Lake Erie - Lake Ontario – St. Lawrence River

Water Level & Flow Conditions Briefing* – 16 April 2020

The risk of flooding and high water impacts around Lake Erie, Lake Ontario, and the upper St. Lawrence River during periods of strong winds and waves continues. Flooding of low-lying areas of the lower St. Lawrence River is also possible, including around Lake St. Louis, Montreal and the Lake St. Pierre areas

***** Please continue to check local forecasts for warnings in your area. ****

- ***Lake Erie's level*** was 175.06 m (574.34 ft) yesterday, which is 82 cm (32.3 in.) above average, 7 cm (2.8 in.) **above* the record-high set at this time during 1985.

- ***Lake Ontario's level*** was 75.34 m (247.18 ft) yesterday, which is 44 cm (17.3 in) above average. This level is also:
    - 34 cm (13.4 in.) **below** the record-high for this time of year set in 1973.
    - 2 cm (0.8 in) **below* than water level on the same date in 2017.
    - 25 cm (9.8 in.) **above* the level on the same date in 2019.

  Compared to 2017, while levels are similar, conditions have been milder and drier, Ottawa River flows are lower as a result, and this is allowing outflows to be much higher. Compared to 2019, while levels are higher, it was only in mid-April last year that an exceptional Ottawa River snowpack started melting rapidly with mild and wet weather, eventually leading to unprecedented flows in both peak and duration.

  Inflows from Lake Erie remain at record-highs, and this will continue to contribute significant volumes of water to Lake Ontario, sustain its well-above average water levels, and prevent any rapid lowering. However, generally mild temperatures and moderate precipitation since early spring, reduced snowpack and declining flows in the Ottawa River, and forecasts of mostly dry conditions for the next two weeks, are all *positive indicators that suggest Lake Ontario will likely peak below the levels observed in 2017 and 2019*.

- ***Lake Ontario outflows*** are currently 8,450 m^3/s (298,400 cfs). The International Lake Ontario – St. Lawrence River Board continues to maximize outflows from Lake Ontario, making frequent adjustments to maintain Lake St. Louis at the minor flood level of 22.33 m (73.3 ft). This remains above the current F-limit, which is meant to balance high water conditions upstream on Lake Ontario with those downstream in the lower St. Lawrence River.

  Note that because high levels downstream have been the limiting factor, the Plan 2014 safe navigation limit (L Limit) has not been applicable since Seaway opened April 1st.

- ***Ottawa River flows*** remained elevated following rain last weekend, but have stabilized and declined slightly since. Further declines are expected this coming week. http://ottawariver.ca/forecast/ottawa-river-at-carillon/

- ***Lake St. Lawrence's level*** was 73.9 m (242.45 ft) yesterday, which is average for this time of year.

- ***Lake St. Louis' level*** yesterday was 22.27 m (73.06 ft), which is 60 cm (23.6 in.) above average. The level of Lake St. Louis will remain near the third tier (22.33 m) of the F-limit according to the Board's strategy.

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* This product is primarily for internal use by water managers and responsible authorities along the shorelines of the Great Lakes and St. Lawrence River. This information is available to draw from and to support your own communications locally, but please note that this product is not for direct public distribution. See also pg. 21.

Weekly Water Level Forecast

Lake Ontario Synopsis

Cool and drier conditions are forecast for the coming week and into the following one.

The Ottawa River freshet continues and flows from this basin into the lower St. Lawrence River remain elevated. However, the Ottawa River has reached a peak and is expected to decline over at least the next several days.

Outflows are expected to increase as a result, as they continue to be maximized to the extent possible, with adjustments made as necessary depending on water levels in the lower St. Lawrence River area, which remain high owing to the high Lake Ontario outflows and above-average Ottawa River flows.

Weather conditions, including temperatures, snowmelt and rainfall will determine the rate and magnitude of rising water levels throughout the Lake Ontario – St. Lawrence River system.

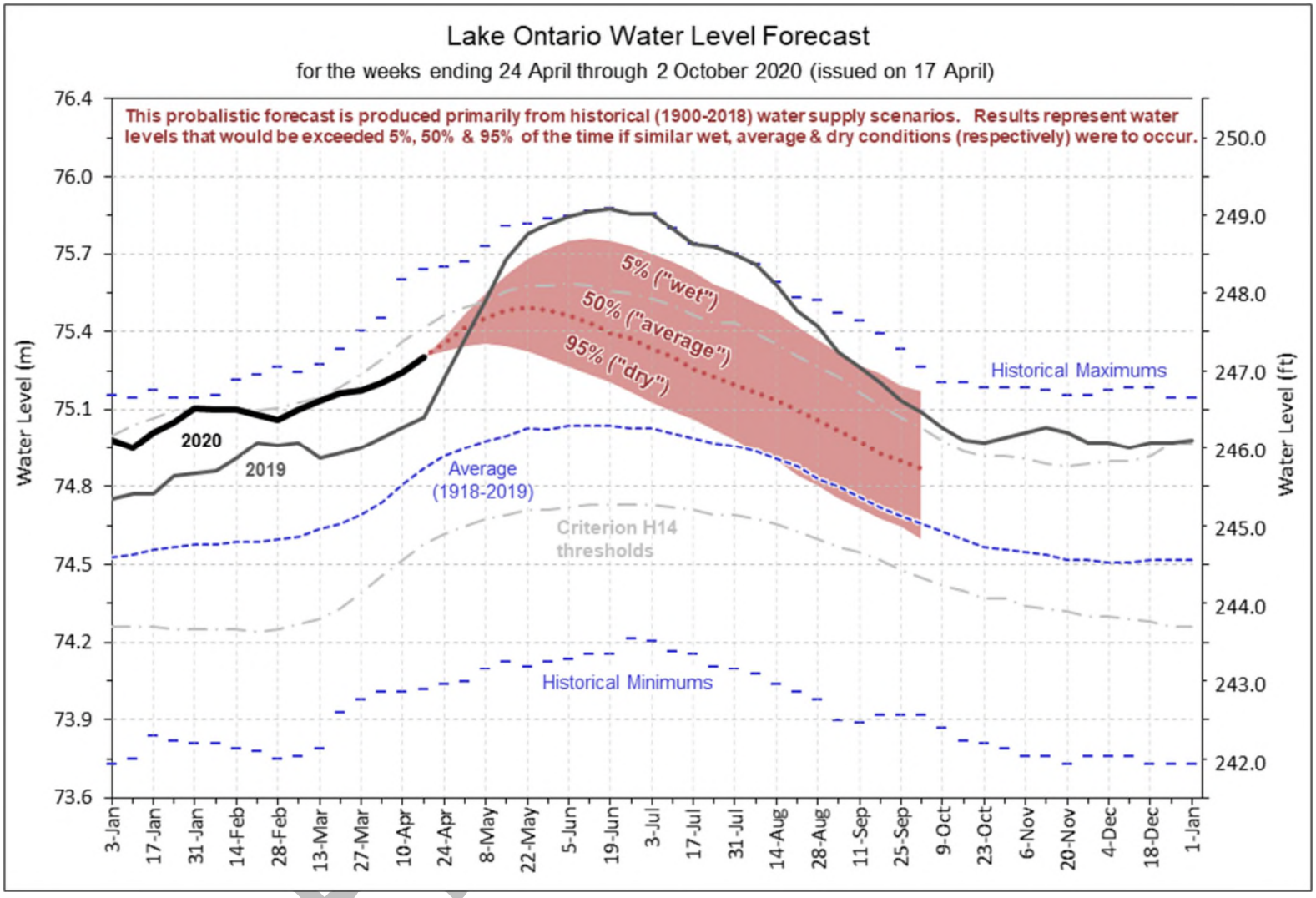
Inflows from Lake Erie remain at record-highs, and this will continue to contribute significant volumes of water to Lake Ontario, sustain its well-above average water levels, and prevent any rapid lowering.

However, generally mild temperatures and moderate precipitation since early spring, reduced snowpack and declining flows in the Ottawa River, and forecasts of mostly dry conditions for the next two weeks, are all positive indicators that suggest Lake Ontario will likely peak below the levels observed in 2017 and 2019.

LAKE ONTARIO FORECAST

Forecast Starting Level: 75.34
(Week ending April 17)

Week Ending Date	End of Week Level (m)		
	5%	50%	95%
Apr-24	75.42	75.39	75.36
May-01	75.51	75.45	75.38
May-08	75.60	75.49	75.39
May-15	75.67	75.52	75.38
May-22	75.73	75.53	75.36
May-29	75.75	75.52	75.33
Jun-05	75.76	75.50	75.30
Jun-12	75.78	75.47	75.27
Jun-19	75.77	75.43	75.24
Jun-26	75.76	75.41	75.20
Jul-03	75.75	75.37	75.16
Jul-10	75.72	75.34	75.12
Jul-17	75.67	75.29	75.09
Jul-24	75.62	75.26	75.05
Jul-31	75.60	75.23	75.01
Aug-07	75.56	75.20	74.96
Aug-14	75.52	75.17	74.93
Aug-21	75.46	75.13	74.87
Aug-28	75.41	75.09	74.83
Sep-04	75.36	75.05	74.78
Sep-11	75.31	75.01	74.74
Sep-18	75.28	74.96	74.70
Sep-25	75.23	74.93	74.67
Oct-02	75.21	74.90	74.62


Lake Ontario Water Level Forecast
for the weeks ending 24 April through 2 October 2020 (issued on 17 April)
This probalistic forecast is produced primarily from historical (1900-2018) water supply scenarios. Results represent water levels that would be exceeded 5%, 50% & 95% of the time if similar wet, average & dry conditions (respectively) were to occur.
Water Level (m)
Water Level (ft)
76.4
76.0
75.7
75.4
75.1
74.8
74.5
74.2
73.9
73.6
250.0
249.0
248.0
247.0
246.0
245.0
244.0
243.0
242.0
5% ("wet")
50% ("average")
95% ("dry")
Historical Maximums
2020
2019
Average
(1918-2019)
Criterion H14
thresholds
Historical Minimums
3-Jan
17-Jan
31-Jan
14-Feb
28-Feb
13-Mar
27-Mar
10-Apr
24-Apr
8-May
22-May
5-Jun
19-Jun
3-Jul
17-Jul
31-Jul
14-Aug
28-Aug
11-Sep
25-Sep
9-Oct
23-Oct
6-Nov
20-Nov
4-Dec
18-Dec
1-Jan

Lake St. Louis F-limit Forecast (updated 16 Apr)
(current Lake Ontario level = 75.34 m)

Plan 2014 F-limit Tiers	Lake Ontario Level (m)	Estimated Date of Occurrence		Lake St. Louis Target Level (m)	Estimated Date of Occurrence	
		Earliest	Latest		Earliest	Latest
1	< 75.30	***surpassed***		22.10	surpassed	
2	≥ 75.30	***current***		22.20	surpassed	
3	≥ 75.37	18-Apr	30-Apr	***22.33***	***current***	
4	≥ 75.50	29-Apr	n/a	22.40	29-Apr	n/a
5*	≥ 75.60	8-May	n/a	22.48	8-May	n/a

* Higher water levels are possible later this spring if conditions prove especially wet, both upstream on Lake Ontario and downstream on Lake St. Louis.

This table is updated to reflect effects of recent hydrologic conditions and regulated outflows, including results of the latest Lake Ontario forecast, the Plan 2014 F-limit, as well as the Board's current outflow deviation strategy. The Board continues to assess all options and may adjust its strategy, considering the risk of high water conditions throughout the Lake Ontario – St. Lawrence River system.

Recent Conditions (Yesterday)[2]

Water Levels [3]

Location	Daily Mean Water Level (m) 15-Apr-20	Compared to: (Historical quarter-monthly statistics**)				Most recent year that WLs were:	
		Average	Last Year	Record High (Year)	Record Low (Year)	Higher	Lower
Lake Erie	175.06 m	+82 cm	+27 cm	+7 cm (1985)	+167 cm (1934)	RECORD	2019
Lake Ontario	75.34 m	+44 cm	+25 cm	-34 cm (1973)	+131 cm (1935)	2017	2019
Lake St. Lawrence	73.90 m	+37 cm	+57 cm	-9 cm (1973)	+99 cm (2018)	1973	2019
Lake St. Louis @ Pte Claire	22.27 m	+60 cm	+12 cm	-7 cm (1976)	+167 cm (1964)	1993	2019
Montreal @ Jetty #1	8.15 m	+81 cm	+29 cm	-45 cm (1976)	+253 cm (2003)	2017	2019

**Stats periods of record: Lake Erie/Lake Ontario: 1918-2019; St. Lawrence River: 1960-2019; Montreal: 1967-2019

Outflows

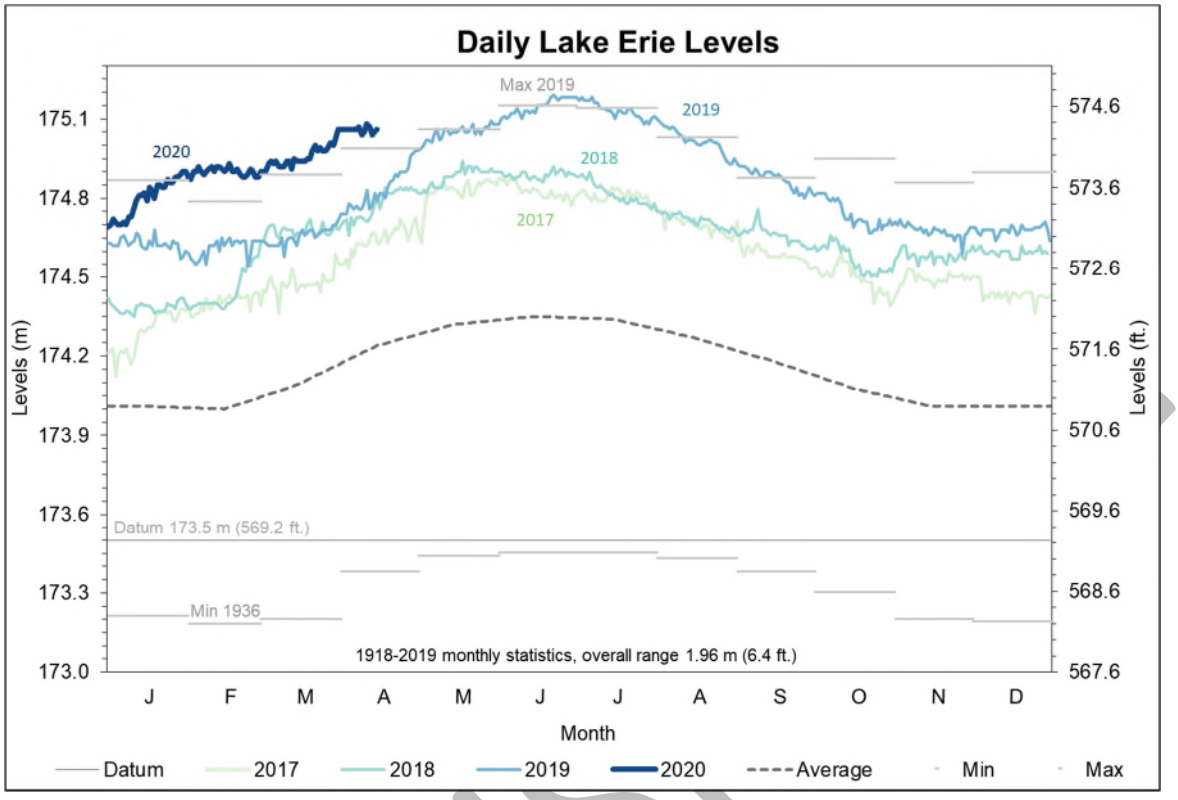
	Daily Mean Flow (m^3/s) 15-Apr-20	Compared to: (Historical quarter-monthly statistics**)			
		Average	Last Year	Record High (Year)	Record Low (Year)
Lake Erie	8500	+2500	+260	+620 (1974)	+4110 (1933)
Lake Ontario	8530	+1450	+1430	-590 (1973)	+3380 (1964)
Ottawa River @ Carillon	5774	+2404	-2556	-16 (1991)	+4174 (1975)
Lake St. Louis @ LaSalle	11800	+2070	-700	-430 (1976)	+5340 (1964)

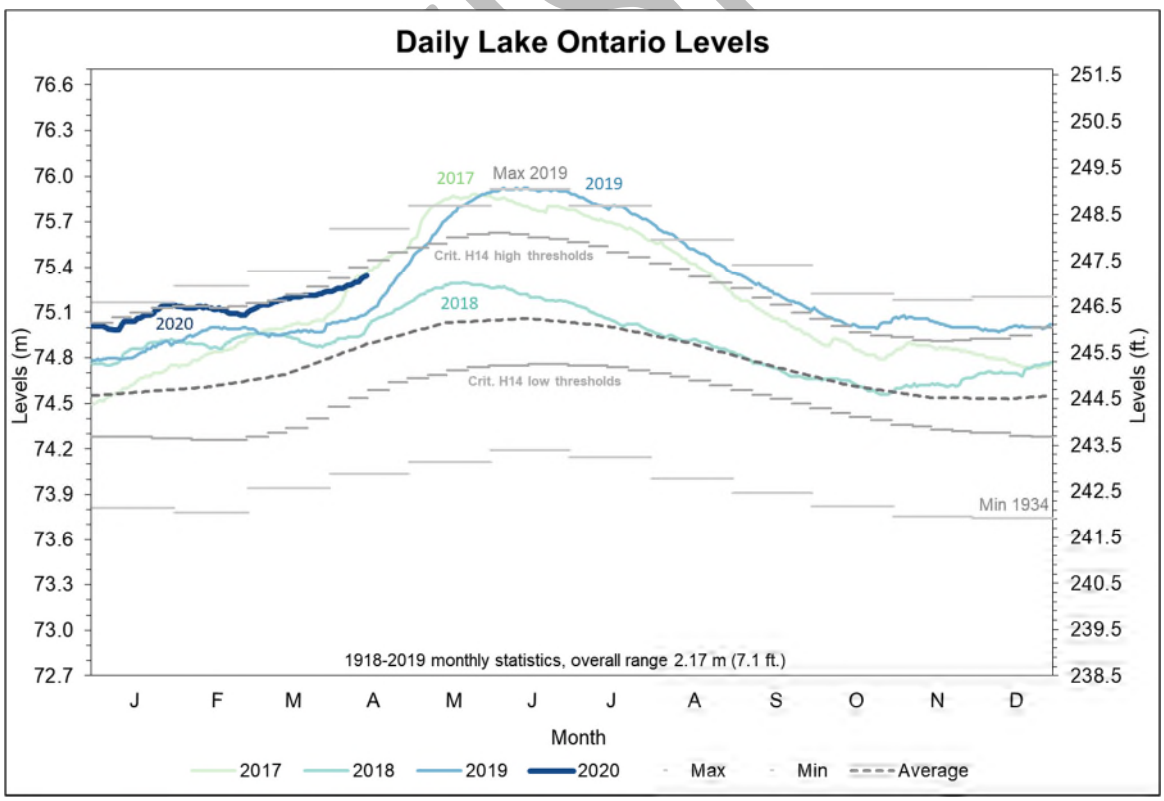
**Stats periods of record: Lake Erie/Lake Ontario: 1900-2019; Ottawa River: 1963-2019; Lake St. Louis: 1960-2019.

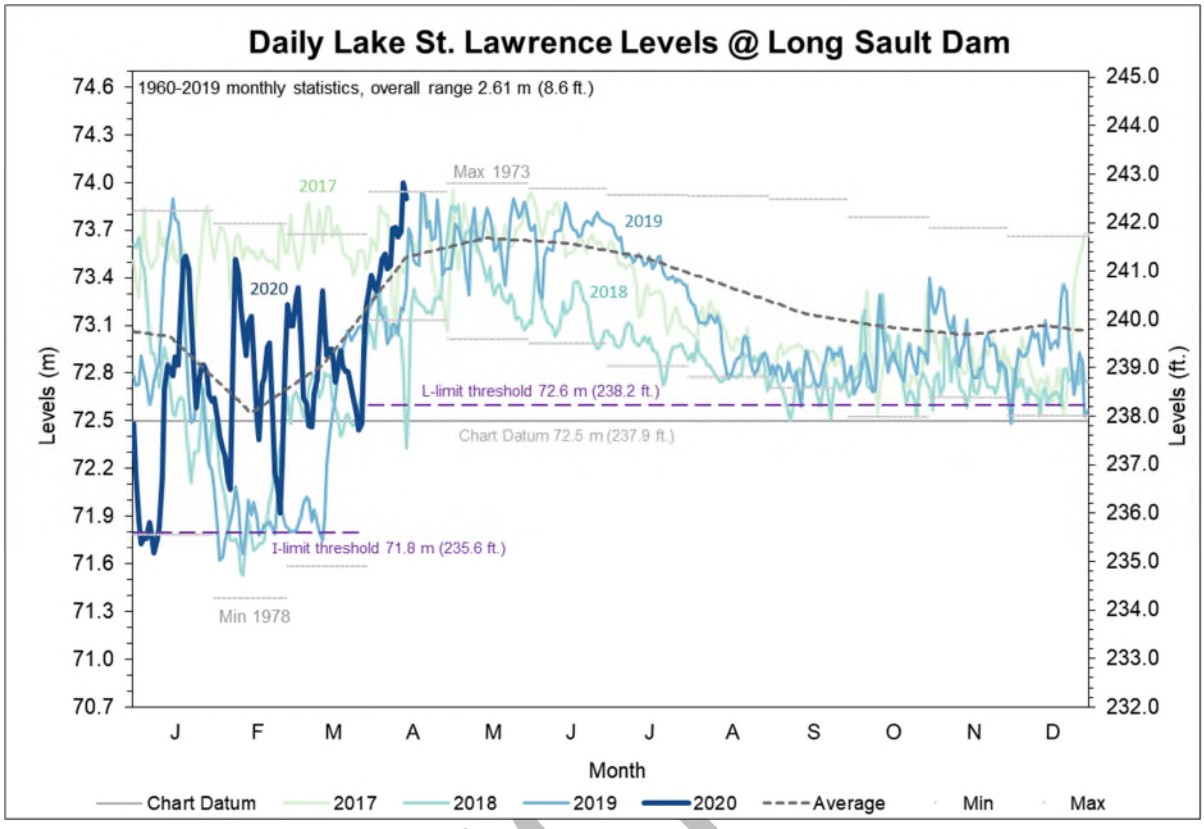
[2] All data in this document is considered "provisional". Historical statistics and comparisons to previous years are for reference purposes only, based on quarter-monthly data and do not reflect fluctuations seen in daily data.

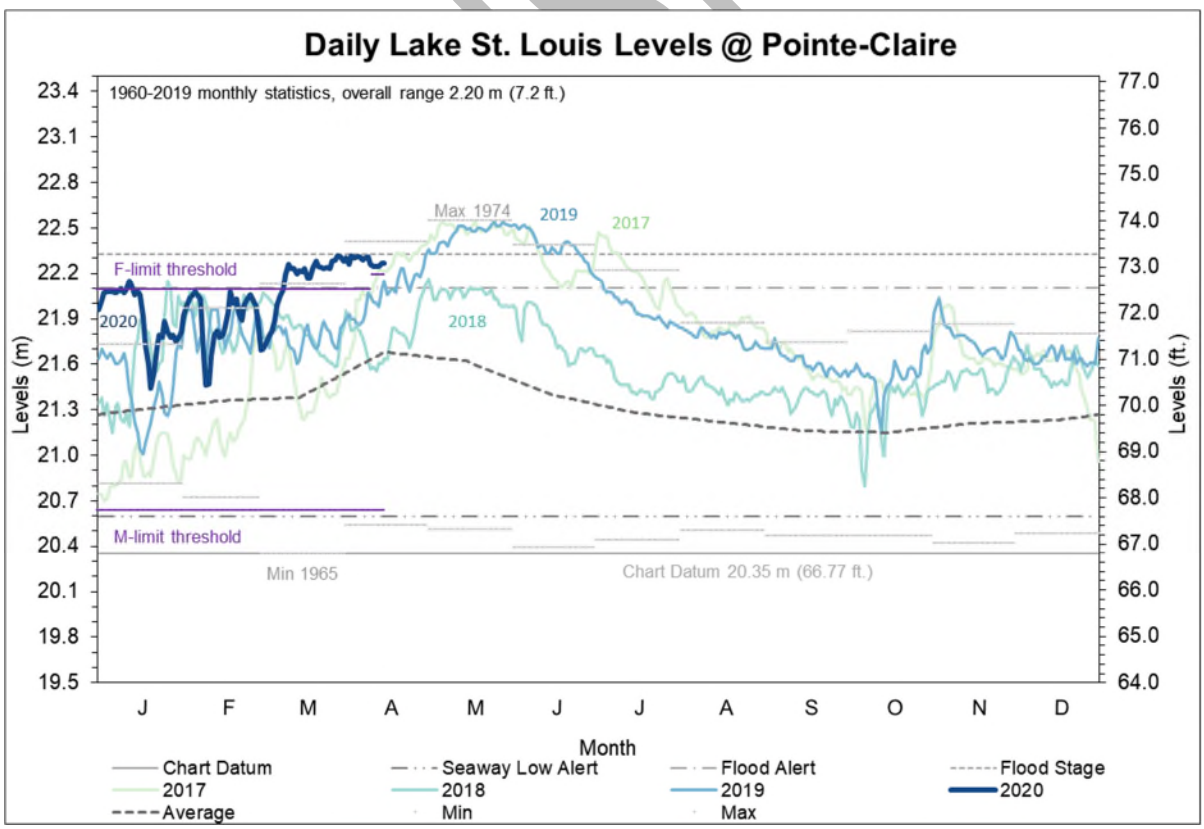
[3] Water levels are referenced to International Great Lakes (Vertical) Datum 1985 (IGLD85). Note that local communities and government agencies may use other datums such as NAVD88, CGVD28 or CGG2013 – particularly when determining flood risk. Measured and forecast water levels in this report can also be subject to a high degree of uncertainty and, importantly, do not account for local variations due to wind and wave effects. For info on local conditions, please refer to the responsible authorities in your area, a short list is provided on pg. 21.

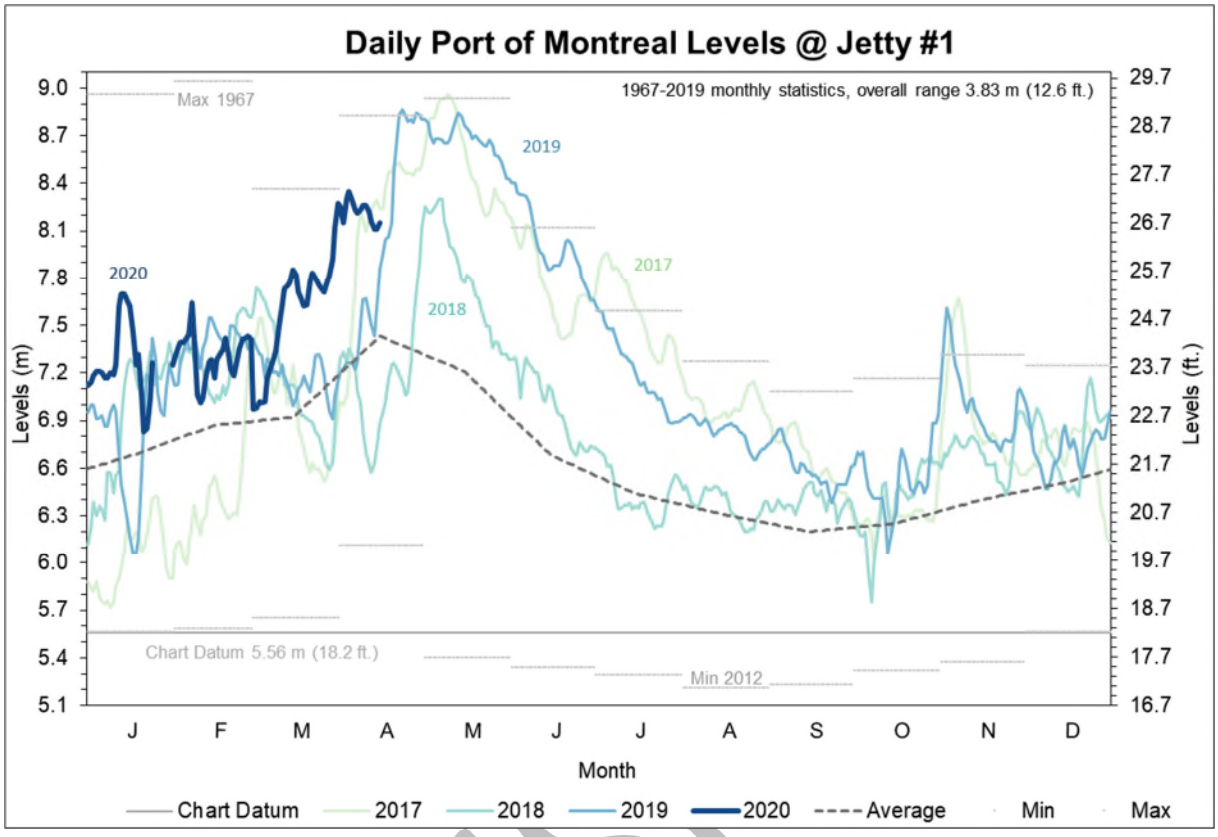
Levels


Daily Lake Erie Levels
Max 2019
2019
2020
2018
2017
Datum 173.5 m (569.2 ft.)
Min 1936
1918-2019 monthly statistics, overall range 1.96 m (6.4 ft.)
Levels (m)
Levels (ft.)
175.1
174.8
174.5
174.2
173.9
173.6
173.3
173.0
574.6
573.6
572.6
571.6
570.6
569.6
568.6
567.6
J F M A M J J A S O N D
Month
Datum
2017
2018
2019
2020
Average
Min
Max

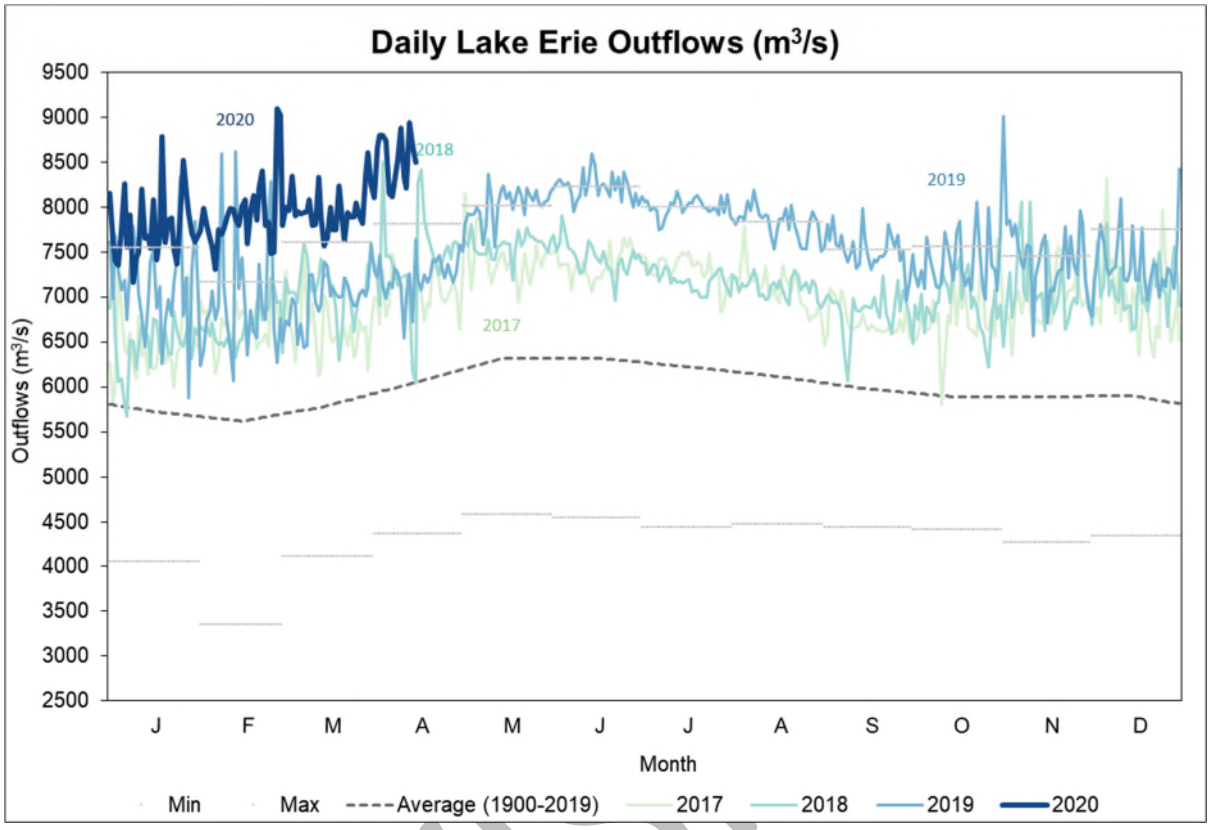

Daily Lake Ontario Levels
2017
Max 2019
2019
Crit. H14 high thresholds
2018
2020
Crit. H14 low thresholds
Min 1934
1918-2019 monthly statistics, overall range 2.17 m (7.1 ft.)
Levels (m)
Levels (ft.)
76.6
76.3
76.0
75.7
75.4
75.1
74.8
74.5
74.2
73.9
73.6
73.3
73.0
72.7
251.5
250.5
249.5
248.5
247.5
246.5
245.5
244.5
243.5
242.5
241.5
240.5
239.5
238.5
J F M A M J J A S O N D
Month
2017
2018
2019
2020
Max
Min
Average

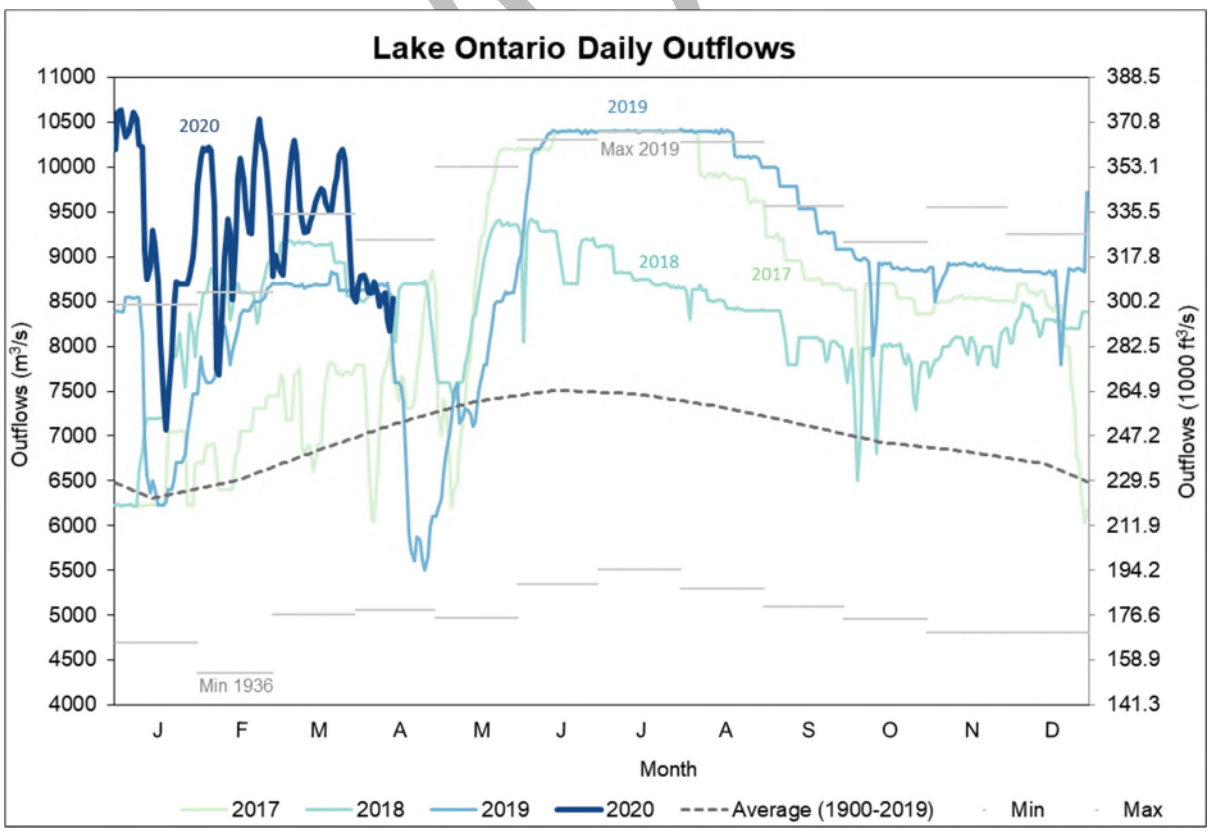

Daily Lake St. Lawrence Levels @ Long Sault Dam
1960-2019 monthly statistics, overall range 2.61 m (8.6 ft.)
Max 1973
2017
2019
2020
2018
L-limit threshold 72.6 m (238.2 ft.)
Chart Datum 72.5 m (237.9 ft.)
I-limit threshold 71.8 m (235.6 ft.)
Min 1978
Levels (m)
Levels (ft.)
Month
Chart Datum
2017
2018
2019
2020
Average
Min
Max

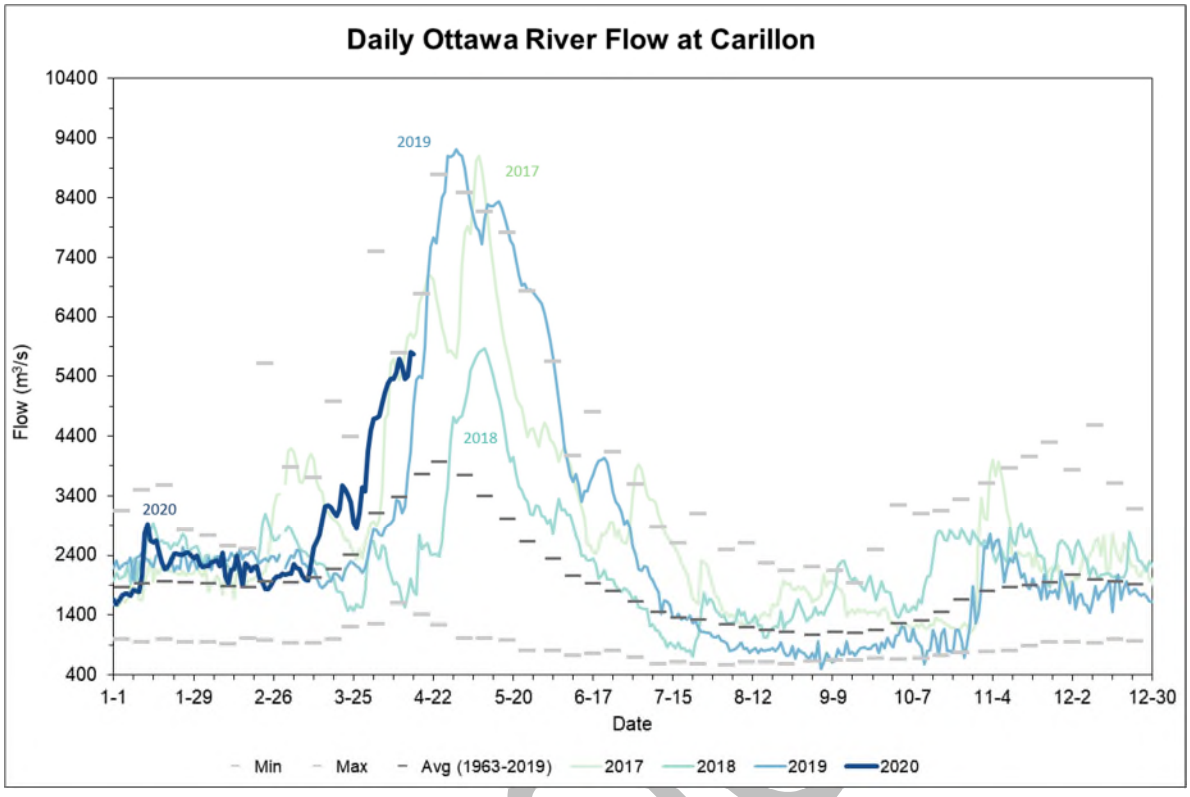

Daily Lake St. Louis Levels @ Pointe-Claire
1960-2019 monthly statistics, overall range 2.20 m (7.2 ft.)
Max 1974
2019
2017
F-limit threshold
2020
2018
M-limit threshold
Min 1965
Chart Datum 20.35 m (66.77 ft.)
Levels (m)
Levels (ft.)
Month
Chart Datum
Seaway Low Alert
Flood Alert
Flood Stage
2017
2018
2019
2020
Average
Min
Max


Daily Port of Montreal Levels @ Jetty #1
1967-2019 monthly statistics, overall range 3.83 m (12.6 ft.)
Max 1967
2019
2017
2018
2020
Chart Datum 5.56 m (18.2 ft.)
Min 2012
Levels (m)
Levels (ft.)
9.0
8.7
8.4
8.1
7.8
7.5
7.2
6.9
6.6
6.3
6.0
5.7
5.4
5.1
29.7
28.7
27.7
26.7
25.7
24.7
23.7
22.7
21.7
20.7
19.7
18.7
17.7
16.7
J F M A M J J A S O N D
Month
Chart Datum
2017
2018
2019
2020
Average
Min
Max

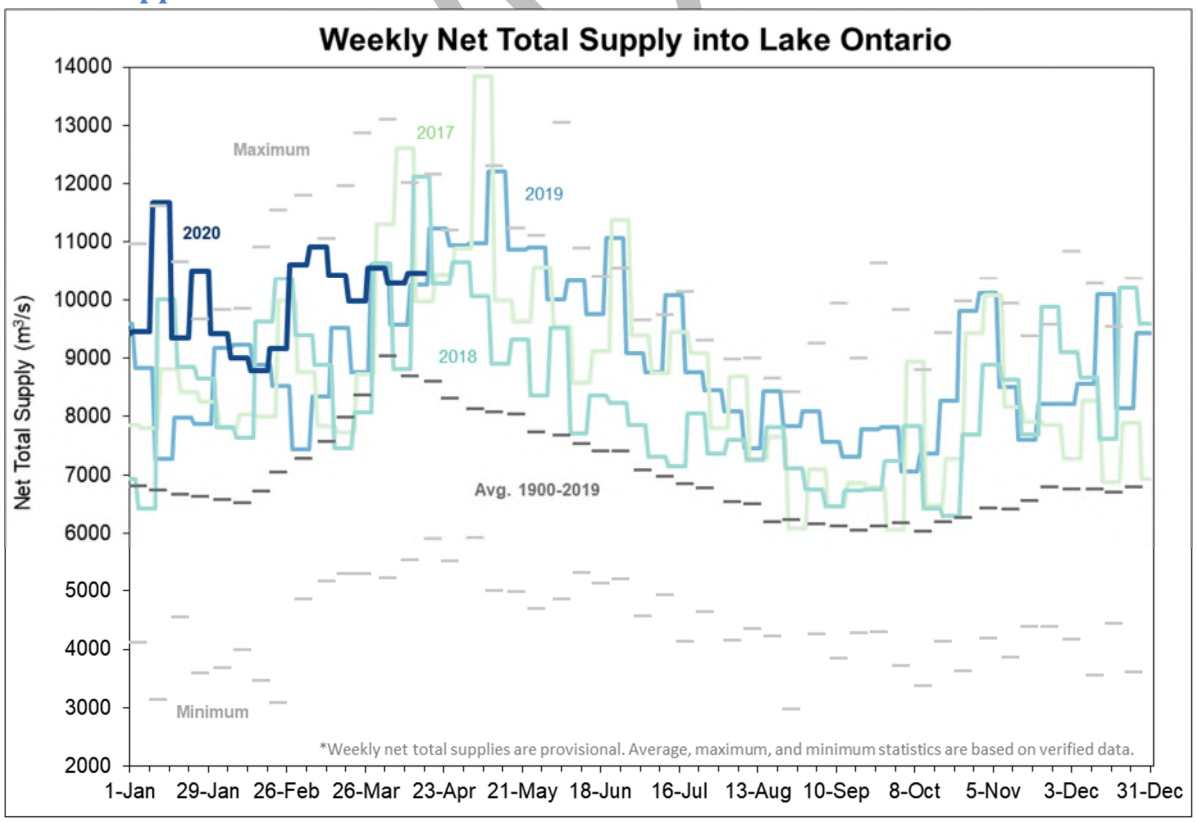
Flows

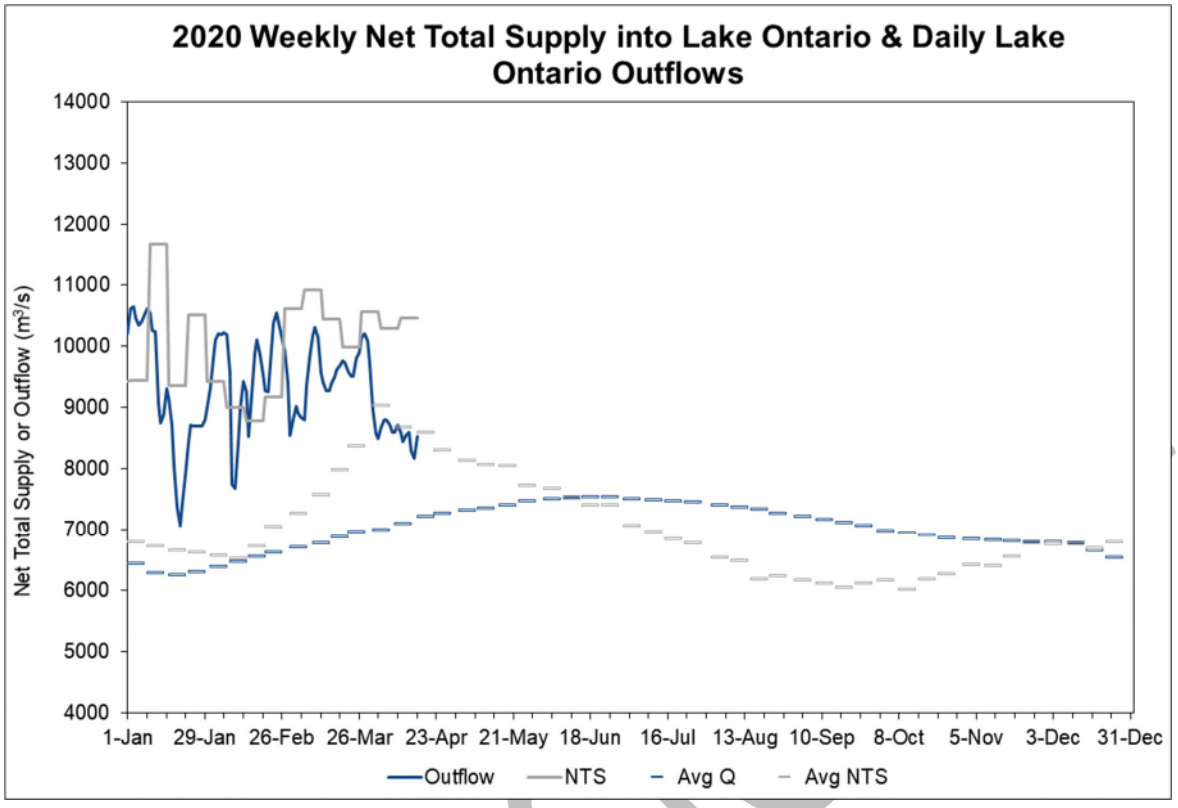

Daily Lake Erie Outflows (m³/s)
Outflows (m³/s)
9500
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2020
2018
2019
2017
J F M A M J J A S O N D
Month
Min
Max
Average (1900-2019)
2017
2018
2019
2020


Lake Ontario Daily Outflows
Outflows (m³/s)
11000
10500
10000
9500
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
4000
Outflows (1000 ft³/s)
388.5
370.8
353.1
335.5
317.8
300.2
282.5
264.9
247.2
229.5
211.9
194.2
176.6
158.9
141.3
2020
2019
Max 2019
2018
2017
Min 1936
J F M A M J J A S O N D
Month
2017
2018
2019
2020
Average (1900-2019)
Min
Max

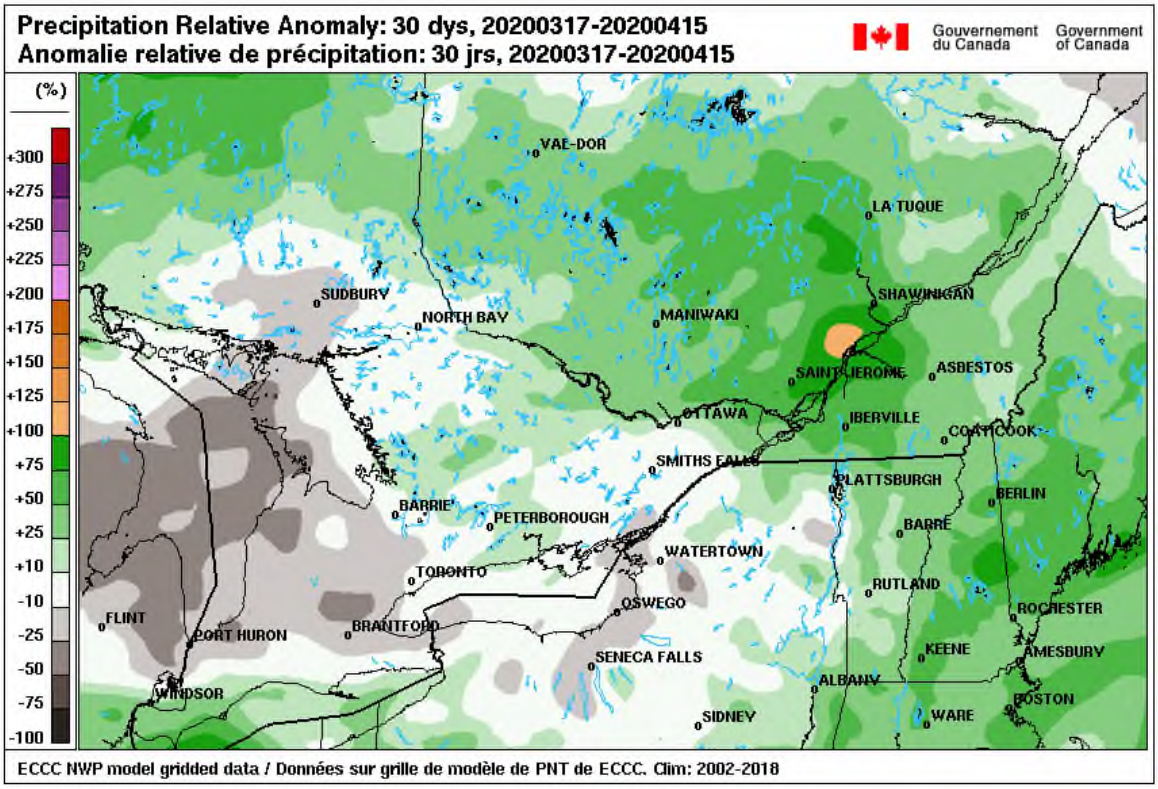


Water Supplies

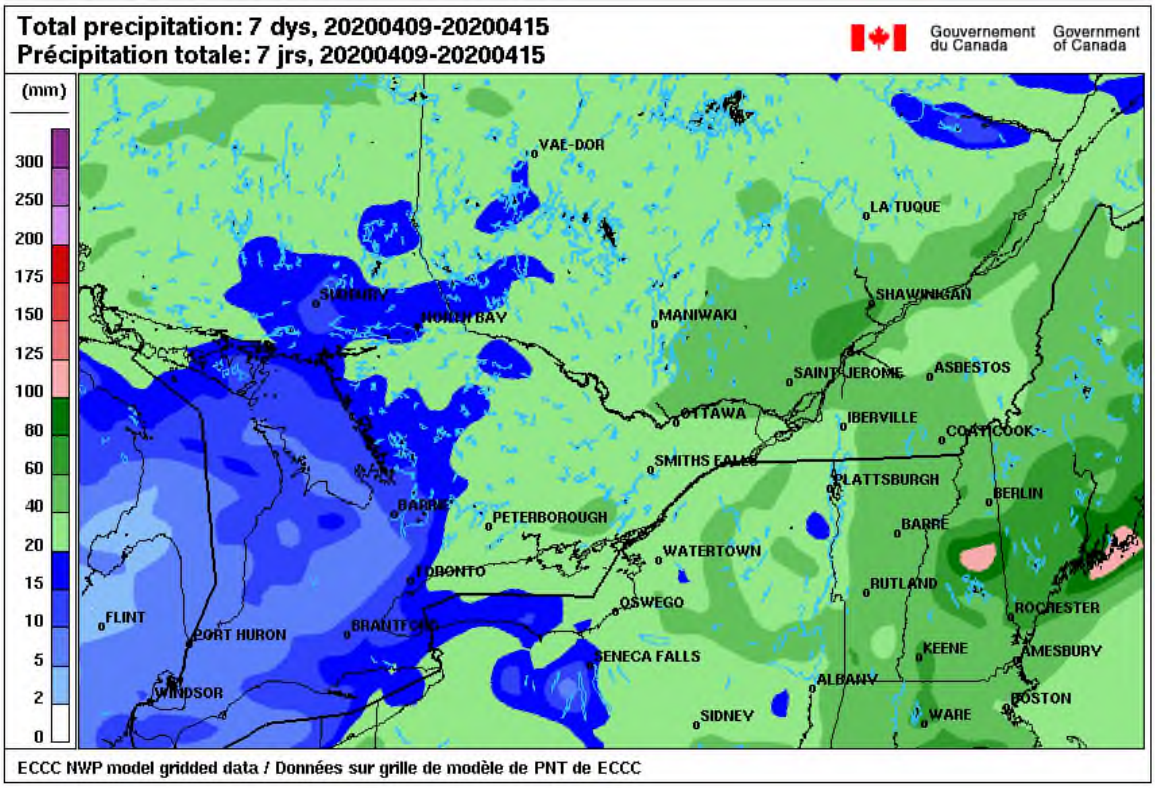


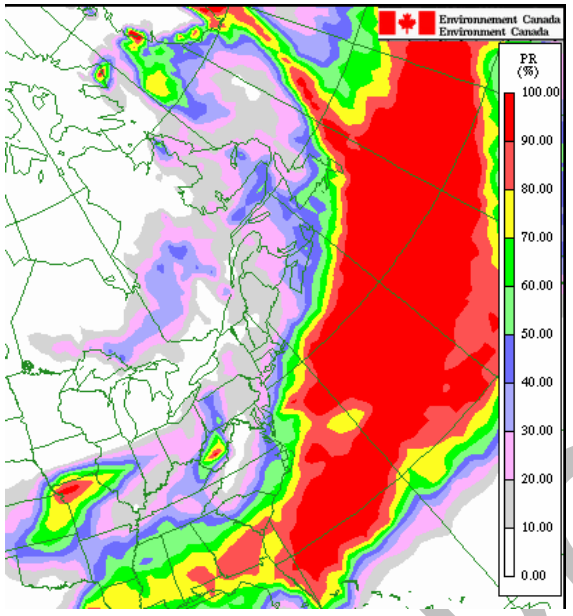
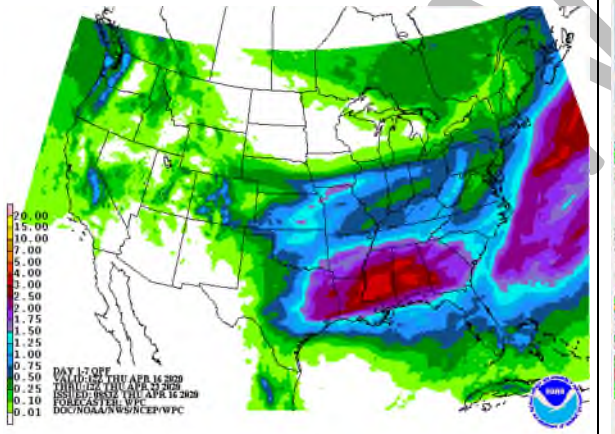
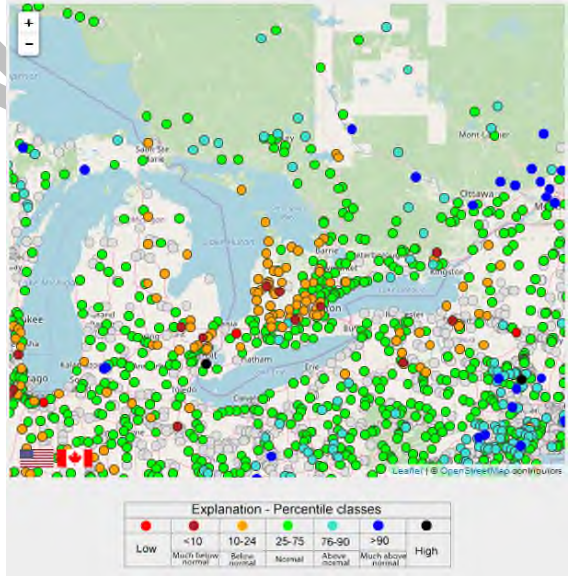

2020 Weekly Net Total Supply into Lake Ontario & Daily Lake Ontario Outflows
Net Total Supply or Outflow (m³/s)
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
1-Jan
29-Jan
26-Feb
26-Mar
23-Apr
21-May
18-Jun
16-Jul
13-Aug
10-Sep
8-Oct
5-Nov
3-Dec
31-Dec
Outflow
NTS
Avg Q
Avg NTS

Precipitation Anomaly – Past 30 Days



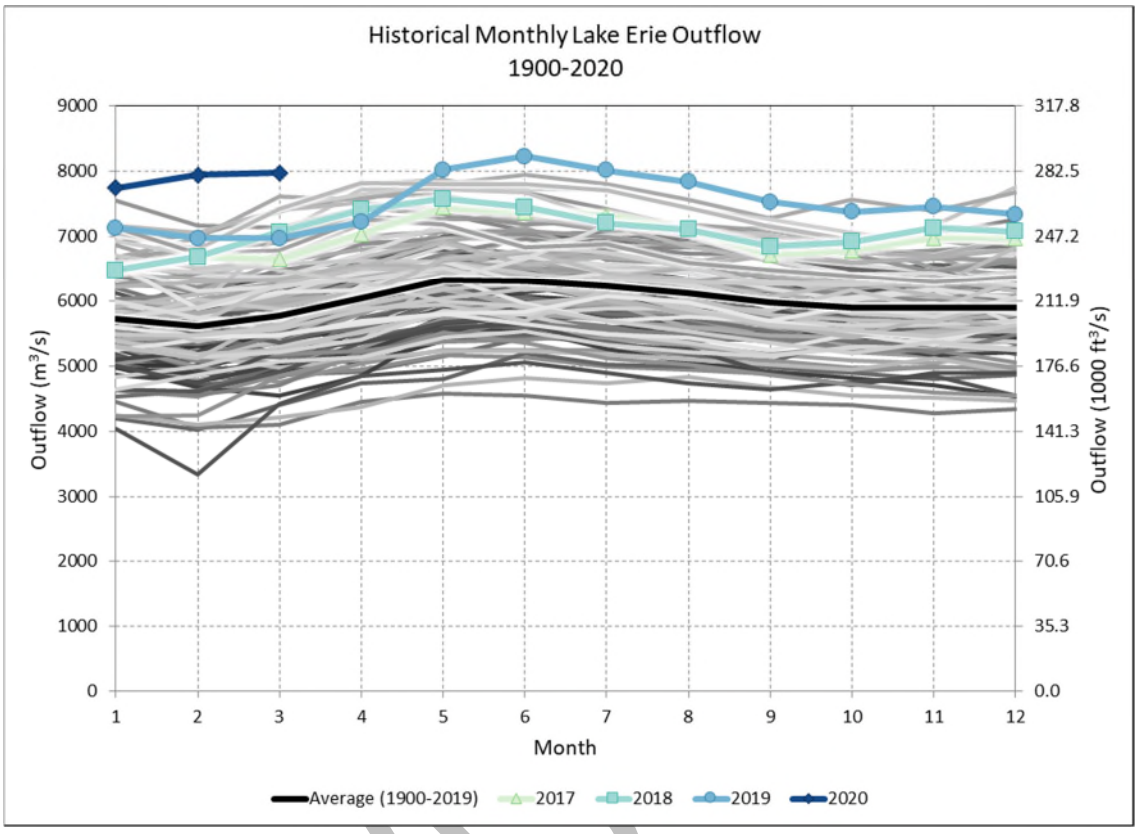
Total Precipitation (past 7 days)

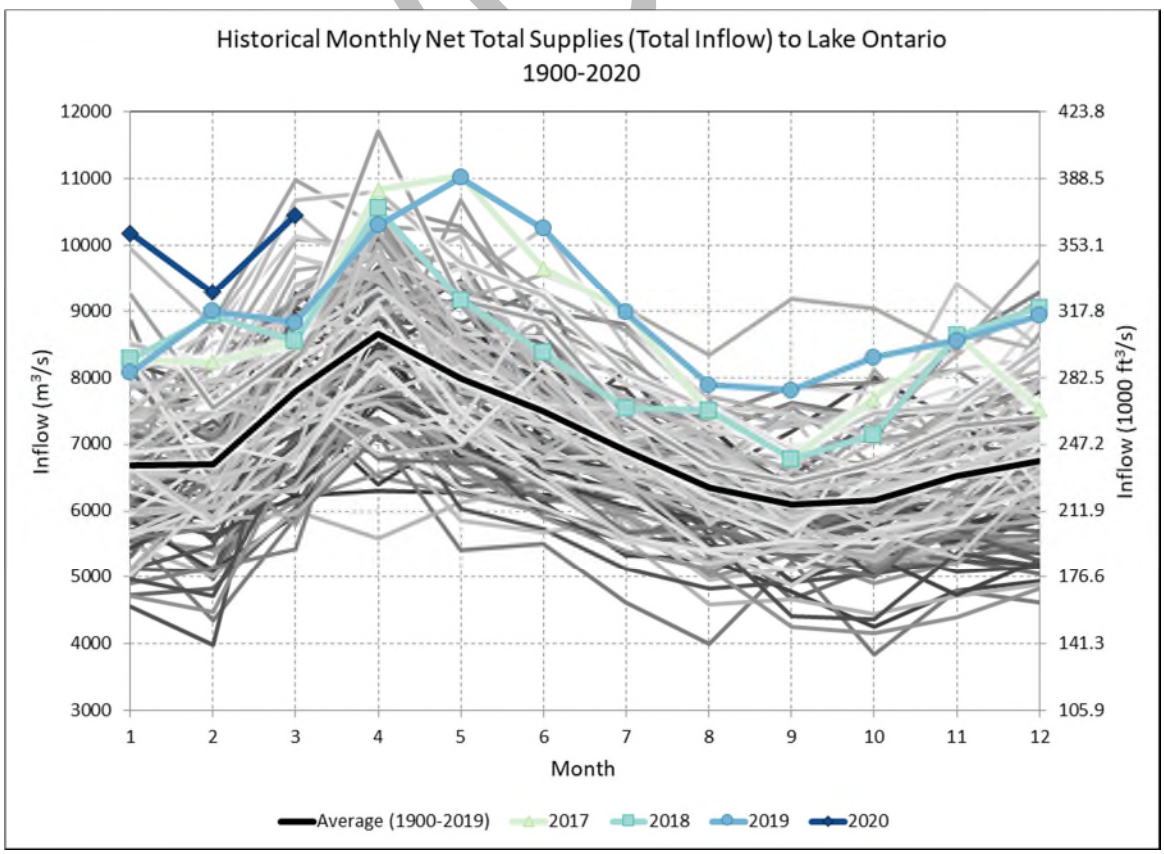


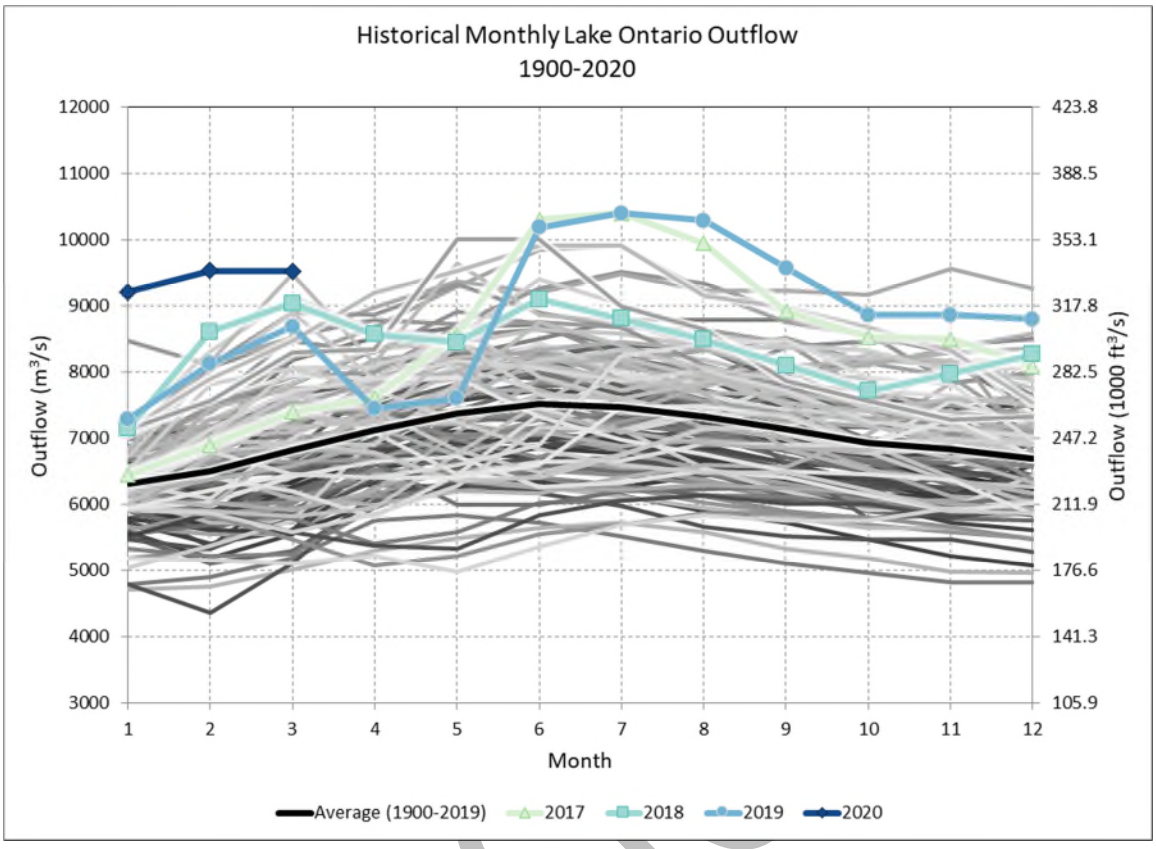
ECCC	*NOAA*	*USGS/ECCC*
North American Ensemble Forecast System (http://weather.gc.ca/ensemble/naefs/produits_e.html) ***Probability of precipitation accumulation over 25 mm through next 7 days***	***Quantitative Precipitation Forecast*** (http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml) ***Total precipitation (inches) through next 7 days***	***North American Water Watch*** (**https://watermonitor.gov/naww/index.php**) ***Real-time streamflow compared to historical streamflow for the day of year***
		

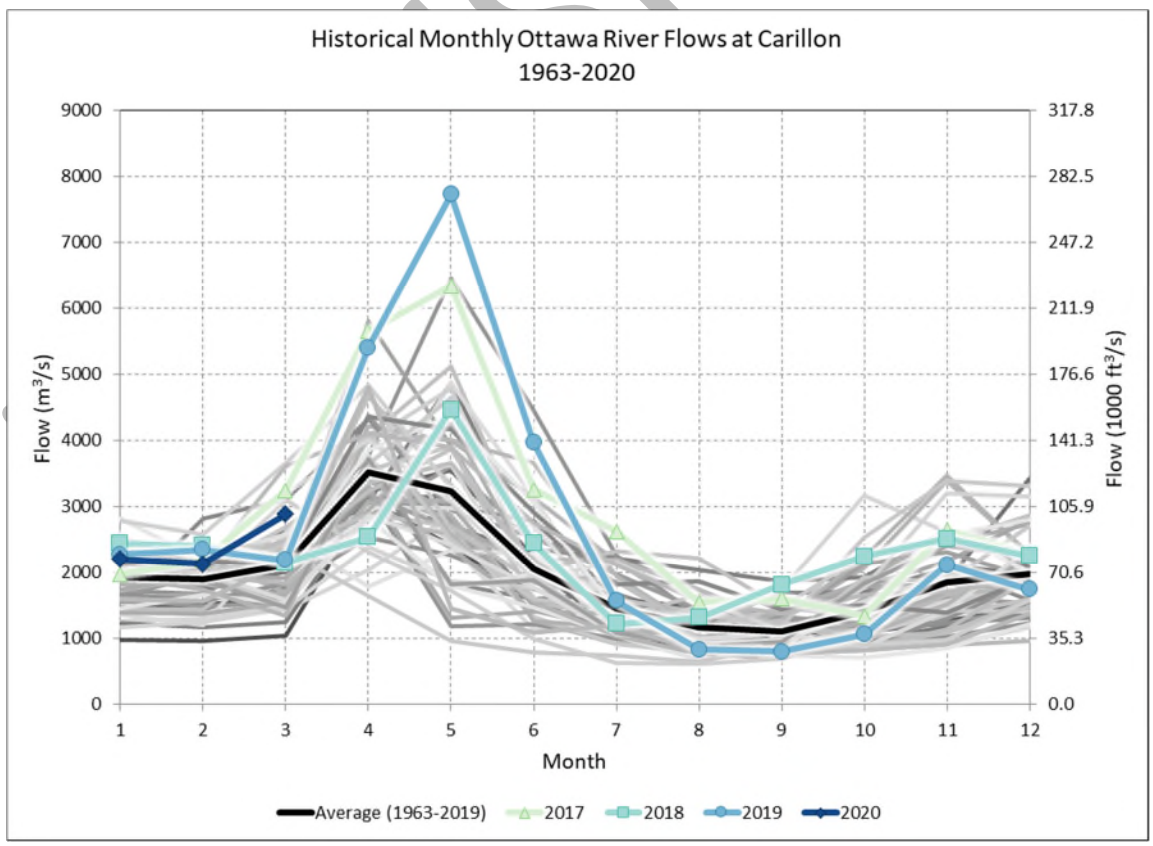
Monthly Spaghetti Plots: Net Total Supply and Outflow

*** Updated April 2nd ***



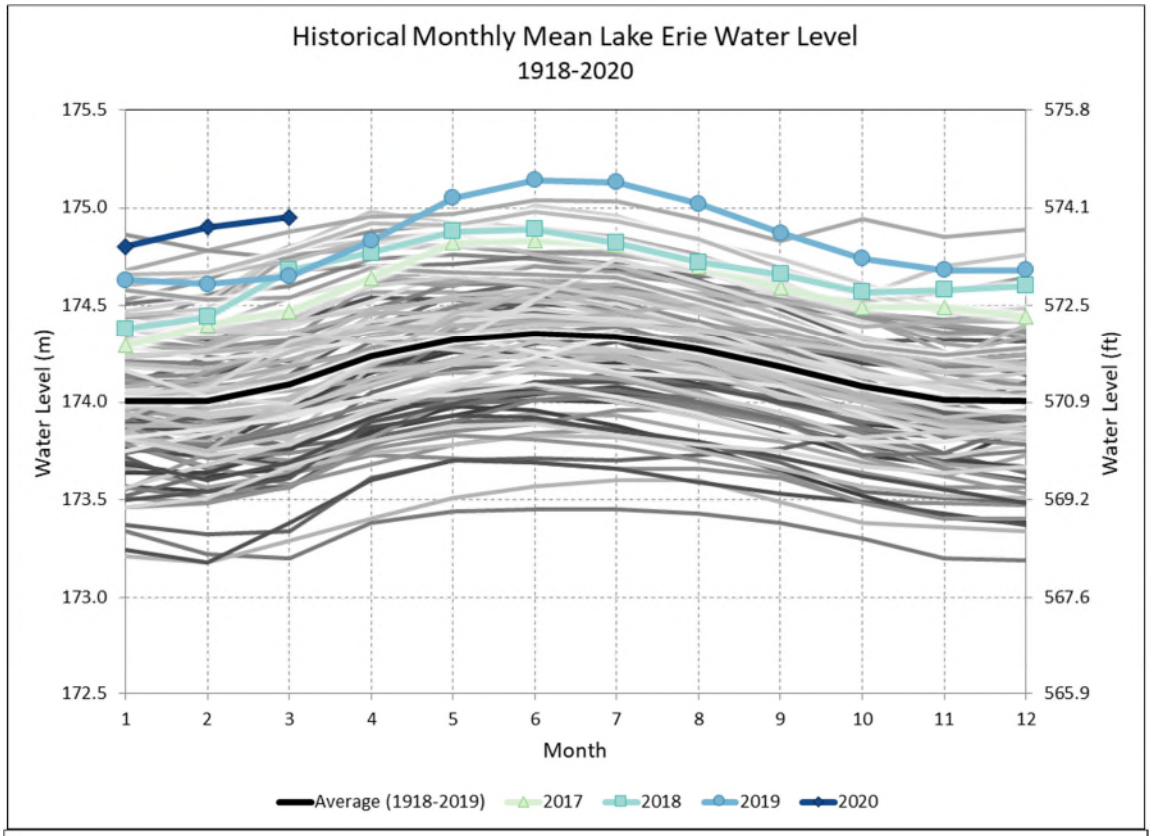


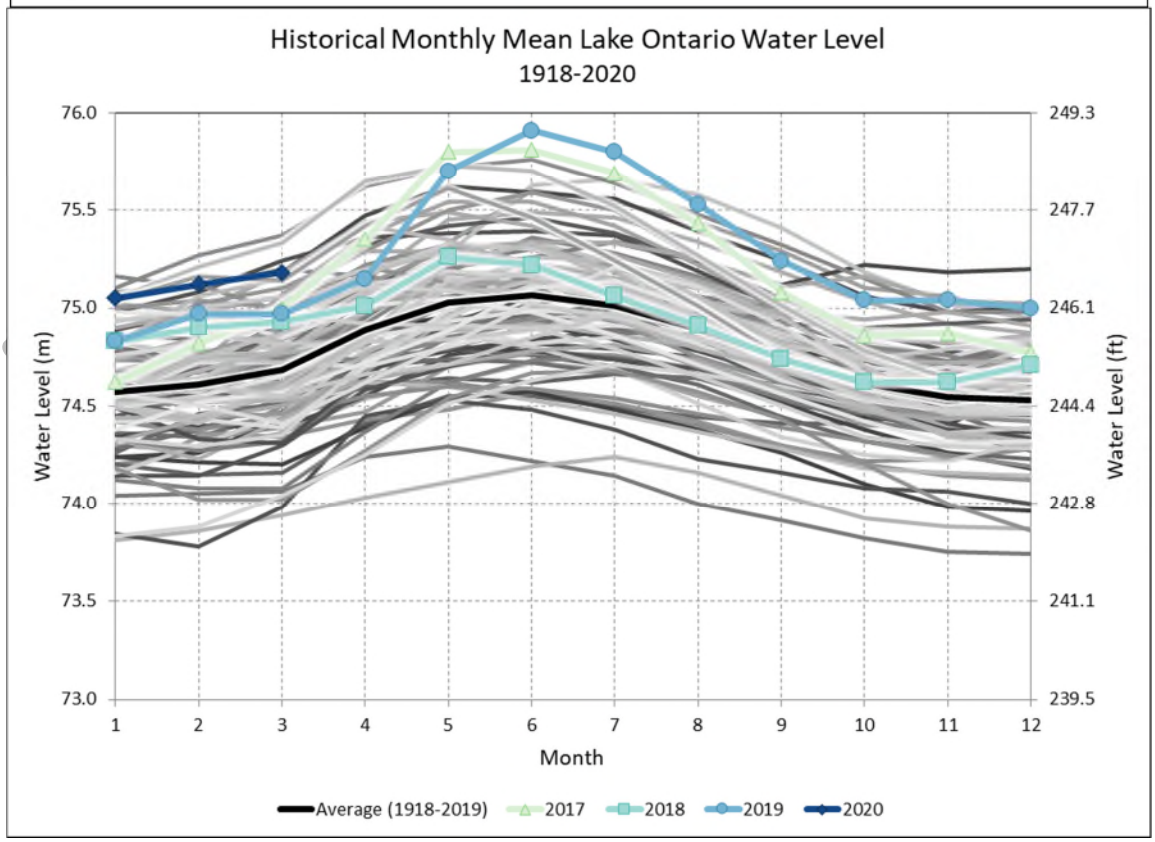

Historical Monthly Lake Ontario Outflow
1900-2020
Outflow (m³/s)
Outflow (1000 ft³/s)
Month
Average (1900-2019)
2017
2018
2019
2020

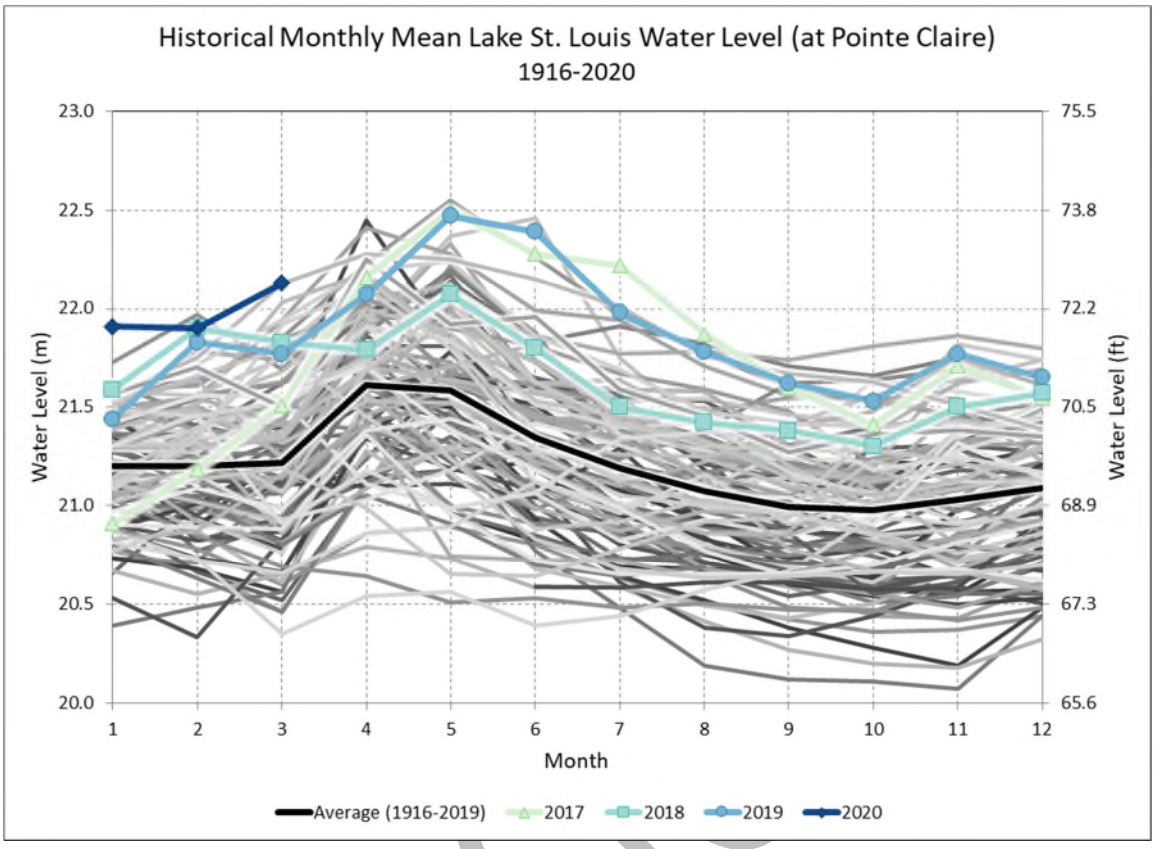

Historical Monthly Ottawa River Flows at Carillon
1963-2020
Flow (m³/s)
Flow (1000 ft³/s)
Month
Average (1963-2019)
2017
2018
2019
2020

Monthly Spaghetti Plots: Water Levels

*** Updated April 2nd ***

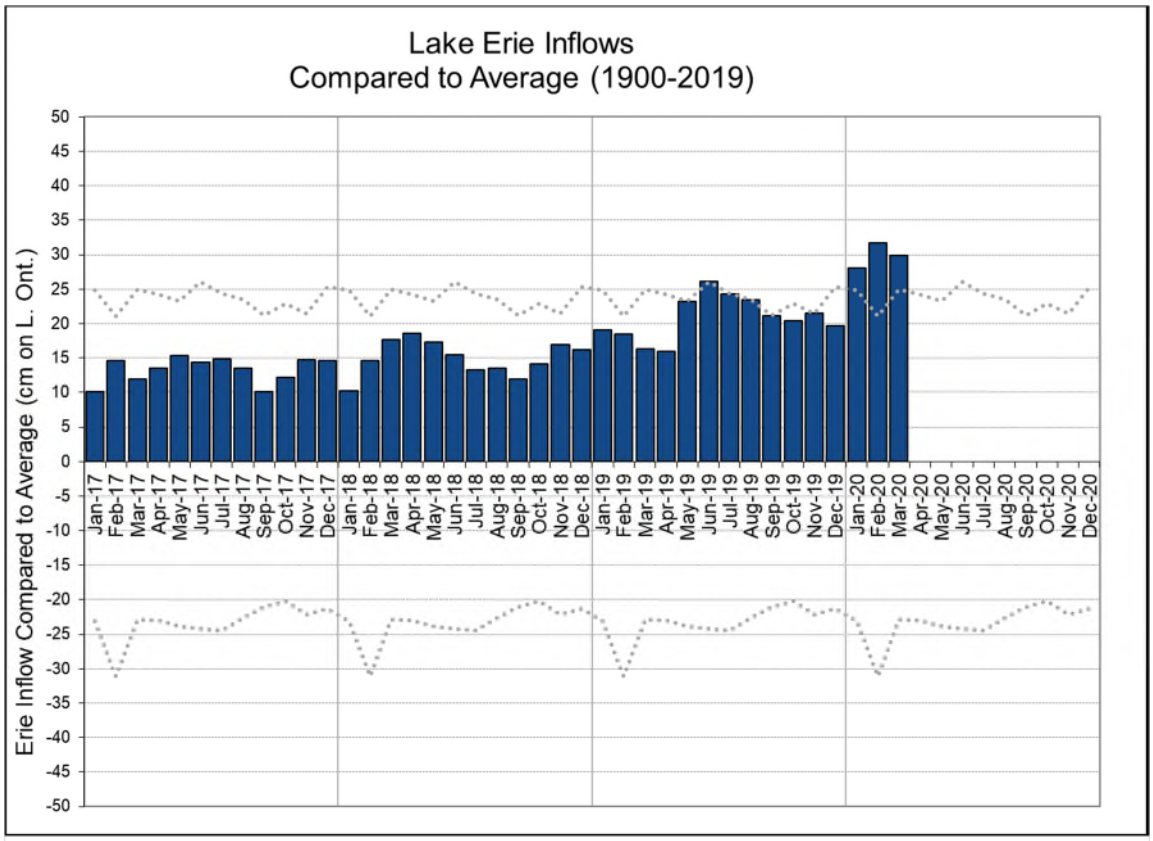


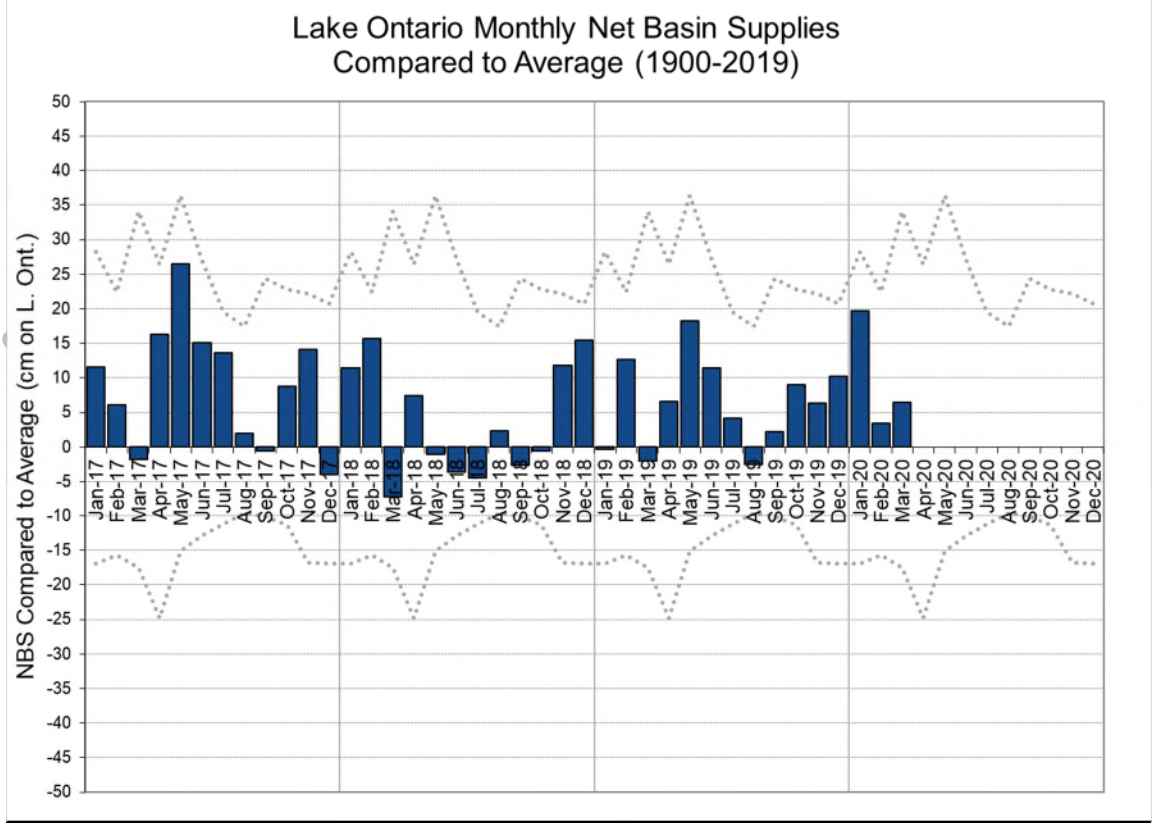


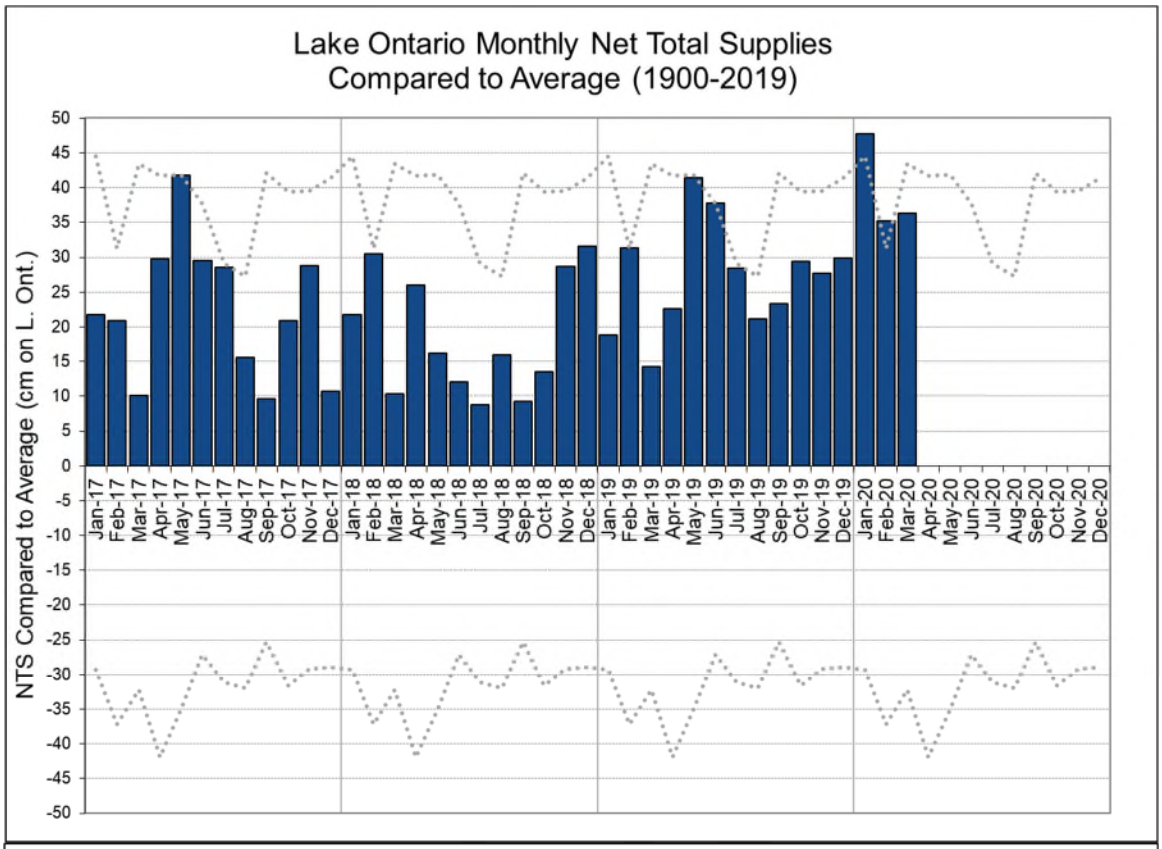

Historical Monthly Mean Lake St. Louis Water Level (at Pointe Claire)
1916-2020
Water Level (m)
Water Level (ft)
Month
23.0
22.5
22.0
21.5
21.0
20.5
20.0
75.5
73.8
72.2
70.5
68.9
67.3
65.6
1
2
3
4
5
6
7
8
9
10
11
12
Average (1916-2019)
2017
2018
2019
2020

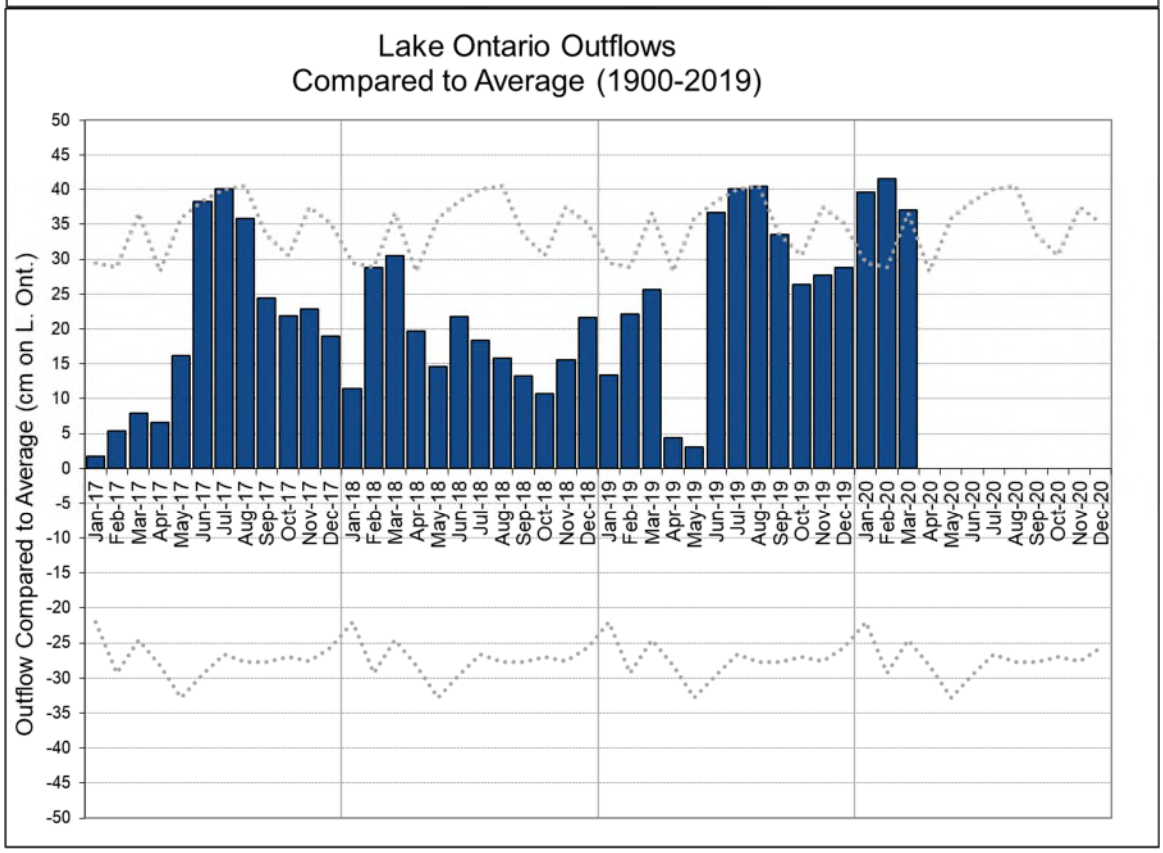
Monthly Departure Plots

*** Updated April 2nd ***






Lake Ontario Monthly Net Total Supplies
Compared to Average (1900-2019)
NTS Compared to Average (cm on L. Ont.)
50
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
Jan-17 Feb-17 Mar-17 Apr-17 May-17 Jun-17 Jul-17 Aug-17 Sep-17 Oct-17 Nov-17 Dec-17
Jan-18 Feb-18 Mar-18 Apr-18 May-18 Jun-18 Jul-18 Aug-18 Sep-18 Oct-18 Nov-18 Dec-18
Jan-19 Feb-19 Mar-19 Apr-19 May-19 Jun-19 Jul-19 Aug-19 Sep-19 Oct-19 Nov-19 Dec-19
Jan-20 Feb-20 Mar-20 Apr-20 May-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20


Lake Ontario Outflows
Compared to Average (1900-2019)
Outflow Compared to Average (cm on L. Ont.)
50
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
Jan-17 Feb-17 Mar-17 Apr-17 May-17 Jun-17 Jul-17 Aug-17 Sep-17 Oct-17 Nov-17 Dec-17
Jan-18 Feb-18 Mar-18 Apr-18 May-18 Jun-18 Jul-18 Aug-18 Sep-18 Oct-18 Nov-18 Dec-18
Jan-19 Feb-19 Mar-19 Apr-19 May-19 Jun-19 Jul-19 Aug-19 Sep-19 Oct-19 Nov-19 Dec-19
Jan-20 Feb-20 Mar-20 Apr-20 May-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20

Basin Map


Lake Ontario - St. Lawrence River
Drainage Basin (including Ottawa River)
Ottawa River
Trois-Rivières, QC
Montreal, QC
Canada
United States
Ottawa, ON
Cornwall, ON
Massena, NY
Ogdensburg, NY
St. Lawrence River
Lake Huron
Kingston, ON
Cobourg, ON
Toronto, ON
Lake Ontario
Oswego, NY
Syracuse, NY
Port Weller, ON
Rochester, NY
Niagara River
Buffalo, NY
Lake Erie
Legend
International Border
Moses-Saunders Dam
Carillon Dam
Ottawa River Watershed
St. Lawrence River Watershed
Lake Ontario Watershed
Upper Great Lakes Watersheds
0 60 120 240 Km
N
Base Data Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Media Reports

Flood watch issued for Lake Ontario & the Upper St. Lawrence River
http://kingstonherald.com/release/20-04-flood-watch-2010328631

Cataraqui Region Conservation Authority issues flood watch for Kingston region
https://globalnews.ca/news/6811858/flood-watch-for-kingston-region/

Water levels update
https://www.quintenews.com/2020/04/16/water-levels-update/

USACE Buffalo District prepares for high water on Lakes Erie, Ontario
https://www.dvidshub.net/news/367373/usace-buffalo-district-prepares-high-water-lakes-erie-ontario

Notes on Intended Audiences and Uses

This product is primarily for internal use by water managers and responsible authorities along the shorelines of the Great Lakes and St. Lawrence River. It provides a summary of current and expected water level conditions and operations related to the regulation of Lake Ontario outflows through the St. Lawrence River**.** This information is available to draw from and to support your own communications locally, but please note that this product is not for direct public distribution. Public information is available online through the ILOSLRB website and on Facebook:

- Current Conditions: www.ijc.org/en/loslrb/watershed/current-conditions
- Forecasts: www.ijc.org/en/loslrb/watershed/forecasts

Data in this document is considered "provisional" and all water levels are referenced to International Great Lakes (Vertical) Datum 1985 (IGLD85). Note that local communities and government agencies may use other datums such as NAVD88, CGVD28 or CGG2013 – particularly when determining flood risk. Measured and forecast water levels in this report can also be subject to a high degree of uncertainty and, importantly, do not account for local variations due to wind and wave effects. For info on local conditions, please refer to the responsible authorities in your area, a short list is provided below.

***** Emergency response is typically provided through your local municipality *****

Ontario

- *MNRF Flood Forecasting & Warning:* www.ontario.ca/law-and-safety/flood-forecasting-and-warning-program
- *Ottawa River Regulation & Planning Board:* www.ottawariver.ca/
- *Conservation Authorities:*

Lake Erie	Lake Ontario/Upper St. Lawrence River
Niagara Peninsula: www.npca.ca	Niagara Peninsula: www.npca.ca
Grand River: www.grandriver.ca	Hamilton: www.conservationhamilton.ca
Long Point: www.lprca.on.ca	Halton: www.conservationhalton.ca
Kettle Creek: www.kettlecreekconservation.on.ca	Credit Valley: www.creditvalleyca.ca
Catfish Creek: www.catfishcreek.ca	Toronto and Region: www.trca.ca
Lower Thames: www.catfishcreek.ca	Central Lake Ontario: www.cloca.ca
Essex Region: www.essexregionconservation.ca	Ganaraska Region: www.grca.on.ca
	Lower Trent: www.ltc.on.ca
	Quinte: www.quinteconservation.ca
	Cataraqui Region: www.crca.ca
	South Nation: www.nation.on.ca
	Raisin Region: www.rrca.on.ca

Quebec

- *Sécurité publique:* https://geoegl.msp.gouv.qc.ca/adnv2/
- *Comission de planification de la régularisation de la rivière des Outaouais:* www.rivieredesoutaouais.ca/
- *Ministère de l'Environnement et de la Lutte contre les changements climatiques:* https://www.cehq.gouv.qc.ca/prevision/previsions.asp?secteur=Archipel

New York State

- *National Weather Service:* https://www.weather.gov/buf/
- *National Oceanic and Atmospheric Administration:* https://tidesandcurrents.noaa.gov/
- *US Army Corps of Engineers:*
    - *Detroit District:* https://www.lre.usace.army.mil/Missions/Great-Lakes-Information
    - *Buffalo District:* https://www.lrb.usace.army.mil/Lake-Ontario-High-Water/