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MACKENZIE DELTA AND BEAUFORT COAST SPRING BREAKUP NEWSLETTER

Report **2018-14**

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Welcome to Breakup 2018

Welcome to the 2018 Mackenzie and Beaufort breakup season. We are now into our 13th season of the breakup newsletter, which was started by Steve Solomon in 2006.

This year is the third breakup season for the Mackenzie-Beaufort Breakup group on Facebook <https://www.facebook.com/groups/1745524288993851/>. Over time we hope this forum hosted in the ISR will take over as the main place to share observations and experience during breakup in the Delta and the coastal communities of the region.

Funding for our current breakup monitoring activity is from the Climate Change Geoscience Program of the Geological Survey of Canada, Natural Resources Canada. Again this year we are posting the newsletters on the CACCON website: www.caccon.org/mackenzie-beaufort-break-up-newsletter/. Please let us know if you do not wish to receive these reports (contact info above) and we will take you off the list. For those of you living in the north, we welcome photos, observations of timing of events, or anything out of the ordinary, and we thank you for all of the feedback received so far.

Water-level data are courtesy of Environment and Climate Change Canada [ECCC] (Water Survey of Canada) and derived from the real-time hydrometric data website at http://www.wateroffice.ec.gc.ca/index_e.html, which we acknowledge with thanks. Weather forecasts are also courtesy ECCC (Meteorological Service of Canada) at <http://weather.gc.ca>.

Current Conditions

It is a gorgeous day in the delta and Tuktoyaktuk. Inuvik, is mainly sunny, with a forecast high of 19 °C, and a low tonight of 2 °C. Aklavik is much the same with a daytime high of 20°C. Tuktoyaktuk has almost fun sun in the forecast with a high of 14 °C. Paulatuk is experiencing rain with a day time high of 1 °C. Cloudy with showers at Ulukhaktok, with a high of 5 °C and low 2 °C. Sachs Harbour is experiencing some rain with scatter flurries, with a high 1 °C, low 0 °C.

Water levels

Water levels throughout the delta continue to drop. The gauge in East Channel at Inuvik (10LC002), although intermittent, shows that the water may have leveled off over the past few days, and it currently stands at 12.5 m (Figure 1). In Peel Channel at Aklavik (10MC003), water level continues to drop at a very slow pace, down 1 cm in the past 24 hours, and the current level is 11.6 m (Figure 2).

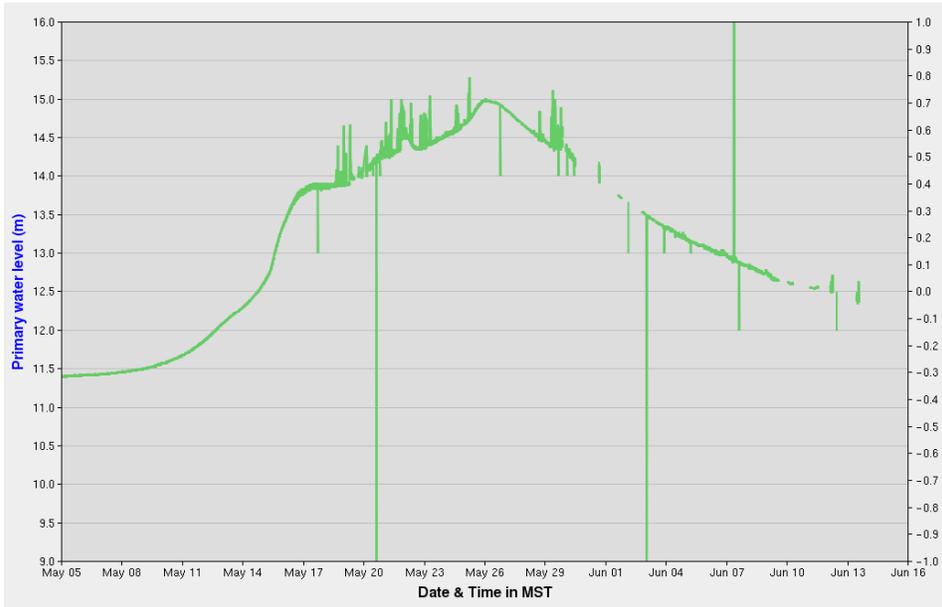


Figure 1. Provisional water level in East Channel at Inuvik (10LC002) since May 5 (courtesy Water Survey of Canada).

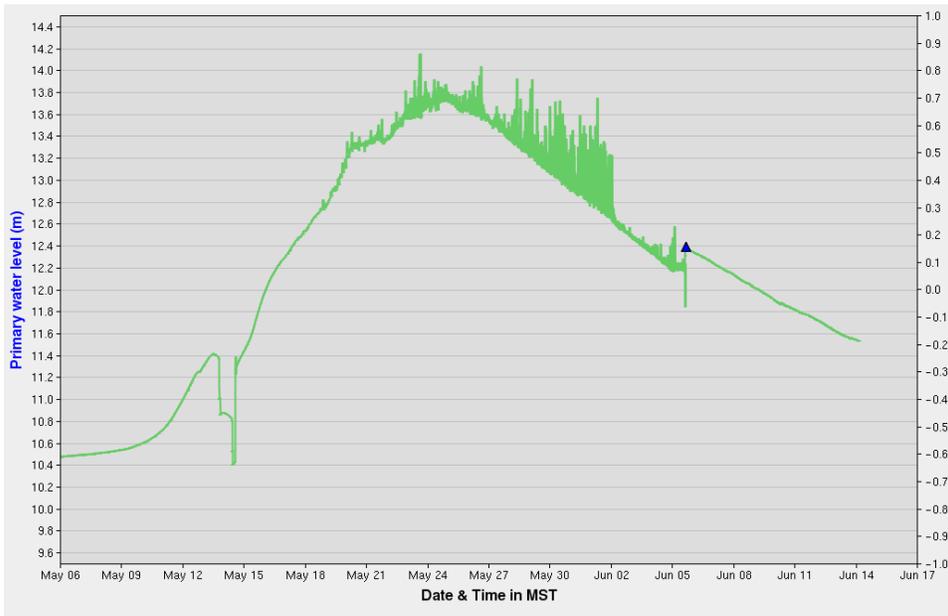


Figure 2. Provisional water level in Peel Channel above Aklavik (10MC003) since May 5 (courtesy Water Survey of Canada)

The delta gauges, in particular Napoiak Channel above Shallow Bay (10MC023) (Figure 3) and Reindeer Channel at Ellice Island (10MC011) (Figure 4) have generally continued to decrease, but both experienced short-term increases over the past few days, suggesting that they may now be responding to sea-level fluctuations in Mackenzie Bay. Figure 5 shows the multiyear comparison of water levels in Reindeer Channel at Ellice Island, highlighting the fact that water levels and associated discharge rates this year were slightly lower than previous years (Figure 5).

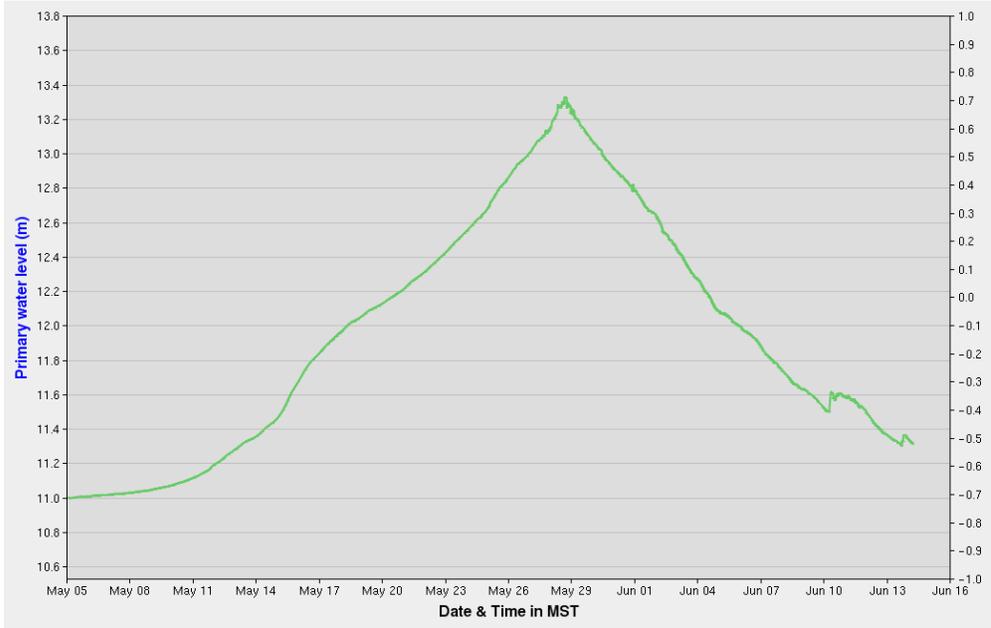


Figure 3. Provisional water level in Napoiak Channel above Shallow Bay (10MC023) since May 5 (courtesy Water Survey of Canada). 5

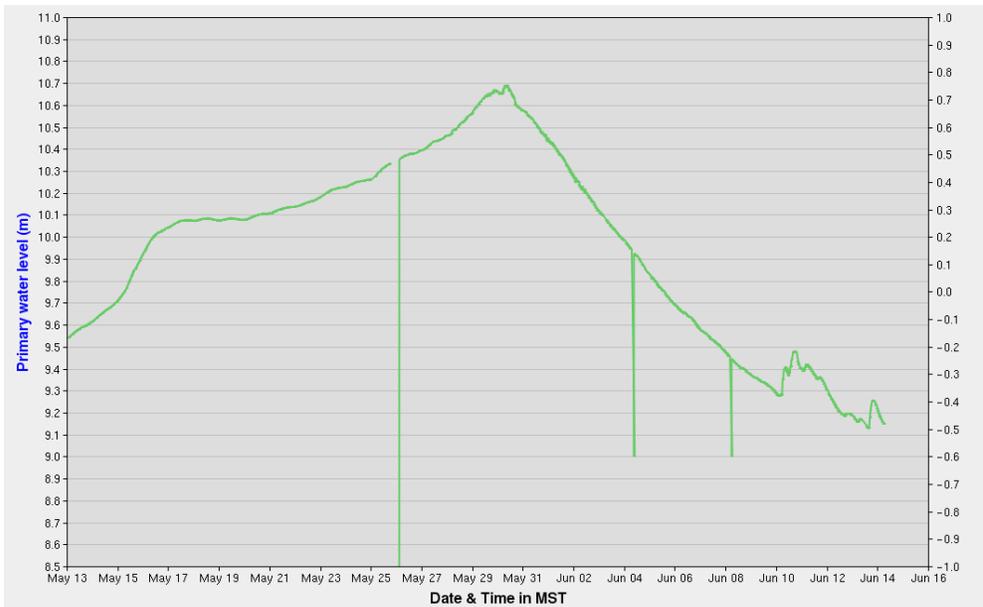


Figure 4. Provisional water level in Reindeer Channel at Ellice Island (10MC011) since May 13 (courtesy Water Survey of Canada).

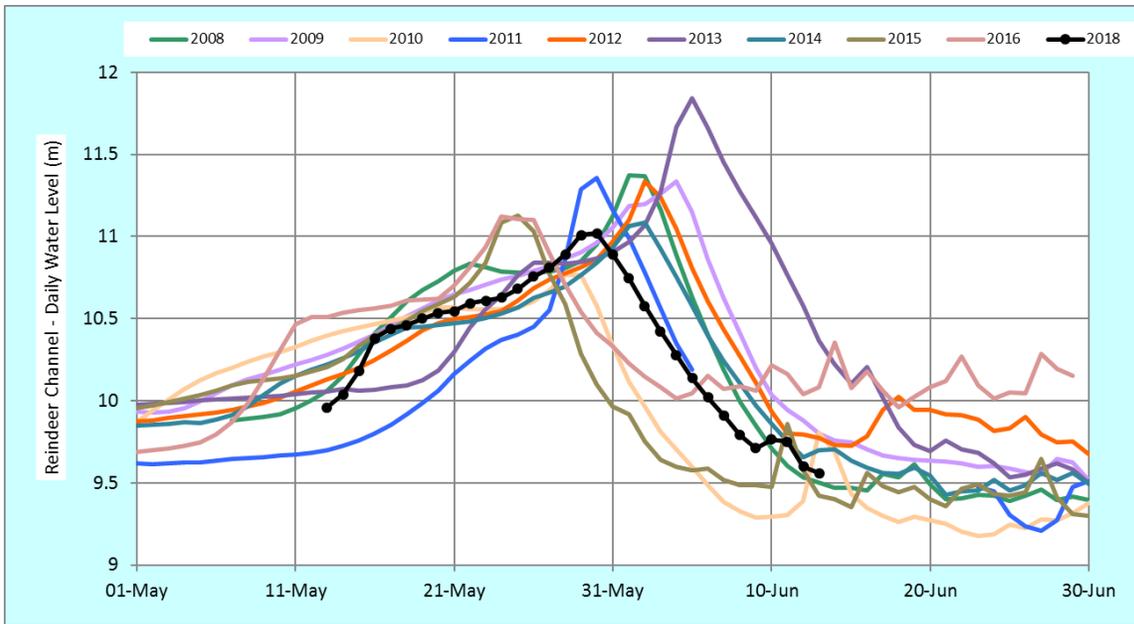


Figure 5. Daily mean water levels in Reindeer Channel at Ellice Island (10MC011) for the past decade with 2018 (black).

Satellite Imagery

Views of the Yukon and Mackenzie Delta region yesterday show the continued expansion of open water along the western delta front at Shallow Bay (locally obscured by cloud) and in Kugmallit Bay at the mouth of East Channel (Figures 6 and 7). The outer edge of the landfast ice remains remarkably stable, with wide ice off the delta and a narrower band along the Yukon coast. The outer edge of the landfast ice in front of Richards Island and Kugmallit Bay is 25-30 km further out this year than it was last year at this time. Unless larger chunks start to break off from the ocean side the breakup of the landfast ice bridge in this section could still be approximately 10-12 days away.

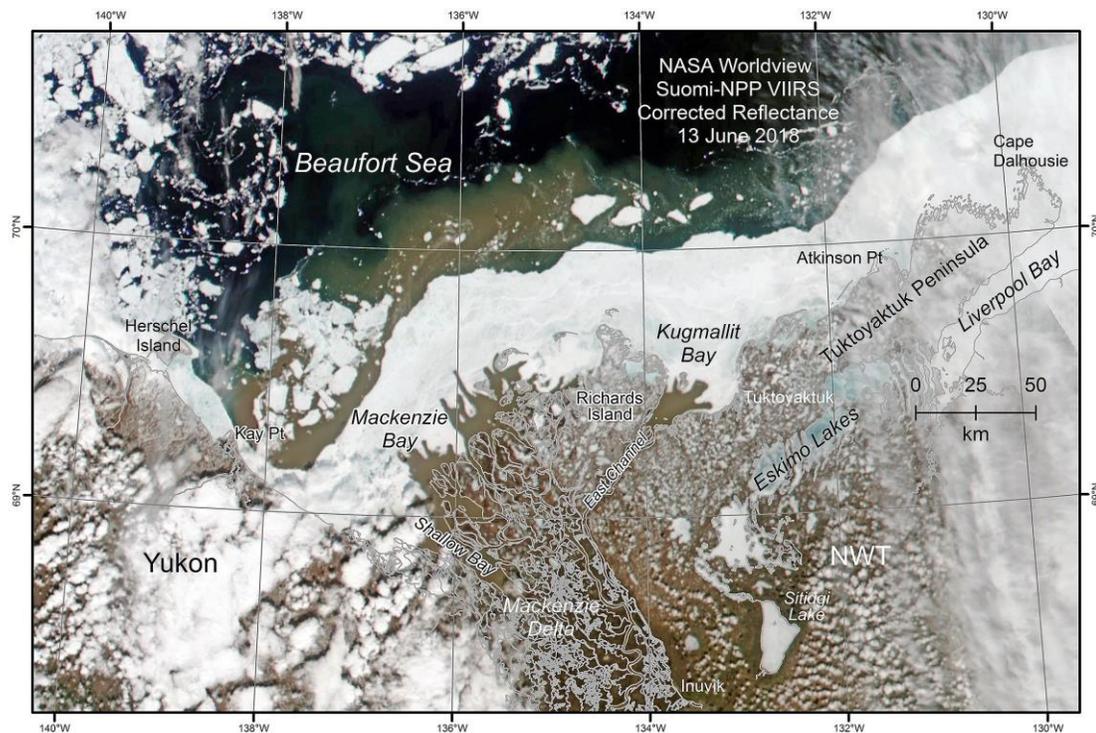


Figure 6. NASA Worldview Corrected Reflectance from the NOAA/NASA/Suomi NPP satellite with VIIRS for 13 June 2018.

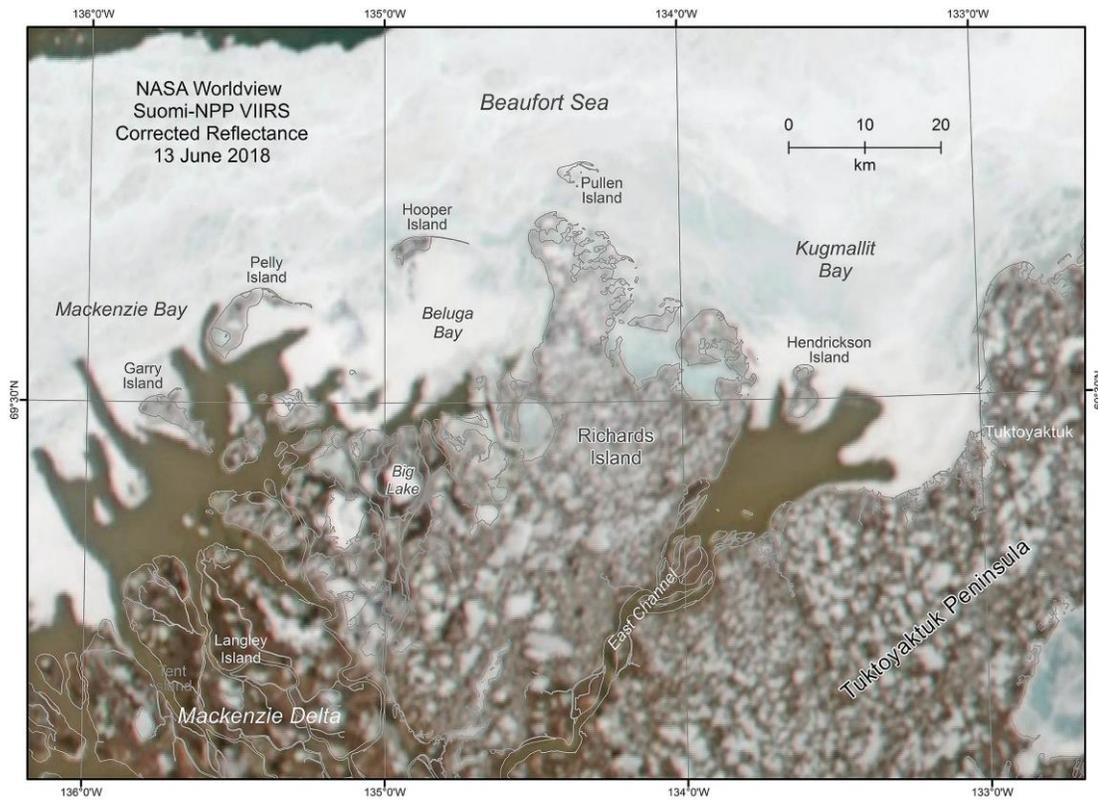


Figure 7. A close up look at the northern delta and Kugmallit Bay: NASA Worldview Corrected Reflectance from the NOAA/NASA/Suomi NPP satellite with VIIRS for 13 June 2018.

The melt pool in Kugmallit Bay is advancing in three lobes (one each side of Hendrickson Island, with a small shore lead along the eastern shore of Richards Island) and a third extending east toward Tuk. As of the time of the imagery yesterday, the leading edge was just 11 km from Tuk (Figure 7), so we expect it is less 10 km today.