rangeley	15-05-12	11:31:53	9.22	-0.18
Rangeley	15-05-12	23:31:53	9.22	-0.19
Rangeley	15-05-13	11:31:53	9.31	-0.09
Rangeley	15-05-13	23:31:53	9.37	-0.03
Rangeley	15-05-14	11:31:53	9.40	0.00
Rangeley	15-05-14	23:31:53	9.39	-0.01
Rangeley	15-05-15	11:31:53	9.38	-0.02
Rangeley	15-05-15	23:31:53	9.35	-0.05
Rangeley	15-05-16	11:31:53	9.35	-0.06
Rangeley	15-05-16	23:31:53	9.34	-0.07
Rangeley	15-05-17	11:31:53	9.35	-0.06
Rangeley	15-05-17	23:31:53	9.37	-0.04
Rangeley	15-05-18	11:31:53	9.36	-0.04
Rangeley	15-05-18	23:31:53	9.30	-0.10
Rangeley	15-05-19	11:31:53	9.25	-0.15
Rangeley	15-05-19	23:31:53	9.20	-0.20
Rangeley	15-05-20	11:31:53	9.19	-0.21
Rangeley	15-05-20	23:31:53	9.24	-0.16
Rangeley	15-05-21	11:31:53	9.24	-0.16
Rangeley	15-05-21	23:31:53	9.22	-0.18
Rangeley	15-05-22	11:31:53	9.21	-0.19
Rangeley	15-05-22	23:31:53	9.29	-0.12
Rangeley	15-05-23	11:31:53	9.33	-0.07
Rangeley	15-05-23	23:31:53	9.32	-0.08
Rangeley	15-05-24	11:31:53	9.29	-0.11
Rangeley	15-05-24	23:31:53	9.32	-0.08
Rangeley	15-05-25	11:31:53	9.32	-0.08
Rangeley	15-05-25	23:31:53	9.30	-0.11
Rangeley	15-05-26	11:31:53	9.28	-0.12
Rangeley	15-05-26	23:31:53	9.30	-0.11

Rangeley	15-05-27	11:31:53	9.28	-0.12
Rangeley	15-05-27	23:31:53	9.30	-0.10
Rangeley	15-05-28	11:31:53	9.31	-0.09
Rangeley	15-05-28	23:31:53	9.39	-0.02
Rangeley	15-05-29	11:31:53	9.42	0.02
Rangeley	15-05-29	23:31:53	9.38	-0.02
Rangeley	15-05-30	11:31:53	9.33	-0.07
Rangeley	15-05-30	23:31:53	9.28	-0.12
Rangeley	15-05-31	11:31:53	9.36	-0.04
Rangeley	15-05-31	23:31:53	9.41	0.00
Rangeley	15-06-01	11:31:53	9.43	0.03
Rangeley	15-06-01	23:31:53	9.43	0.03
Rangeley	15-06-02	11:31:53	9.41	0.00
Rangeley	15-06-02	23:31:53	9.39	-0.01
Rangeley	15-06-03	11:31:53	9.42	0.02
Rangeley	15-06-03	23:31:53	9.43	0.03
Rangeley	15-06-04	11:31:53	9.42	0.02
Rangeley	15-06-04	23:31:53	9.39	-0.01
Rangeley	15-06-05	11:31:53	9.34	-0.06
Richardson (Lower)	14-08-27	23:55:38	12.66	0.02
Richardson (Lower)	14-08-28	11:55:38	12.62	-0.02
Richardson (Lower)	14-08-28	23:55:38	12.66	0.02
Richardson (Lower)	14-08-29	11:55:38	12.71	0.07
Richardson (Lower)	14-08-29	23:55:38	12.72	0.09
Richardson (Lower)	14-08-30	11:55:38	12.69	0.05
Richardson (Lower)	14-08-30	23:55:38	12.65	0.01
Richardson (Lower)	14-08-31	11:55:38	12.62	-0.02
Richardson (Lower)	14-08-31	23:55:38	12.61	-0.03
Richardson (Lower)	14-09-01	11:55:38	12.62	-0.02
Richardson (Lower)	14-09-01	23:55:38	12.62	-0.02
Richardson (Lower)	14-09-02	11:55:38	12.58	-0.06
Richardson (Lower)	14-09-02	23:55:38	12.52	-0.11
Richardson (Lower)	14-09-03	11:55:38	12.59	-0.05
Richardson (Lower)	14-09-03	23:55:38	12.64	0.00
Richardson (Lower)	14-09-04	11:55:38	12.64	0.00
Richardson (Lower)	14-09-04	23:55:38	12.62	-0.02
Richardson (Lower)	14-09-05	11:55:38	12.60	-0.04
Richardson (Lower)	14-09-05	23:55:38	12.54	-0.10
Richardson (Lower)	14-09-06	11:55:38	12.48	-0.16
Richardson (Lower)	14-09-06	23:55:38	12.52	-0.12
Richardson (Lower)	14-09-07	11:55:38	12.56	-0.08

Richardson (Lower)	14-09-07	23:55:38	12.60	-0.04
Richardson (Lower)	14-09-08	11:55:38	12.64	0.00
Richardson (Lower)	14-09-08	23:55:38	12.62	-0.02
Richardson (Lower)	14-09-09	11:55:38	12.60	-0.04
Richardson (Lower)	14-09-09	23:55:38	12.55	-0.09
Richardson (Lower)	14-09-10	11:55:38	12.50	-0.14
Richardson (Lower)	14-09-10	23:55:38	12.45	-0.19
Richardson (Lower)	14-09-11	11:55:38	12.36	-0.28
Richardson (Lower)	14-09-11	23:55:38	12.40	-0.24
Richardson (Lower)	14-09-12	11:55:38	12.45	-0.19
Richardson (Lower)	14-09-12	23:55:38	12.51	-0.13
Richardson (Lower)	14-09-13	11:55:38	12.49	-0.15
Richardson (Lower)	14-09-13	23:55:38	12.43	-0.21
Richardson (Lower)	14-09-14	11:55:38	12.46	-0.18
Richardson (Lower)	14-09-14	23:55:38	12.44	-0.20
Richardson (Lower)	14-09-15	11:55:38	12.42	-0.22
Richardson (Lower)	14-09-15	23:55:38	12.38	-0.26
Richardson (Lower)	14-09-16	11:55:38	12.33	-0.31
Richardson (Lower)	14-09-16	23:55:38	12.33	-0.31
Richardson (Lower)	14-09-17	11:55:38	12.32	-0.32
Richardson (Lower)	14-09-17	23:55:38	12.29	-0.34
Richardson (Lower)	14-09-18	11:55:38	12.31	-0.32
Richardson (Lower)	14-09-18	23:55:38	12.36	-0.28
Richardson (Lower)	14-09-19	11:55:38	12.41	-0.23
Richardson (Lower)	14-09-19	23:55:38	12.38	-0.25
Richardson (Lower)	14-09-20	11:55:38	12.33	-0.31
Richardson (Lower)	14-09-20	23:55:38	12.27	-0.37
Richardson (Lower)	14-09-21	11:55:38	12.20	-0.44
Richardson (Lower)	14-09-21	23:55:38	12.11	-0.53
Richardson (Lower)	14-09-22	11:55:38	12.14	-0.50
Richardson (Lower)	14-09-22	23:55:38	12.24	-0.40
Richardson (Lower)	14-09-23	11:55:38	12.29	-0.35
Richardson (Lower)	14-09-23	23:55:38	12.36	-0.28
Richardson (Lower)	14-09-24	11:55:38	12.42	-0.22
Richardson (Lower)	14-09-24	23:55:38	12.39	-0.25
Richardson (Lower)	14-09-25	11:55:38	12.35	-0.29
Richardson (Lower)	14-09-25	23:55:38	12.29	-0.35
Richardson (Lower)	14-09-26	11:55:38	12.27	-0.37
Richardson (Lower)	14-09-26	23:55:38	12.25	-0.39
Richardson (Lower)	14-09-27	11:55:38	12.25	-0.39
Richardson (Lower)	14-09-27	23:55:38	12.25	-0.39

Richardson (Lower)	14-09-28	11:55:38	12.21	-0.43
Richardson (Lower)	14-09-28	23:55:38	12.17	-0.47
Richardson (Lower)	14-09-29	11:55:38	12.17	-0.47
Richardson (Lower)	14-09-29	23:55:38	12.18	-0.46
Richardson (Lower)	14-09-30	11:55:38	12.17	-0.46
Richardson (Lower)	14-09-30	23:55:38	12.20	-0.44
Richardson (Lower)	14-10-01	11:55:38	12.22	-0.42
Richardson (Lower)	14-10-01	23:55:38	12.21	-0.43
Richardson (Lower)	14-10-02	11:55:38	12.22	-0.42
Richardson (Lower)	14-10-02	23:55:38	12.20	-0.44
Richardson (Lower)	14-10-03	11:55:38	12.15	-0.49
Richardson (Lower)	14-10-03	23:55:38	12.09	-0.55
Richardson (Lower)	14-10-04	11:55:38	12.03	-0.61
Richardson (Lower)	14-10-04	23:55:38	11.96	-0.68
Richardson (Lower)	14-10-05	11:55:38	12.00	-0.64
Richardson (Lower)	14-10-05	23:55:38	12.06	-0.58
Richardson (Lower)	14-10-06	11:55:38	12.10	-0.54
Richardson (Lower)	14-10-06	23:55:38	12.11	-0.53
Richardson (Lower)	14-10-07	11:55:38	12.04	-0.60
Richardson (Lower)	14-10-07	23:55:38	12.05	-0.59
Richardson (Lower)	14-10-08	11:55:38	11.94	-0.70
Richardson (Lower)	14-10-08	23:55:38	11.99	-0.65
Richardson (Lower)	14-10-09	11:55:38	11.99	-0.65
Richardson (Lower)	14-10-09	23:55:38	12.01	-0.63
Richardson (Lower)	14-10-10	11:55:38	12.03	-0.61
Richardson (Lower)	14-10-10	23:55:38	12.07	-0.57
Richardson (Lower)	14-10-11	11:55:38	12.06	-0.58
Richardson (Lower)	14-10-11	23:55:38	12.05	-0.59
Richardson (Lower)	14-10-12	11:55:38	12.10	-0.54
Richardson (Lower)	14-10-12	23:55:38	12.10	-0.54
Richardson (Lower)	14-10-13	11:55:38	12.08	-0.55
Richardson (Lower)	14-10-13	23:55:38	12.06	-0.58
Richardson (Lower)	14-10-14	11:55:38	12.04	-0.60
Richardson (Lower)	14-10-14	23:55:38	12.01	-0.63
Richardson (Lower)	14-10-15	11:55:38	12.01	-0.63
Richardson (Lower)	14-10-15	23:55:38	11.97	-0.67
Richardson (Lower)	14-10-16	11:55:38	11.95	-0.69
Richardson (Lower)	14-10-16	23:55:38	11.90	-0.74
Richardson (Lower)	14-10-17	11:55:38	11.85	-0.79
Richardson (Lower)	14-10-17	23:55:38	11.88	-0.76
Richardson (Lower)	14-10-18	11:55:38	11.85	-0.79

Richardson (Lower)	14-10-18	23:55:38	11.87	-0.77
Richardson (Lower)	14-10-19	11:55:38	11.95	-0.69
Richardson (Lower)	14-10-19	23:55:38	11.95	-0.69
Richardson (Lower)	14-10-20	11:55:38	11.97	-0.67
Richardson (Lower)	14-10-20	23:55:38	11.98	-0.66
Richardson (Lower)	14-10-21	11:55:38	12.00	-0.64
Richardson (Lower)	14-10-21	23:55:38	12.04	-0.60
Richardson (Lower)	14-10-22	11:55:38	12.06	-0.58
Richardson (Lower)	14-10-22	23:55:38	12.02	-0.62
Richardson (Lower)	14-10-23	11:55:38	11.97	-0.67
Richardson (Lower)	14-10-23	23:55:38	11.98	-0.66
Richardson (Lower)	14-10-24	11:55:38	11.99	-0.65
Richardson (Lower)	14-10-24	23:55:38	12.01	-0.63
Richardson (Lower)	14-10-25	11:55:38	11.99	-0.65
Richardson (Lower)	14-10-25	23:55:38	11.92	-0.72
Richardson (Lower)	14-10-26	11:55:38	11.93	-0.71
Richardson (Lower)	14-10-26	23:55:38	11.99	-0.65
Richardson (Lower)	14-10-27	11:55:38	12.07	-0.57
Richardson (Lower)	14-10-27	23:55:38	12.11	-0.53
Richardson (Lower)	14-10-28	11:55:38	12.13	-0.51
Richardson (Lower)	14-10-28	23:55:38	12.10	-0.54
Richardson (Lower)	14-10-29	11:55:38	12.06	-0.58
Richardson (Lower)	14-10-29	23:55:38	12.07	-0.57
Richardson (Lower)	14-10-30	11:55:38	12.09	-0.55
Richardson (Lower)	14-10-30	23:55:38	12.12	-0.52
Richardson (Lower)	14-10-31	11:55:38	12.12	-0.52
Richardson (Lower)	14-10-31	23:55:38	12.13	-0.51
Richardson (Lower)	14-11-01	11:55:38	12.11	-0.53
Richardson (Lower)	14-11-01	23:55:38	12.09	-0.55
Richardson (Lower)	14-11-02	11:55:38	12.05	-0.59
Richardson (Lower)	14-11-02	23:55:38	12.01	-0.63
Richardson (Lower)	14-11-03	11:55:38	12.04	-0.60
Richardson (Lower)	14-11-03	23:55:38	12.09	-0.55
Richardson (Lower)	14-11-04	11:55:38	12.11	-0.53
Richardson (Lower)	14-11-04	23:55:38	12.06	-0.58
Richardson (Lower)	14-11-05	11:55:38	12.05	-0.59
Richardson (Lower)	14-11-05	23:55:38	12.09	-0.55
Richardson (Lower)	14-11-06	11:55:38	12.06	-0.58
Richardson (Lower)	14-11-06	23:55:38	11.95	-0.69
Richardson (Lower)	14-11-07	11:55:38	11.90	-0.74
Richardson (Lower)	14-11-07	23:55:38	11.95	-0.69

Richardson (Lower)	14-11-08	11:55:38	12.02	-0.62
Richardson (Lower)	14-11-08	23:55:38	12.00	-0.64
Richardson (Lower)	14-11-09	11:55:38	12.00	-0.64
Richardson (Lower)	14-11-09	23:55:38	12.03	-0.60
Richardson (Lower)	14-11-10	11:55:38	12.08	-0.56
Richardson (Lower)	14-11-10	23:55:38	12.09	-0.55
Richardson (Lower)	14-11-11	11:55:38	12.05	-0.59
Richardson (Lower)	14-11-11	23:55:38	12.02	-0.62
Richardson (Lower)	14-11-12	11:55:38	11.97	-0.67
Richardson (Lower)	14-11-12	23:55:38	12.03	-0.61
Richardson (Lower)	14-11-13	11:55:38	12.02	-0.62
Richardson (Lower)	14-11-13	23:55:38	12.00	-0.64
Richardson (Lower)	14-11-14	11:55:38	11.98	-0.66
Richardson (Lower)	14-11-14	23:55:38	12.01	-0.63
Richardson (Lower)	14-11-15	11:55:38	12.05	-0.59
Richardson (Lower)	14-11-15	23:55:38	12.07	-0.57
Richardson (Lower)	14-11-16	11:55:38	12.06	-0.58
Richardson (Lower)	14-11-16	23:55:38	12.01	-0.63
Richardson (Lower)	14-11-17	11:55:38	11.93	-0.71
Richardson (Lower)	14-11-17	23:55:38	11.79	-0.85
Richardson (Lower)	14-11-18	11:55:38	11.81	-0.83
Richardson (Lower)	14-11-18	23:55:38	11.86	-0.78
Richardson (Lower)	14-11-19	11:55:38	11.95	-0.69
Richardson (Lower)	14-11-19	23:55:38	11.95	-0.69
Richardson (Lower)	14-11-20	11:55:38	11.87	-0.77
Richardson (Lower)	14-11-20	23:55:38	11.88	-0.76
Richardson (Lower)	14-11-21	11:55:38	11.95	-0.68
Richardson (Lower)	14-11-21	23:55:38	12.03	-0.61
Richardson (Lower)	14-11-22	11:55:38	11.97	-0.67
Richardson (Lower)	14-11-22	23:55:38	11.90	-0.74
Richardson (Lower)	14-11-23	11:55:38	11.96	-0.68
Richardson (Lower)	14-11-23	23:55:38	11.96	-0.68
Richardson (Lower)	14-11-24	11:55:38	11.81	-0.82
Richardson (Lower)	14-11-24	23:55:38	11.78	-0.86
Richardson (Lower)	14-11-25	11:55:38	11.87	-0.77
Richardson (Lower)	14-11-25	23:55:38	11.93	-0.71
Richardson (Lower)	14-11-26	11:55:38	12.00	-0.64
Richardson (Lower)	14-11-26	23:55:38	11.90	-0.74
Richardson (Lower)	14-11-27	11:55:38	11.92	-0.72
Richardson (Lower)	14-11-27	23:55:38	11.95	-0.69
Richardson (Lower)	14-11-28	11:55:38	11.95	-0.69

Richardson (Lower)	14-11-28	23:55:38	11.98	-0.66
Richardson (Lower)	14-11-29	11:55:38	12.02	-0.62
Richardson (Lower)	14-11-29	23:55:38	11.99	-0.65
Richardson (Lower)	14-11-30	11:55:38	11.95	-0.69
Richardson (Lower)	14-11-30	23:55:38	11.91	-0.73
Richardson (Lower)	14-12-01	11:55:38	11.94	-0.70
Richardson (Lower)	14-12-01	23:55:38	12.07	-0.57
Richardson (Lower)	14-12-02	11:55:38	12.16	-0.47
Richardson (Lower)	14-12-02	23:55:38	12.10	-0.54
Richardson (Lower)	14-12-03	11:55:38	11.92	-0.72
Richardson (Lower)	14-12-03	23:55:38	11.91	-0.73
Richardson (Lower)	14-12-04	11:55:38	12.03	-0.61
Richardson (Lower)	14-12-04	23:55:38	12.12	-0.52
Richardson (Lower)	14-12-05	11:55:38	12.14	-0.50
Richardson (Lower)	14-12-05	23:55:38	12.09	-0.55
Richardson (Lower)	14-12-06	11:55:38	12.02	-0.62
Richardson (Lower)	14-12-06	23:55:38	12.04	-0.60
Richardson (Lower)	14-12-07	11:55:38	12.13	-0.51
Richardson (Lower)	14-12-07	23:55:38	12.18	-0.46
Richardson (Lower)	14-12-08	11:55:38	12.17	-0.47
Richardson (Lower)	14-12-08	23:55:38	12.12	-0.52
Richardson (Lower)	14-12-09	11:55:38	12.04	-0.60
Richardson (Lower)	14-12-09	23:55:38	11.91	-0.73
Richardson (Lower)	14-12-10	11:55:38	11.87	-0.77
Richardson (Lower)	14-12-10	23:55:38	11.80	-0.84
Richardson (Lower)	14-12-11	11:55:38	11.81	-0.82
Richardson (Lower)	14-12-11	23:55:38	11.87	-0.77
Richardson (Lower)	14-12-12	11:55:38	11.91	-0.73
Richardson (Lower)	14-12-12	23:55:38	11.92	-0.72
Richardson (Lower)	14-12-13	11:55:38	11.90	-0.74
Richardson (Lower)	14-12-13	23:55:38	11.90	-0.74
Richardson (Lower)	14-12-14	11:55:38	11.91	-0.73
Richardson (Lower)	14-12-14	23:55:38	11.94	-0.70
Richardson (Lower)	14-12-15	11:55:38	11.98	-0.66
Richardson (Lower)	14-12-15	23:55:38	11.99	-0.65
Richardson (Lower)	14-12-16	11:55:38	11.99	-0.65
Richardson (Lower)	14-12-16	23:55:38	11.94	-0.70
Richardson (Lower)	14-12-17	11:55:38	11.91	-0.73
Richardson (Lower)	14-12-17	23:55:38	11.88	-0.76
Richardson (Lower)	14-12-18	11:55:38	11.90	-0.74
Richardson (Lower)	14-12-18	23:55:38	11.94	-0.70

Richardson (Lower)	14-12-19	11:55:38	11.99	-0.65
Richardson (Lower)	14-12-19	23:55:38	12.07	-0.57
Richardson (Lower)	14-12-20	11:55:38	12.11	-0.53
Richardson (Lower)	14-12-20	23:55:38	12.13	-0.51
Richardson (Lower)	14-12-21	11:55:38	12.13	-0.51
Richardson (Lower)	14-12-21	23:55:38	12.15	-0.49
Richardson (Lower)	14-12-22	11:55:38	12.16	-0.48
Richardson (Lower)	14-12-22	23:55:38	12.15	-0.49
Richardson (Lower)	14-12-23	11:55:38	12.15	-0.49
Richardson (Lower)	14-12-23	23:55:38	12.13	-0.51
Richardson (Lower)	14-12-24	11:55:38	12.07	-0.57
Richardson (Lower)	14-12-24	23:55:38	11.93	-0.71
Richardson (Lower)	14-12-25	11:55:38	11.91	-0.73
Richardson (Lower)	14-12-25	23:55:38	12.06	-0.58
Richardson (Lower)	14-12-26	11:55:38	12.14	-0.50
Richardson (Lower)	14-12-26	23:55:38	12.17	-0.47
Richardson (Lower)	14-12-27	11:55:38	12.20	-0.44
Richardson (Lower)	14-12-27	23:55:38	12.15	-0.49
Richardson (Lower)	14-12-28	11:55:38	12.09	-0.55
Richardson (Lower)	14-12-28	23:55:38	12.17	-0.47
Richardson (Lower)	14-12-29	11:55:38	12.22	-0.42
Richardson (Lower)	14-12-29	23:55:38	12.27	-0.37
Richardson (Lower)	14-12-30	11:55:38	12.31	-0.33
Richardson (Lower)	14-12-30	23:55:38	12.30	-0.34
Richardson (Lower)	14-12-31	11:55:38	12.28	-0.36
Richardson (Lower)	14-12-31	23:55:38	12.23	-0.41
Richardson (Lower)	15-01-01	11:55:38	12.19	-0.45
Richardson (Lower)	15-01-01	23:55:38	12.17	-0.46
Richardson (Lower)	15-01-02	11:55:38	12.25	-0.39
Richardson (Lower)	15-01-02	23:55:38	12.37	-0.26
Richardson (Lower)	15-01-03	11:55:38	12.45	-0.19
Richardson (Lower)	15-01-03	23:55:38	12.37	-0.26
Richardson (Lower)	15-01-04	11:55:38	12.20	-0.44
Richardson (Lower)	15-01-04	23:55:38	12.11	-0.53
Richardson (Lower)	15-01-05	11:55:38	12.23	-0.41
Richardson (Lower)	15-01-05	23:55:38	12.32	-0.32
Richardson (Lower)	15-01-06	11:55:38	12.33	-0.31
Richardson (Lower)	15-01-06	23:55:38	12.25	-0.39
Richardson (Lower)	15-01-07	11:55:38	12.18	-0.46
Richardson (Lower)	15-01-07	23:55:38	12.29	-0.35
Richardson (Lower)	15-01-08	11:55:38	12.32	-0.32

Richardson (Lower)	15-01-08	23:55:38	12.30	-0.33
Richardson (Lower)	15-01-09	11:55:38	12.21	-0.43
Richardson (Lower)	15-01-09	23:55:38	12.25	-0.39
Richardson (Lower)	15-01-10	11:55:38	12.30	-0.34
Richardson (Lower)	15-01-10	23:55:38	12.32	-0.32
Richardson (Lower)	15-01-11	11:55:38	12.35	-0.29
Richardson (Lower)	15-01-11	23:55:38	12.29	-0.35
Richardson (Lower)	15-01-12	11:55:38	12.20	-0.44
Richardson (Lower)	15-01-12	23:55:38	12.18	-0.46
Richardson (Lower)	15-01-13	11:55:38	12.29	-0.35
Richardson (Lower)	15-01-13	23:55:38	12.27	-0.37
Richardson (Lower)	15-01-14	11:55:38	12.18	-0.46
Richardson (Lower)	15-01-14	23:55:38	12.13	-0.51
Richardson (Lower)	15-01-15	11:55:38	12.07	-0.57
Richardson (Lower)	15-01-15	23:55:38	11.96	-0.68
Richardson (Lower)	15-01-16	11:55:38	11.88	-0.75
Richardson (Lower)	15-01-16	23:55:38	12.02	-0.62
Richardson (Lower)	15-01-17	11:55:38	12.12	-0.52
Richardson (Lower)	15-01-17	23:55:38	12.06	-0.58
Richardson (Lower)	15-01-18	11:55:38	12.02	-0.62
Richardson (Lower)	15-01-18	23:55:38	11.89	-0.75
Richardson (Lower)	15-01-19	11:55:38	11.89	-0.74
Richardson (Lower)	15-01-19	23:55:38	11.92	-0.72
Richardson (Lower)	15-01-20	11:55:38	11.95	-0.69
Richardson (Lower)	15-01-20	23:55:38	12.02	-0.62
Richardson (Lower)	15-01-21	11:55:38	12.08	-0.55
Richardson (Lower)	15-01-21	23:55:38	12.10	-0.54
Richardson (Lower)	15-01-22	11:55:38	12.09	-0.55
Richardson (Lower)	15-01-22	23:55:38	12.09	-0.55
Richardson (Lower)	15-01-23	11:55:38	12.05	-0.59
Richardson (Lower)	15-01-23	23:55:38	11.96	-0.68
Richardson (Lower)	15-01-24	11:55:38	11.87	-0.77
Richardson (Lower)	15-01-24	23:55:38	11.73	-0.91
Richardson (Lower)	15-01-25	11:55:38	11.83	-0.81
Richardson (Lower)	15-01-25	23:55:38	11.97	-0.67
Richardson (Lower)	15-01-26	11:55:38	12.01	-0.63
Richardson (Lower)	15-01-26	23:55:38	11.99	-0.65
Richardson (Lower)	15-01-27	11:55:38	11.88	-0.76
Richardson (Lower)	15-01-27	23:55:38	11.87	-0.77
Richardson (Lower)	15-01-28	11:55:38	11.93	-0.71
Richardson (Lower)	15-01-28	23:55:38	12.01	-0.63

Richardson (Lower)	15-01-29	11:55:38	12.02	-0.62
Richardson (Lower)	15-01-29	23:55:38	11.92	-0.72
Richardson (Lower)	15-01-30	11:55:38	11.85	-0.79
Richardson (Lower)	15-01-30	23:55:38	11.87	-0.76
Richardson (Lower)	15-01-31	11:55:38	11.88	-0.76
Richardson (Lower)	15-01-31	23:55:38	11.89	-0.75
Richardson (Lower)	15-02-01	11:55:38	11.91	-0.73
Richardson (Lower)	15-02-01	23:55:38	11.92	-0.72
Richardson (Lower)	15-02-02	11:55:38	11.82	-0.82
Richardson (Lower)	15-02-02	23:55:38	11.78	-0.86
Richardson (Lower)	15-02-03	11:55:38	11.88	-0.76
Richardson (Lower)	15-02-03	23:55:38	11.90	-0.74
Richardson (Lower)	15-02-04	11:55:38	11.88	-0.76
Richardson (Lower)	15-02-04	23:55:38	11.80	-0.84
Richardson (Lower)	15-02-05	11:55:38	11.83	-0.81
Richardson (Lower)	15-02-05	23:55:38	11.83	-0.81
Richardson (Lower)	15-02-06	11:55:38	11.80	-0.84
Richardson (Lower)	15-02-06	23:55:38	11.76	-0.88
Richardson (Lower)	15-02-07	11:55:38	11.79	-0.85
Richardson (Lower)	15-02-07	23:55:38	11.80	-0.83
Richardson (Lower)	15-02-08	11:55:38	11.82	-0.82
Richardson (Lower)	15-02-08	23:55:38	11.82	-0.81
Richardson (Lower)	15-02-09	11:55:38	11.86	-0.78
Richardson (Lower)	15-02-09	23:55:38	11.82	-0.82
Richardson (Lower)	15-02-10	11:55:38	11.79	-0.85
Richardson (Lower)	15-02-10	23:55:38	11.80	-0.84
Richardson (Lower)	15-02-11	11:55:38	11.76	-0.88
Richardson (Lower)	15-02-11	23:55:38	11.68	-0.96
Richardson (Lower)	15-02-12	11:55:38	11.61	-1.03
Richardson (Lower)	15-02-12	23:55:38	11.60	-1.04
Richardson (Lower)	15-02-13	11:55:38	11.64	-1.00
Richardson (Lower)	15-02-13	23:55:38	11.66	-0.98
Richardson (Lower)	15-02-14	11:55:38	11.59	-1.05
Richardson (Lower)	15-02-14	23:55:38	11.53	-1.11
Richardson (Lower)	15-02-15	11:55:38	11.50	-1.14
Richardson (Lower)	15-02-15	23:55:38	11.52	-1.12
Richardson (Lower)	15-02-16	11:55:38	11.52	-1.12
Richardson (Lower)	15-02-16	23:55:38	11.56	-1.08
Richardson (Lower)	15-02-17	11:55:38	11.52	-1.12
Richardson (Lower)	15-02-17	23:55:38	11.48	-1.16
Richardson (Lower)	15-02-18	11:55:38	11.45	-1.19

Richardson (Lower)	15-02-18	23:55:38	11.38	-1.26
Richardson (Lower)	15-02-19	11:55:38	11.30	-1.34
Richardson (Lower)	15-02-19	23:55:38	11.29	-1.35
Richardson (Lower)	15-02-20	11:55:38	11.35	-1.29
Richardson (Lower)	15-02-20	23:55:38	11.47	-1.17
Richardson (Lower)	15-02-21	11:55:38	11.47	-1.17
Richardson (Lower)	15-02-21	23:55:38	11.38	-1.26
Richardson (Lower)	15-02-22	11:55:38	11.37	-1.27
Richardson (Lower)	15-02-22	23:55:38	11.33	-1.31
Richardson (Lower)	15-02-23	11:55:38	11.32	-1.32
Richardson (Lower)	15-02-23	23:55:38	11.32	-1.32
Richardson (Lower)	15-02-24	11:55:38	11.28	-1.36
Richardson (Lower)	15-02-24	23:55:38	11.14	-1.50
Richardson (Lower)	15-02-25	11:55:38	11.08	-1.56
Richardson (Lower)	15-02-25	23:55:38	11.15	-1.49
Richardson (Lower)	15-02-26	11:55:38	11.19	-1.45
Richardson (Lower)	15-02-26	23:55:38	11.18	-1.45
Richardson (Lower)	15-02-27	11:55:38	11.23	-1.41
Richardson (Lower)	15-02-27	23:55:38	11.28	-1.36
Richardson (Lower)	15-02-28	11:55:38	11.33	-1.31
Richardson (Lower)	15-02-28	23:55:38	11.31	-1.33
Richardson (Lower)	15-03-01	11:55:38	11.26	-1.38
Richardson (Lower)	15-03-01	23:55:38	11.10	-1.54
Richardson (Lower)	15-03-02	11:55:38	11.02	-1.62
Richardson (Lower)	15-03-02	23:55:38	11.11	-1.53
Richardson (Lower)	15-03-03	11:55:38	11.13	-1.51
Richardson (Lower)	15-03-03	23:55:38	10.93	-1.71
Richardson (Lower)	15-03-04	11:55:38	10.91	-1.73
Richardson (Lower)	15-03-04	23:55:38	10.93	-1.71
Richardson (Lower)	15-03-05	11:55:38	11.01	-1.63
Richardson (Lower)	15-03-05	23:55:38	11.06	-1.58
Richardson (Lower)	15-03-06	11:55:38	11.08	-1.56
Richardson (Lower)	15-03-06	23:55:38	11.00	-1.64
Richardson (Lower)	15-03-07	11:55:38	10.93	-1.71
Richardson (Lower)	15-03-07	23:55:38	10.90	-1.74
Richardson (Lower)	15-03-08	11:55:38	10.89	-1.75
Richardson (Lower)	15-03-08	23:55:38	10.89	-1.75
Richardson (Lower)	15-03-09	11:55:38	10.87	-1.77
Richardson (Lower)	15-03-09	23:55:38	10.91	-1.73
Richardson (Lower)	15-03-10	11:55:38	10.93	-1.71
Richardson (Lower)	15-03-10	23:55:38	10.80	-1.84

Richardson (Lower)	15-03-11	11:55:38	10.75	-1.88
Richardson (Lower)	15-03-11	23:55:38	10.76	-1.88
Richardson (Lower)	15-03-12	11:55:38	10.90	-1.74
Richardson (Lower)	15-03-12	23:55:38	10.94	-1.70
Richardson (Lower)	15-03-13	11:55:38	10.93	-1.71
Richardson (Lower)	15-03-13	23:55:38	10.86	-1.78
Richardson (Lower)	15-03-14	11:55:38	10.78	-1.86
Richardson (Lower)	15-03-14	23:55:38	10.64	-2.00
Richardson (Lower)	15-03-15	11:55:38	10.60	-2.04
Richardson (Lower)	15-03-15	23:55:38	10.68	-1.96
Richardson (Lower)	15-03-16	11:55:38	10.66	-1.98
Richardson (Lower)	15-03-16	23:55:38	10.60	-2.04
Richardson (Lower)	15-03-17	11:55:38	10.49	-2.15
Richardson (Lower)	15-03-17	23:55:38	10.55	-2.08
Richardson (Lower)	15-03-18	11:55:38	10.57	-2.07
Richardson (Lower)	15-03-18	23:55:38	10.63	-2.01
Richardson (Lower)	15-03-19	11:55:38	10.66	-1.98
Richardson (Lower)	15-03-19	23:55:38	10.70	-1.94
Richardson (Lower)	15-03-20	11:55:38	10.68	-1.96
Richardson (Lower)	15-03-20	23:55:38	10.61	-2.03
Richardson (Lower)	15-03-21	11:55:38	10.54	-2.10
Richardson (Lower)	15-03-21	23:55:38	10.46	-2.18
Richardson (Lower)	15-03-22	11:55:38	10.50	-2.14
Richardson (Lower)	15-03-22	23:55:38	10.49	-2.15
Richardson (Lower)	15-03-23	11:55:38	10.52	-2.12
Richardson (Lower)	15-03-23	23:55:38	10.58	-2.06
Richardson (Lower)	15-03-24	11:55:38	10.58	-2.06
Richardson (Lower)	15-03-24	23:55:38	10.58	-2.06
Richardson (Lower)	15-03-25	11:55:38	10.57	-2.07
Richardson (Lower)	15-03-25	23:55:38	10.44	-2.20
Richardson (Lower)	15-03-26	11:55:38	10.36	-2.28
Richardson (Lower)	15-03-26	23:55:38	10.33	-2.31
Richardson (Lower)	15-03-27	11:55:38	10.32	-2.32
Richardson (Lower)	15-03-27	23:55:38	10.34	-2.30
Richardson (Lower)	15-03-28	11:55:38	10.34	-2.30
Richardson (Lower)	15-03-28	23:55:38	10.38	-2.26
Richardson (Lower)	15-03-29	11:55:38	10.41	-2.23
Richardson (Lower)	15-03-29	23:55:38	10.35	-2.29
Richardson (Lower)	15-03-30	11:55:38	10.23	-2.41
Richardson (Lower)	15-03-30	23:55:38	10.19	-2.45
Richardson (Lower)	15-03-31	11:55:38	10.22	-2.42

Richardson (Lower)	15-03-31	23:55:38	10.24	-2.40
Richardson (Lower)	15-04-01	11:55:38	10.28	-2.36
Richardson (Lower)	15-04-01	23:55:38	10.32	-2.32
Richardson (Lower)	15-04-02	11:55:38	10.31	-2.33
Richardson (Lower)	15-04-02	23:55:38	10.20	-2.44
Richardson (Lower)	15-04-03	11:55:38	10.20	-2.44
Richardson (Lower)	15-04-03	23:55:38	10.18	-2.46
Richardson (Lower)	15-04-04	11:55:38	10.14	-2.50
Richardson (Lower)	15-04-04	23:55:38	10.27	-2.37
Richardson (Lower)	15-04-05	11:55:38	10.29	-2.35
Richardson (Lower)	15-04-05	23:55:38	10.35	-2.29
Richardson (Lower)	15-04-06	11:55:38	10.38	-2.26
Richardson (Lower)	15-04-06	23:55:38	10.37	-2.27
Richardson (Lower)	15-04-07	11:55:38	10.40	-2.24
Richardson (Lower)	15-04-07	23:55:38	10.42	-2.22
Richardson (Lower)	15-04-08	11:55:38	10.43	-2.21
Richardson (Lower)	15-04-08	23:55:38	10.41	-2.23
Richardson (Lower)	15-04-09	11:55:38	10.40	-2.24
Richardson (Lower)	15-04-09	23:55:38	10.34	-2.29
Richardson (Lower)	15-04-10	11:55:38	10.21	-2.43
Richardson (Lower)	15-04-10	23:55:38	10.12	-2.52
Richardson (Lower)	15-04-11	11:55:38	10.17	-2.47
Richardson (Lower)	15-04-11	23:55:38	10.26	-2.38
Richardson (Lower)	15-04-12	11:55:38	10.30	-2.34
Richardson (Lower)	15-04-12	23:55:38	10.33	-2.30
Richardson (Lower)	15-04-13	11:55:38	10.33	-2.31
Richardson (Lower)	15-04-13	23:55:38	10.25	-2.39
Richardson (Lower)	15-04-14	11:55:38	10.30	-2.34
Richardson (Lower)	15-04-14	23:55:38	10.33	-2.31
Richardson (Lower)	15-04-15	11:55:38	10.37	-2.27
Richardson (Lower)	15-04-15	23:55:38	10.47	-2.17
Richardson (Lower)	15-04-16	11:55:38	10.50	-2.14
Richardson (Lower)	15-04-16	23:55:38	10.43	-2.21
Richardson (Lower)	15-04-17	11:55:38	10.37	-2.27
Richardson (Lower)	15-04-17	23:55:38	10.40	-2.23
Richardson (Lower)	15-04-18	11:55:38	10.44	-2.20
Richardson (Lower)	15-04-18	23:55:38	10.54	-2.10
Richardson (Lower)	15-04-19	11:55:38	10.62	-2.02
Richardson (Lower)	15-04-19	23:55:38	10.63	-2.01
Richardson (Lower)	15-04-20	11:55:38	10.63	-2.01
Richardson (Lower)	15-04-20	23:55:38	10.57	-2.07

Richardson (Lower)	15-04-21	11:55:38	10.51	-2.13
Richardson (Lower)	15-04-21	23:55:38	10.60	-2.04
Richardson (Lower)	15-04-22	11:55:38	10.61	-2.02
Richardson (Lower)	15-04-22	23:55:38	10.57	-2.07
Richardson (Lower)	15-04-23	11:55:38	10.63	-2.01
Richardson (Lower)	15-04-23	23:55:38	10.67	-1.97
Richardson (Lower)	15-04-24	11:55:38	10.71	-1.93
Richardson (Lower)	15-04-24	23:55:38	10.73	-1.91
Richardson (Lower)	15-04-25	11:55:38	10.73	-1.91
Richardson (Lower)	15-04-25	23:55:38	10.74	-1.90
Richardson (Lower)	15-04-26	11:55:38	10.74	-1.90
Richardson (Lower)	15-04-26	23:55:38	10.73	-1.91
Richardson (Lower)	15-04-27	11:55:38	10.74	-1.90
Richardson (Lower)	15-04-27	23:55:38	10.78	-1.86
Richardson (Lower)	15-04-28	11:55:38	10.81	-1.83
Richardson (Lower)	15-04-28	23:55:38	10.77	-1.87
Richardson (Lower)	15-04-29	11:55:38	10.81	-1.83
Richardson (Lower)	15-04-29	23:55:38	10.86	-1.78
Richardson (Lower)	15-04-30	11:55:38	10.88	-1.76
Richardson (Lower)	15-04-30	23:55:38	10.93	-1.71
Richardson (Lower)	15-05-01	11:55:38	10.95	-1.69
Richardson (Lower)	15-05-01	23:55:38	10.95	-1.69
Richardson (Lower)	15-05-02	11:55:38	10.95	-1.69
Richardson (Lower)	15-05-02	23:55:38	10.97	-1.67
Richardson (Lower)	15-05-03	11:55:38	11.01	-1.63
Richardson (Lower)	15-05-03	23:55:38	11.08	-1.56
Richardson (Lower)	15-05-04	11:55:38	11.12	-1.52
Richardson (Lower)	15-05-04	23:55:38	11.13	-1.51
Richardson (Lower)	15-05-05	11:55:38	11.24	-1.40
Richardson (Lower)	15-05-05	23:55:38	11.30	-1.34
Richardson (Lower)	15-05-06	11:55:38	11.36	-1.28
Richardson (Lower)	15-05-06	23:55:38	11.37	-1.27
Richardson (Lower)	15-05-07	11:55:38	11.40	-1.24
Richardson (Lower)	15-05-07	23:55:38	11.42	-1.22
Richardson (Lower)	15-05-08	11:55:38	11.47	-1.16
Richardson (Lower)	15-05-08	23:55:38	11.51	-1.13
Richardson (Lower)	15-05-09	11:55:38	11.50	-1.14
Richardson (Lower)	15-05-09	23:55:38	11.48	-1.16
Richardson (Lower)	15-05-10	11:55:38	11.44	-1.20
Richardson (Lower)	15-05-10	23:55:38	11.45	-1.19
Richardson (Lower)	15-05-11	11:55:38	11.48	-1.16

Richardson (Lower)	15-05-11	23:55:38	11.47	-1.17
Richardson (Lower)	15-05-12	11:55:38	11.44	-1.20
Richardson (Lower)	15-05-12	23:55:38	11.50	-1.14
Richardson (Lower)	15-05-13	11:55:38	11.65	-0.99
Richardson (Lower)	15-05-13	23:55:38	11.75	-0.89
Richardson (Lower)	15-05-14	11:55:38	11.82	-0.82
Richardson (Lower)	15-05-14	23:55:38	11.83	-0.81
Richardson (Lower)	15-05-15	11:55:38	11.83	-0.81
Richardson (Lower)	15-05-15	23:55:38	11.80	-0.84
Richardson (Lower)	15-05-16	11:55:38	11.78	-0.86
Richardson (Lower)	15-05-16	23:55:38	11.77	-0.87
Richardson (Lower)	15-05-17	11:55:38	11.77	-0.87
Richardson (Lower)	15-05-17	23:55:38	11.79	-0.85
Richardson (Lower)	15-05-18	11:55:38	11.78	-0.86
Richardson (Lower)	15-05-18	23:55:38	11.71	-0.93
Richardson (Lower)	15-05-19	11:55:38	11.66	-0.98
Richardson (Lower)	15-05-19	23:55:38	11.64	-1.00
Richardson (Lower)	15-05-20	11:55:38	11.67	-0.97
Richardson (Lower)	15-05-20	23:55:38	11.74	-0.90
Richardson (Lower)	15-05-21	11:55:38	11.76	-0.88
Richardson (Lower)	15-05-21	23:55:38	11.74	-0.90
Richardson (Lower)	15-05-22	11:55:38	11.74	-0.89
Richardson (Lower)	15-05-22	23:55:38	11.83	-0.81
Richardson (Lower)	15-05-23	11:55:38	11.87	-0.77
Richardson (Lower)	15-05-23	23:55:38	11.86	-0.78
Richardson (Lower)	15-05-24	11:55:38	11.84	-0.80
Richardson (Lower)	15-05-24	23:55:38	11.85	-0.79
Richardson (Lower)	15-05-25	11:55:38	11.85	-0.79
Richardson (Lower)	15-05-25	23:55:38	11.81	-0.83
Richardson (Lower)	15-05-26	11:55:38	11.80	-0.84
Richardson (Lower)	15-05-26	23:55:38	11.82	-0.82
Richardson (Lower)	15-05-27	11:55:38	11.80	-0.84
Richardson (Lower)	15-05-27	23:55:38	11.83	-0.81
Richardson (Lower)	15-05-28	11:55:38	11.85	-0.79
Richardson (Lower)	15-05-28	23:55:38	11.94	-0.69
Richardson (Lower)	15-05-29	11:55:38	11.99	-0.65
Richardson (Lower)	15-05-29	23:55:38	12.01	-0.63
Richardson (Lower)	15-05-30	11:55:38	12.01	-0.63
Richardson (Lower)	15-05-30	23:55:38	12.04	-0.60
Richardson (Lower)	15-05-31	11:55:38	12.17	-0.46
Richardson (Lower)	15-05-31	23:55:38	12.28	-0.36

Richardson (Lower)	15-06-01	11:55:38	12.36	-0.28
Richardson (Lower)	15-06-01	23:55:38	12.43	-0.21
Richardson (Lower)	15-06-02	11:55:38	12.49	-0.15
Richardson (Lower)	15-06-02	23:55:38	12.54	-0.10
Richardson (Lower)	15-06-03	11:55:38	12.65	0.01
Richardson (Lower)	15-06-03	23:55:38	12.73	0.09
Richardson (Lower)	15-06-04	11:55:38	12.80	0.16
Richardson (Lower)	15-06-04	23:55:38	12.82	0.18
Richardson (Lower)	15-06-05	11:55:38	12.79	0.16
Richardson (Lower)	15-06-05	23:55:38	12.78	0.14
Richardson (Lower)	15-06-06	11:55:38	12.84	0.20
Richardson (Lower)	15-06-06	23:55:38	12.89	0.25
Richardson (Lower)	15-06-07	11:55:38	12.92	0.28
Richardson (Lower)	15-06-07	23:55:38	12.90	0.26
Trente-et-un-milles	*see text for data source*			
Umbagog	14-08-29	0:13:01	6.86	-0.34
Umbagog	14-08-29	12:13:01	6.91	-0.29
Umbagog	14-08-30	0:13:01	6.92	-0.28
Umbagog	14-08-30	12:13:01	6.89	-0.30
Umbagog	14-08-31	0:13:01	6.84	-0.35
Umbagog	14-08-31	12:13:01	6.81	-0.38
Umbagog	14-09-01	0:13:01	6.79	-0.41
Umbagog	14-09-01	12:13:01	6.79	-0.41
Umbagog	14-09-02	0:13:01	6.78	-0.41
Umbagog	14-09-02	12:13:01	6.74	-0.46
Umbagog	14-09-03	0:13:01	6.69	-0.50
Umbagog	14-09-03	12:13:01	6.76	-0.43
Umbagog	14-09-04	0:13:01	6.82	-0.38
Umbagog	14-09-04	12:13:01	6.83	-0.37
Umbagog	14-09-05	0:13:01	6.82	-0.38
Umbagog	14-09-05	12:13:01	6.79	-0.40
Umbagog	14-09-06	0:13:01	6.74	-0.46
Umbagog	14-09-06	12:13:01	6.70	-0.50
Umbagog	14-09-07	0:13:01	6.73	-0.47
Umbagog	14-09-07	12:13:01	6.78	-0.42
Umbagog	14-09-08	0:13:01	6.83	-0.37
Umbagog	14-09-08	12:13:01	6.87	-0.33
Umbagog	14-09-09	0:13:01	6.87	-0.33
Umbagog	14-09-09	12:13:01	6.85	-0.35
Umbagog	14-09-10	0:13:01	6.80	-0.40
Umbagog	14-09-10	12:13:01	6.76	-0.43

Umbagog	14-09-11	0:13:01	6.72	-0.48
Umbagog	14-09-11	12:13:01	6.64	-0.56
Umbagog	14-09-12	0:13:01	6.69	-0.51
Umbagog	14-09-12	12:13:01	6.75	-0.45
Umbagog	14-09-13	0:13:01	6.80	-0.40
Umbagog	14-09-13	12:13:01	6.79	-0.41
Umbagog	14-09-14	0:13:01	6.73	-0.47
Umbagog	14-09-14	12:13:01	6.77	-0.43
Umbagog	14-09-15	0:13:01	6.76	-0.44
Umbagog	14-09-15	12:13:01	6.74	-0.46
Umbagog	14-09-16	0:13:01	6.70	-0.49
Umbagog	14-09-16	12:13:01	6.67	-0.53
Umbagog	14-09-17	0:13:01	6.67	-0.53
Umbagog	14-09-17	12:13:01	6.67	-0.53
Umbagog	14-09-18	0:13:01	6.65	-0.55
Umbagog	14-09-18	12:13:01	6.66	-0.53
Umbagog	14-09-19	0:13:01	6.72	-0.47
Umbagog	14-09-19	12:13:01	6.78	-0.42
Umbagog	14-09-20	0:13:01	6.76	-0.44
Umbagog	14-09-20	12:13:01	6.70	-0.49
Umbagog	14-09-21	0:13:01	6.65	-0.55
Umbagog	14-09-21	12:13:01	6.59	-0.61
Umbagog	14-09-22	0:13:01	6.49	-0.71
Umbagog	14-09-22	12:13:01	6.56	-0.64
Umbagog	14-09-23	0:13:01	6.65	-0.55
Umbagog	14-09-23	12:13:01	6.70	-0.49
Umbagog	14-09-24	0:13:01	6.77	-0.43
Umbagog	14-09-24	12:13:01	6.83	-0.37
Umbagog	14-09-25	0:13:01	6.81	-0.39
Umbagog	14-09-25	12:13:01	6.77	-0.42
Umbagog	14-09-26	0:13:01	6.73	-0.47
Umbagog	14-09-26	12:13:01	6.72	-0.48
Umbagog	14-09-27	0:13:01	6.71	-0.49
Umbagog	14-09-27	12:13:01	6.72	-0.48
Umbagog	14-09-28	0:13:01	6.72	-0.47
Umbagog	14-09-28	12:13:01	6.69	-0.51
Umbagog	14-09-29	0:13:01	6.66	-0.53
Umbagog	14-09-29	12:13:01	6.67	-0.53
Umbagog	14-09-30	0:13:01	6.68	-0.52
Umbagog	14-09-30	12:13:01	6.68	-0.52
Umbagog	14-10-01	0:13:01	6.69	-0.50

Umbagog	14-10-01	12:13:01	6.71	-0.49
Umbagog	14-10-02	0:13:01	6.72	-0.48
Umbagog	14-10-02	12:13:01	6.74	-0.46
Umbagog	14-10-03	0:13:01	6.73	-0.46
Umbagog	14-10-03	12:13:01	6.70	-0.50
Umbagog	14-10-04	0:13:01	6.64	-0.55
Umbagog	14-10-04	12:13:01	6.60	-0.60
Umbagog	14-10-05	0:13:01	6.54	-0.65
Umbagog	14-10-05	12:13:01	6.60	-0.60
Umbagog	14-10-06	0:13:01	6.68	-0.52
Umbagog	14-10-06	12:13:01	6.74	-0.46
Umbagog	14-10-07	0:13:01	6.76	-0.43
Umbagog	14-10-07	12:13:01	6.72	-0.47
Umbagog	14-10-08	0:13:01	6.73	-0.47
Umbagog	14-10-08	12:13:01	6.67	-0.53
Umbagog	14-10-09	0:13:01	6.72	-0.48
Umbagog	14-10-09	12:13:01	6.74	-0.46
Umbagog	14-10-10	0:13:01	6.77	-0.43
Umbagog	14-10-10	12:13:01	6.79	-0.40
Umbagog	14-10-11	0:13:01	6.83	-0.37
Umbagog	14-10-11	12:13:01	6.82	-0.38
Umbagog	14-10-12	0:13:01	6.82	-0.38
Umbagog	14-10-12	12:13:01	6.86	-0.33
Umbagog	14-10-13	0:13:01	6.87	-0.33
Umbagog	14-10-13	12:13:01	6.85	-0.35
Umbagog	14-10-14	0:13:01	6.83	-0.37
Umbagog	14-10-14	12:13:01	6.82	-0.37
Umbagog	14-10-15	0:13:01	6.78	-0.42
Umbagog	14-10-15	12:13:01	6.77	-0.42
Umbagog	14-10-16	0:13:01	6.74	-0.46
Umbagog	14-10-16	12:13:01	6.70	-0.50
Umbagog	14-10-17	0:13:01	6.65	-0.55
Umbagog	14-10-17	12:13:01	6.62	-0.57
Umbagog	14-10-18	0:13:01	6.66	-0.54
Umbagog	14-10-18	12:13:01	6.65	-0.55
Umbagog	14-10-19	0:13:01	6.68	-0.52
Umbagog	14-10-19	12:13:01	6.77	-0.42
Umbagog	14-10-20	0:13:01	6.80	-0.40
Umbagog	14-10-20	12:13:01	6.83	-0.37
Umbagog	14-10-21	0:13:01	6.84	-0.36
Umbagog	14-10-21	12:13:01	6.86	-0.33

Umbagog	14-10-22	0:13:01	6.90	-0.30
Umbagog	14-10-22	12:13:01	6.93	-0.27
Umbagog	14-10-23	0:13:01	6.90	-0.30
Umbagog	14-10-23	12:13:01	6.86	-0.33
Umbagog	14-10-24	0:13:01	6.88	-0.32
Umbagog	14-10-24	12:13:01	6.93	-0.27
Umbagog	14-10-25	0:13:01	7.00	-0.20
Umbagog	14-10-25	12:13:01	7.01	-0.19
Umbagog	14-10-26	0:13:01	6.96	-0.24
Umbagog	14-10-26	12:13:01	6.98	-0.22
Umbagog	14-10-27	0:13:01	7.05	-0.15
Umbagog	14-10-27	12:13:01	7.13	-0.07
Umbagog	14-10-28	0:13:01	7.19	0.00
Umbagog	14-10-28	12:13:01	7.21	0.01
Umbagog	14-10-29	0:13:01	7.18	-0.02
Umbagog	14-10-29	12:13:01	7.14	-0.06
Umbagog	14-10-30	0:13:01	7.14	-0.05
Umbagog	14-10-30	12:13:01	7.16	-0.03
Umbagog	14-10-31	0:13:01	7.18	-0.01
Umbagog	14-10-31	12:13:01	7.18	-0.01
Umbagog	14-11-01	0:13:01	7.18	-0.01
Umbagog	14-11-01	12:13:01	7.16	-0.04
Umbagog	14-11-02	0:13:01	7.12	-0.08
Umbagog	14-11-02	12:13:01	7.05	-0.14
Umbagog	14-11-03	0:13:01	7.03	-0.16
Umbagog	14-11-03	12:13:01	7.06	-0.13
Umbagog	14-11-04	0:13:01	7.09	-0.10
Umbagog	14-11-04	12:13:01	7.10	-0.10
Umbagog	14-11-05	0:13:01	7.05	-0.15
Umbagog	14-11-05	12:13:01	7.03	-0.17
Umbagog	14-11-06	0:13:01	7.05	-0.15
Umbagog	14-11-06	12:13:01	7.00	-0.20
Umbagog	14-11-07	0:13:01	6.88	-0.32
Umbagog	14-11-07	12:13:01	6.82	-0.38
Umbagog	14-11-08	0:13:01	6.87	-0.33
Umbagog	14-11-08	12:13:01	6.92	-0.28
Umbagog	14-11-09	0:13:01	6.90	-0.30
Umbagog	14-11-09	12:13:01	6.90	-0.30
Umbagog	14-11-10	0:13:01	6.92	-0.28
Umbagog	14-11-10	12:13:01	6.94	-0.25
Umbagog	14-11-11	0:13:01	6.95	-0.24

Umbagog	14-11-11	12:13:01	6.89	-0.31
Umbagog	14-11-12	0:13:01	6.86	-0.34
Umbagog	14-11-12	12:13:01	6.80	-0.40
Umbagog	14-11-13	0:13:01	6.85	-0.35
Umbagog	14-11-13	12:13:01	6.83	-0.36
Umbagog	14-11-14	0:13:01	6.79	-0.41
Umbagog	14-11-14	12:13:01	6.76	-0.44
Umbagog	14-11-15	0:13:01	6.79	-0.41
Umbagog	14-11-15	12:13:01	6.83	-0.37
Umbagog	14-11-16	0:13:01	6.83	-0.36
Umbagog	14-11-16	12:13:01	6.81	-0.38
Umbagog	14-11-17	0:13:01	6.74	-0.45
Umbagog	14-11-17	12:13:01	6.65	-0.55
Umbagog	14-11-18	0:13:01	6.50	-0.70
Umbagog	14-11-18	12:13:01	6.52	-0.67
Umbagog	14-11-19	0:13:01	6.57	-0.63
Umbagog	14-11-19	12:13:01	6.65	-0.55
Umbagog	14-11-20	0:13:01	6.62	-0.58
Umbagog	14-11-20	12:13:01	6.52	-0.68
Umbagog	14-11-21	0:13:01	6.52	-0.67
Umbagog	14-11-21	12:13:01	6.59	-0.61
Umbagog	14-11-22	0:13:01	6.66	-0.54
Umbagog	14-11-22	12:13:01	6.60	-0.60
Umbagog	14-11-23	0:13:01	6.52	-0.68
Umbagog	14-11-23	12:13:01	6.56	-0.64
Umbagog	14-11-24	0:13:01	6.56	-0.64
Umbagog	14-11-24	12:13:01	6.41	-0.79
Umbagog	14-11-25	0:13:01	6.40	-0.80
Umbagog	14-11-25	12:13:01	6.54	-0.66
Umbagog	14-11-26	0:13:01	6.63	-0.56
Umbagog	14-11-26	12:13:01	6.69	-0.50
Umbagog	14-11-27	0:13:01	6.60	-0.59
Umbagog	14-11-27	12:13:01	6.64	-0.56
Umbagog	14-11-28	0:13:01	6.67	-0.53
Umbagog	14-11-28	12:13:01	6.67	-0.53
Umbagog	14-11-29	0:13:01	6.70	-0.49
Umbagog	14-11-29	12:13:01	6.74	-0.46
Umbagog	14-11-30	0:13:01	6.70	-0.49
Umbagog	14-11-30	12:13:01	6.65	-0.55
Umbagog	14-12-01	0:13:01	6.61	-0.58
Umbagog	14-12-01	12:13:01	6.65	-0.55

Umbagog	14-12-02	0:13:01	6.78	-0.42
Umbagog	14-12-02	12:13:01	6.87	-0.32
Umbagog	14-12-03	0:13:01	6.80	-0.39
Umbagog	14-12-03	12:13:01	6.62	-0.58
Umbagog	14-12-04	0:13:01	6.62	-0.58
Umbagog	14-12-04	12:13:01	6.72	-0.47
Umbagog	14-12-05	0:13:01	6.82	-0.38
Umbagog	14-12-05	12:13:01	6.83	-0.36
Umbagog	14-12-06	0:13:01	6.77	-0.42
Umbagog	14-12-06	12:13:01	6.69	-0.51
Umbagog	14-12-07	0:13:01	6.72	-0.48
Umbagog	14-12-07	12:13:01	6.81	-0.39
Umbagog	14-12-08	0:13:01	6.85	-0.35
Umbagog	14-12-08	12:13:01	6.83	-0.36
Umbagog	14-12-09	0:13:01	6.77	-0.43
Umbagog	14-12-09	12:13:01	6.68	-0.52
Umbagog	14-12-10	0:13:01	6.54	-0.66
Umbagog	14-12-10	12:13:01	6.48	-0.72
Umbagog	14-12-11	0:13:01	6.42	-0.78
Umbagog	14-12-11	12:13:01	6.44	-0.76
Umbagog	14-12-12	0:13:01	6.50	-0.70
Umbagog	14-12-12	12:13:01	6.55	-0.64
Umbagog	14-12-13	0:13:01	6.56	-0.63
Umbagog	14-12-13	12:13:01	6.55	-0.65
Umbagog	14-12-14	0:13:01	6.55	-0.64
Umbagog	14-12-14	12:13:01	6.56	-0.63
Umbagog	14-12-15	0:13:01	6.60	-0.60
Umbagog	14-12-15	12:13:01	6.64	-0.56
Umbagog	14-12-16	0:13:01	6.65	-0.55
Umbagog	14-12-16	12:13:01	6.63	-0.56
Umbagog	14-12-17	0:13:01	6.59	-0.61
Umbagog	14-12-17	12:13:01	6.54	-0.66
Umbagog	14-12-18	0:13:01	6.50	-0.70
Umbagog	14-12-18	12:13:01	6.52	-0.68
Umbagog	14-12-19	0:13:01	6.55	-0.64
Umbagog	14-12-19	12:13:01	6.61	-0.59
Umbagog	14-12-20	0:13:01	6.67	-0.53
Umbagog	14-12-20	12:13:01	6.71	-0.49
Umbagog	14-12-21	0:13:01	6.71	-0.49
Umbagog	14-12-21	12:13:01	6.71	-0.49
Umbagog	14-12-22	0:13:01	6.71	-0.49

Umbagog	14-12-22	12:13:01	6.71	-0.49
Umbagog	14-12-23	0:13:01	6.69	-0.50
Umbagog	14-12-23	12:13:01	6.68	-0.52
Umbagog	14-12-24	0:13:01	6.65	-0.55
Umbagog	14-12-24	12:13:01	6.58	-0.62
Umbagog	14-12-25	0:13:01	6.43	-0.76
Umbagog	14-12-25	12:13:01	6.41	-0.78
Umbagog	14-12-26	0:13:01	6.60	-0.60
Umbagog	14-12-26	12:13:01	6.72	-0.47
Umbagog	14-12-27	0:13:01	6.78	-0.42
Umbagog	14-12-27	12:13:01	6.83	-0.37
Umbagog	14-12-28	0:13:01	6.78	-0.42
Umbagog	14-12-28	12:13:01	6.73	-0.46
Umbagog	14-12-29	0:13:01	6.85	-0.35
Umbagog	14-12-29	12:13:01	6.92	-0.28
Umbagog	14-12-30	0:13:01	6.97	-0.22
Umbagog	14-12-30	12:13:01	7.01	-0.18
Umbagog	14-12-31	0:13:01	7.00	-0.20
Umbagog	14-12-31	12:13:01	6.97	-0.23
Umbagog	15-01-01	0:13:01	6.90	-0.29
Umbagog	15-01-01	12:13:01	6.85	-0.35
Umbagog	15-01-02	0:13:01	6.82	-0.38
Umbagog	15-01-02	12:13:01	6.89	-0.30
Umbagog	15-01-03	0:13:01	7.00	-0.20
Umbagog	15-01-03	12:13:01	7.07	-0.12
Umbagog	15-01-04	0:13:01	6.97	-0.22
Umbagog	15-01-04	12:13:01	6.78	-0.41
Umbagog	15-01-05	0:13:01	6.69	-0.50
Umbagog	15-01-05	12:13:01	6.81	-0.39
Umbagog	15-01-06	0:13:01	6.90	-0.30
Umbagog	15-01-06	12:13:01	6.91	-0.29
Umbagog	15-01-07	0:13:01	6.81	-0.38
Umbagog	15-01-07	12:13:01	6.73	-0.46
Umbagog	15-01-08	0:13:01	6.84	-0.35
Umbagog	15-01-08	12:13:01	6.85	-0.35
Umbagog	15-01-09	0:13:01	6.81	-0.39
Umbagog	15-01-09	12:13:01	6.71	-0.49
Umbagog	15-01-10	0:13:01	6.78	-0.41
Umbagog	15-01-10	12:13:01	6.87	-0.33
Umbagog	15-01-11	0:13:01	6.91	-0.29
Umbagog	15-01-11	12:13:01	6.97	-0.23

Umbagog	15-01-12	0:13:01	6.94	-0.26
Umbagog	15-01-12	12:13:01	6.87	-0.33
Umbagog	15-01-13	0:13:01	6.90	-0.30
Umbagog	15-01-13	12:13:01	7.04	-0.16
Umbagog	15-01-14	0:13:01	7.05	-0.15
Umbagog	15-01-14	12:13:01	6.98	-0.22
Umbagog	15-01-15	0:13:01	6.93	-0.27
Umbagog	15-01-15	12:13:01	6.86	-0.34
Umbagog	15-01-16	0:13:01	6.76	-0.44
Umbagog	15-01-16	12:13:01	6.69	-0.50
Umbagog	15-01-17	0:13:01	6.85	-0.35
Umbagog	15-01-17	12:13:01	6.94	-0.26
Umbagog	15-01-18	0:13:01	6.87	-0.33
Umbagog	15-01-18	12:13:01	6.83	-0.37
Umbagog	15-01-19	0:13:01	6.69	-0.51
Umbagog	15-01-19	12:13:01	6.69	-0.51
Umbagog	15-01-20	0:13:01	6.73	-0.47
Umbagog	15-01-20	12:13:01	6.77	-0.42
Umbagog	15-01-21	0:13:01	6.87	-0.32
Umbagog	15-01-21	12:13:01	6.95	-0.24
Umbagog	15-01-22	0:13:01	6.98	-0.22
Umbagog	15-01-22	12:13:01	6.97	-0.22
Umbagog	15-01-23	0:13:01	6.99	-0.21
Umbagog	15-01-23	12:13:01	6.96	-0.24
Umbagog	15-01-24	0:13:01	6.87	-0.33
Umbagog	15-01-24	12:13:01	6.77	-0.42
Umbagog	15-01-25	0:13:01	6.64	-0.55
Umbagog	15-01-25	12:13:01	6.76	-0.44
Umbagog	15-01-26	0:13:01	6.89	-0.30
Umbagog	15-01-26	12:13:01	6.94	-0.26
Umbagog	15-01-27	0:13:01	6.92	-0.28
Umbagog	15-01-27	12:13:01	6.81	-0.39
Umbagog	15-01-28	0:13:01	6.80	-0.39
Umbagog	15-01-28	12:13:01	6.87	-0.33
Umbagog	15-01-29	0:13:01	6.95	-0.25
Umbagog	15-01-29	12:13:01	6.95	-0.25
Umbagog	15-01-30	0:13:01	6.84	-0.36
Umbagog	15-01-30	12:13:01	6.78	-0.42
Umbagog	15-01-31	0:13:01	6.81	-0.39
Umbagog	15-01-31	12:13:01	6.82	-0.38
Umbagog	15-02-01	0:13:01	6.83	-0.37

Umbagog	15-02-01	12:13:01	6.85	-0.35
Umbagog	15-02-02	0:13:01	6.85	-0.34
Umbagog	15-02-02	12:13:01	6.75	-0.45
Umbagog	15-02-03	0:13:01	6.72	-0.48
Umbagog	15-02-03	12:13:01	6.81	-0.38
Umbagog	15-02-04	0:13:01	6.84	-0.36
Umbagog	15-02-04	12:13:01	6.81	-0.38
Umbagog	15-02-05	0:13:01	6.72	-0.48
Umbagog	15-02-05	12:13:01	6.76	-0.43
Umbagog	15-02-06	0:13:01	6.77	-0.43
Umbagog	15-02-06	12:13:01	6.74	-0.46
Umbagog	15-02-07	0:13:01	6.69	-0.51
Umbagog	15-02-07	12:13:01	6.72	-0.48
Umbagog	15-02-08	0:13:01	6.74	-0.46
Umbagog	15-02-08	12:13:01	6.75	-0.45
Umbagog	15-02-09	0:13:01	6.76	-0.44
Umbagog	15-02-09	12:13:01	6.78	-0.41
Umbagog	15-02-10	0:13:01	6.75	-0.45
Umbagog	15-02-10	12:13:01	6.72	-0.48
Umbagog	15-02-11	0:13:01	6.72	-0.48
Umbagog	15-02-11	12:13:01	6.66	-0.53
Umbagog	15-02-12	0:13:01	6.58	-0.62
Umbagog	15-02-12	12:13:01	6.50	-0.70
Umbagog	15-02-13	0:13:01	6.49	-0.71
Umbagog	15-02-13	12:13:01	6.54	-0.65
Umbagog	15-02-14	0:13:01	6.56	-0.63
Umbagog	15-02-14	12:13:01	6.49	-0.71
Umbagog	15-02-15	0:13:01	6.43	-0.77
Umbagog	15-02-15	12:13:01	6.41	-0.78
Umbagog	15-02-16	0:13:01	6.44	-0.76
Umbagog	15-02-16	12:13:01	6.43	-0.76
Umbagog	15-02-17	0:13:01	6.50	-0.70
Umbagog	15-02-17	12:13:01	6.47	-0.73
Umbagog	15-02-18	0:13:01	6.44	-0.75
Umbagog	15-02-18	12:13:01	6.44	-0.76
Umbagog	15-02-19	0:13:01	6.39	-0.81
Umbagog	15-02-19	12:13:01	6.33	-0.87
Umbagog	15-02-20	0:13:01	6.34	-0.85
Umbagog	15-02-20	12:13:01	6.42	-0.77
Umbagog	15-02-21	0:13:01	6.56	-0.63
Umbagog	15-02-21	12:13:01	6.57	-0.63

Umbagog	15-02-22	0:13:01	6.51	-0.69
Umbagog	15-02-22	12:13:01	6.51	-0.68
Umbagog	15-02-23	0:13:01	6.48	-0.71
Umbagog	15-02-23	12:13:01	6.51	-0.69
Umbagog	15-02-24	0:13:01	6.52	-0.68
Umbagog	15-02-24	12:13:01	6.49	-0.71
Umbagog	15-02-25	0:13:01	6.37	-0.83
Umbagog	15-02-25	12:13:01	6.32	-0.88
Umbagog	15-02-26	0:13:01	6.40	-0.80
Umbagog	15-02-26	12:13:01	6.43	-0.77
Umbagog	15-02-27	0:13:01	6.43	-0.76
Umbagog	15-02-27	12:13:01	6.48	-0.71
Umbagog	15-02-28	0:13:01	6.54	-0.66
Umbagog	15-02-28	12:13:01	6.58	-0.62
Umbagog	15-03-01	0:13:01	6.57	-0.63
Umbagog	15-03-01	12:13:01	6.51	-0.69
Umbagog	15-03-02	0:13:01	6.35	-0.84
Umbagog	15-03-02	12:13:01	6.28	-0.91
Umbagog	15-03-03	0:13:01	6.37	-0.83
Umbagog	15-03-03	12:13:01	6.39	-0.81
Umbagog	15-03-04	0:13:01	6.19	-1.01
Umbagog	15-03-04	12:13:01	6.17	-1.02
Umbagog	15-03-05	0:13:01	6.19	-1.01
Umbagog	15-03-05	12:13:01	6.27	-0.92
Umbagog	15-03-06	0:13:01	6.33	-0.87
Umbagog	15-03-06	12:13:01	6.34	-0.85
Umbagog	15-03-07	0:13:01	6.27	-0.93
Umbagog	15-03-07	12:13:01	6.21	-0.99
Umbagog	15-03-08	0:13:01	6.18	-1.02
Umbagog	15-03-08	12:13:01	6.15	-1.05
Umbagog	15-03-09	0:13:01	6.16	-1.04
Umbagog	15-03-09	12:13:01	6.14	-1.06
Umbagog	15-03-10	0:13:01	6.18	-1.02
Umbagog	15-03-10	12:13:01	6.18	-1.02
Umbagog	15-03-11	0:13:01	6.05	-1.15
Umbagog	15-03-11	12:13:01	6.00	-1.19
Umbagog	15-03-12	0:13:01	6.02	-1.18
Umbagog	15-03-12	12:13:01	6.18	-1.02
Umbagog	15-03-13	0:13:01	6.23	-0.97
Umbagog	15-03-13	12:13:01	6.23	-0.97
Umbagog	15-03-14	0:13:01	6.17	-1.03

Umbagog	15-03-14	12:13:01	6.10	-1.09
Umbagog	15-03-15	0:13:01	5.97	-1.23
Umbagog	15-03-15	12:13:01	5.94	-1.26
Umbagog	15-03-16	0:13:01	6.03	-1.17
Umbagog	15-03-16	12:13:01	6.01	-1.18
Umbagog	15-03-17	0:13:01	5.97	-1.23
Umbagog	15-03-17	12:13:01	5.87	-1.33
Umbagog	15-03-18	0:13:01	5.96	-1.24
Umbagog	15-03-18	12:13:01	5.99	-1.21
Umbagog	15-03-19	0:13:01	6.05	-1.14
Umbagog	15-03-19	12:13:01	6.10	-1.10
Umbagog	15-03-20	0:13:01	6.14	-1.05
Umbagog	15-03-20	12:13:01	6.13	-1.07
Umbagog	15-03-21	0:13:01	6.08	-1.12
Umbagog	15-03-21	12:13:01	6.01	-1.19
Umbagog	15-03-22	0:13:01	5.95	-1.25
Umbagog	15-03-22	12:13:01	6.00	-1.19
Umbagog	15-03-23	0:13:01	6.01	-1.19
Umbagog	15-03-23	12:13:01	6.04	-1.16
Umbagog	15-03-24	0:13:01	6.11	-1.09
Umbagog	15-03-24	12:13:01	6.12	-1.08
Umbagog	15-03-25	0:13:01	6.13	-1.07
Umbagog	15-03-25	12:13:01	6.11	-1.09
Umbagog	15-03-26	0:13:01	5.98	-1.21
Umbagog	15-03-26	12:13:01	5.91	-1.29
Umbagog	15-03-27	0:13:01	5.89	-1.31
Umbagog	15-03-27	12:13:01	5.88	-1.31
Umbagog	15-03-28	0:13:01	5.93	-1.27
Umbagog	15-03-28	12:13:01	5.93	-1.26
Umbagog	15-03-29	0:13:01	5.99	-1.21
Umbagog	15-03-29	12:13:01	6.02	-1.18
Umbagog	15-03-30	0:13:01	5.96	-1.24
Umbagog	15-03-30	12:13:01	5.85	-1.34
Umbagog	15-03-31	0:13:01	5.83	-1.37
Umbagog	15-03-31	12:13:01	5.86	-1.34
Umbagog	15-04-01	0:13:01	5.89	-1.31
Umbagog	15-04-01	12:13:01	5.93	-1.26
Umbagog	15-04-02	0:13:01	5.96	-1.23
Umbagog	15-04-02	12:13:01	5.93	-1.26
Umbagog	15-04-03	0:13:01	5.80	-1.39
Umbagog	15-04-03	12:13:01	5.80	-1.39

Umbagog	15-04-04	0:13:01	5.78	-1.41
Umbagog	15-04-04	12:13:01	5.78	-1.42
Umbagog	15-04-05	0:13:01	5.91	-1.29
Umbagog	15-04-05	12:13:01	5.93	-1.26
Umbagog	15-04-06	0:13:01	6.02	-1.18
Umbagog	15-04-06	12:13:01	6.06	-1.13
Umbagog	15-04-07	0:13:01	6.06	-1.14
Umbagog	15-04-07	12:13:01	6.10	-1.10
Umbagog	15-04-08	0:13:01	6.12	-1.07
Umbagog	15-04-08	12:13:01	6.13	-1.07
Umbagog	15-04-09	0:13:01	6.11	-1.09
Umbagog	15-04-09	12:13:01	6.10	-1.10
Umbagog	15-04-10	0:13:01	6.04	-1.16
Umbagog	15-04-10	12:13:01	5.89	-1.30
Umbagog	15-04-11	0:13:01	5.82	-1.38
Umbagog	15-04-11	12:13:01	5.87	-1.32
Umbagog	15-04-12	0:13:01	5.98	-1.22
Umbagog	15-04-12	12:13:01	6.02	-1.18
Umbagog	15-04-13	0:13:01	6.07	-1.12
Umbagog	15-04-13	12:13:01	6.08	-1.12
Umbagog	15-04-14	0:13:01	6.03	-1.16
Umbagog	15-04-14	12:13:01	6.15	-1.05
Umbagog	15-04-15	0:13:01	6.30	-0.90
Umbagog	15-04-15	12:13:01	6.48	-0.72
Umbagog	15-04-16	0:13:01	6.65	-0.55
Umbagog	15-04-16	12:13:01	6.72	-0.48
Umbagog	15-04-17	0:13:01	6.69	-0.50
Umbagog	15-04-17	12:13:01	6.67	-0.52
Umbagog	15-04-18	0:13:01	6.71	-0.48
Umbagog	15-04-18	12:13:01	6.77	-0.43
Umbagog	15-04-19	0:13:01	6.88	-0.32
Umbagog	15-04-19	12:13:01	6.94	-0.25
Umbagog	15-04-20	0:13:01	6.92	-0.28
Umbagog	15-04-20	12:13:01	6.90	-0.30
Umbagog	15-04-21	0:13:01	6.78	-0.42
Umbagog	15-04-21	12:13:01	6.64	-0.55
Umbagog	15-04-22	0:13:01	6.72	-0.48
Umbagog	15-04-22	12:13:01	6.72	-0.47
Umbagog	15-04-23	0:13:01	6.67	-0.53
Umbagog	15-04-23	12:13:01	6.70	-0.49
Umbagog	15-04-24	0:13:01	6.72	-0.48

Umbagog	15-04-24	12:13:01	6.72	-0.47
Umbagog	15-04-25	0:13:01	6.72	-0.48
Umbagog	15-04-25	12:13:01	6.68	-0.51
Umbagog	15-04-26	0:13:01	6.67	-0.52
Umbagog	15-04-26	12:13:01	6.65	-0.55
Umbagog	15-04-27	0:13:01	6.61	-0.59
Umbagog	15-04-27	12:13:01	6.59	-0.61
Umbagog	15-04-28	0:13:01	6.61	-0.59
Umbagog	15-04-28	12:13:01	6.63	-0.57
Umbagog	15-04-29	0:13:01	6.58	-0.62
Umbagog	15-04-29	12:13:01	6.61	-0.59
Umbagog	15-04-30	0:13:01	6.65	-0.54
Umbagog	15-04-30	12:13:01	6.67	-0.53
Umbagog	15-05-01	0:13:01	6.72	-0.48
Umbagog	15-05-01	12:13:01	6.72	-0.47
Umbagog	15-05-02	0:13:01	6.72	-0.48
Umbagog	15-05-02	12:13:01	6.72	-0.48
Umbagog	15-05-03	0:13:01	6.73	-0.47
Umbagog	15-05-03	12:13:01	6.76	-0.44
Umbagog	15-05-04	0:13:01	6.78	-0.42
Umbagog	15-05-04	12:13:01	6.79	-0.41
Umbagog	15-05-05	0:13:01	6.76	-0.44
Umbagog	15-05-05	12:13:01	6.83	-0.36
Umbagog	15-05-06	0:13:01	6.85	-0.35
Umbagog	15-05-06	12:13:01	6.85	-0.35
Umbagog	15-05-07	0:13:01	6.80	-0.40
Umbagog	15-05-07	12:13:01	6.77	-0.42
Umbagog	15-05-08	0:13:01	6.74	-0.45
Umbagog	15-05-08	12:13:01	6.76	-0.44
Umbagog	15-05-09	0:13:01	6.78	-0.42
Umbagog	15-05-09	12:13:01	6.74	-0.46
Umbagog	15-05-10	0:13:01	6.70	-0.50
Umbagog	15-05-10	12:13:01	6.66	-0.54
Umbagog	15-05-11	0:13:01	6.66	-0.54
Umbagog	15-05-11	12:13:01	6.68	-0.52
Umbagog	15-05-12	0:13:01	6.64	-0.55
Umbagog	15-05-12	12:13:01	6.60	-0.60
Umbagog	15-05-13	0:13:01	6.66	-0.54
Umbagog	15-05-13	12:13:01	6.79	-0.41
Umbagog	15-05-14	0:13:01	6.88	-0.31
Umbagog	15-05-14	12:13:01	6.93	-0.27

Umbagog	15-05-15	0:13:01	6.94	-0.26
Umbagog	15-05-15	12:13:01	6.93	-0.26
Umbagog	15-05-16	0:13:01	6.91	-0.28
Umbagog	15-05-16	12:13:01	6.91	-0.29
Umbagog	15-05-17	0:13:01	6.91	-0.28
Umbagog	15-05-17	12:13:01	6.93	-0.27
Umbagog	15-05-18	0:13:01	6.97	-0.23
Umbagog	15-05-18	12:13:01	6.96	-0.24
Umbagog	15-05-19	0:13:01	6.91	-0.28
Umbagog	15-05-19	12:13:01	6.87	-0.33
Umbagog	15-05-20	0:13:01	6.85	-0.35
Umbagog	15-05-20	12:13:01	6.88	-0.31
Umbagog	15-05-21	0:13:01	6.93	-0.26
Umbagog	15-05-21	12:13:01	6.94	-0.25
Umbagog	15-05-22	0:13:01	6.93	-0.27
Umbagog	15-05-22	12:13:01	6.93	-0.27
Umbagog	15-05-23	0:13:01	7.02	-0.17
Umbagog	15-05-23	12:13:01	7.07	-0.13
Umbagog	15-05-24	0:13:01	7.05	-0.15
Umbagog	15-05-24	12:13:01	7.05	-0.14
Umbagog	15-05-25	0:13:01	7.04	-0.15
Umbagog	15-05-25	12:13:01	7.05	-0.15
Umbagog	15-05-26	0:13:01	7.01	-0.19
Umbagog	15-05-26	12:13:01	7.01	-0.19
Umbagog	15-05-27	0:13:01	7.02	-0.18
Umbagog	15-05-27	12:13:01	7.01	-0.19
Umbagog	15-05-28	0:13:01	7.01	-0.19
Umbagog	15-05-28	12:13:01	7.02	-0.18
Umbagog	15-05-29	0:13:01	7.09	-0.10
Umbagog	15-05-29	12:13:01	7.14	-0.06
Umbagog	15-05-30	0:13:01	7.12	-0.07
Umbagog	15-05-30	12:13:01	7.07	-0.12
Umbagog	15-05-31	0:13:01	7.05	-0.15
Umbagog	15-05-31	12:13:01	7.11	-0.08
Umbagog	15-06-01	0:13:01	7.16	-0.04
Umbagog	15-06-01	12:13:01	7.19	0.00
Umbagog	15-06-02	0:13:01	7.22	0.02
Umbagog	15-06-02	12:13:01	7.22	0.02
Umbagog	15-06-03	0:13:01	7.23	0.03
Umbagog	15-06-03	12:13:01	7.26	0.06
Umbagog	15-06-04	0:13:01	7.27	0.07

Umbagog	15-06-04	12:13:01	7.25	0.06
Umbagog	15-06-05	0:13:01	7.20	0.01
Umbagog	15-06-05	12:13:01	7.13	-0.07
Umbagog	15-06-06	0:13:01	7.06	-0.14
Umbagog	15-06-06	12:13:01	7.07	-0.13
Umbagog	15-06-07	0:13:01	7.08	-0.12
Umbagog	15-06-07	12:13:01	7.05	-0.14
Umbagog	15-06-08	0:13:01	6.99	-0.21
Umbagog	15-06-08	12:13:01	6.90	-0.30