

June Report: Outlook Based on May Data

Regional 2009 Outlook: Western Parry Channel Route of the Northwest Passage

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Estimate of Ice Evolution

Multi-year ice (MYI) conditions are much lighter than normal as the melt season begins in Western Parry Channel region of the Northwest Passage (Figure 1). The amount of MYI is just less than 2008 and even less than 2007 (Figure 2), when the region cleared for the first time during the satellite era. However, light ice conditions at the start of the melt season are not a precursor to complete clearing – 1999 and 2008 are evidence of this (Figure 1). It is also important to note that 2008 was the longest melt season on record within the Canadian Arctic Archipelago but a long melt season by itself is not sufficient to completely clear the Northwest Passage (Howell et al., 2009). This is because seasonal first-year ice (FYI) in the region can survive the melt season and ii) more seasonal FYI in the Western Parry Channel facilitates a steady flux of MYI through Byam-Martin Channel from the Queen Elizabeth Islands.

Although 2009 contains less MYI than 2008 at the start of the season, the spatial distribution is different (Figure 1; Figure 2). For 2008, the FYI broke-up south of Byam-Martin Channel early in the season, but by doing so allowed for MYI from the Queen Elizabeth Islands to continually flow into the Western Parry Channel. As the melt season gets underway for 2009, high MYI concentrations immediately south of Byam-Martin Channel will likely delay breakup in the region compared to 2008. When the ice within the Western Parry Channel eventually does become mobile, large flows of MYI present in Byam-Martin Channel and the Queen Elizabeth Islands are poised to be flushed into the region. As a result, it seems likely that 2009 MYI conditions within the Western Parry Channel during the season maybe ‘less’ than normal but this will not result in the clearing of the Northwest Passage for 2009.

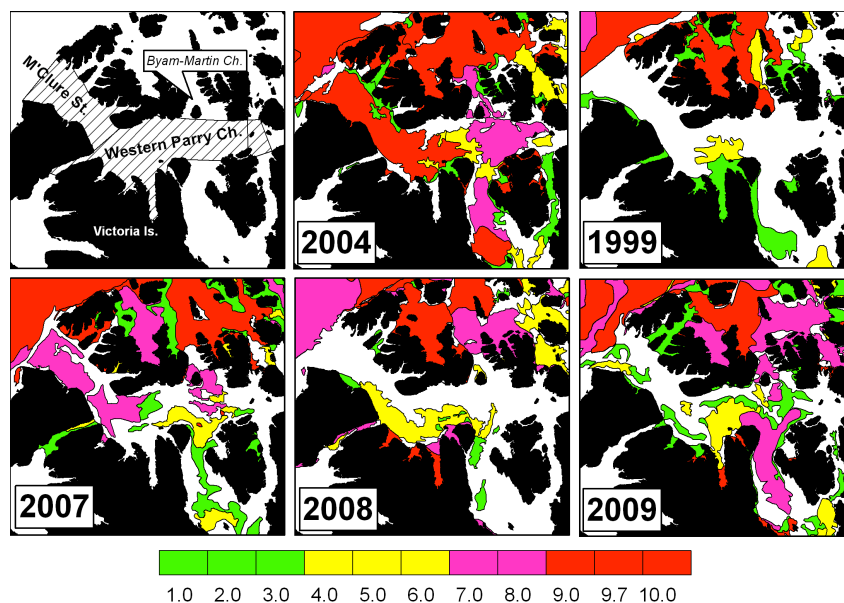


Figure 1. Spatial distribution of multi-year ice concentration (in tenths) within the Western Parry Channel region of the Northwest Passage on May 15th for a heavy ice year (2004), a light year ice (1999) and the last three years.

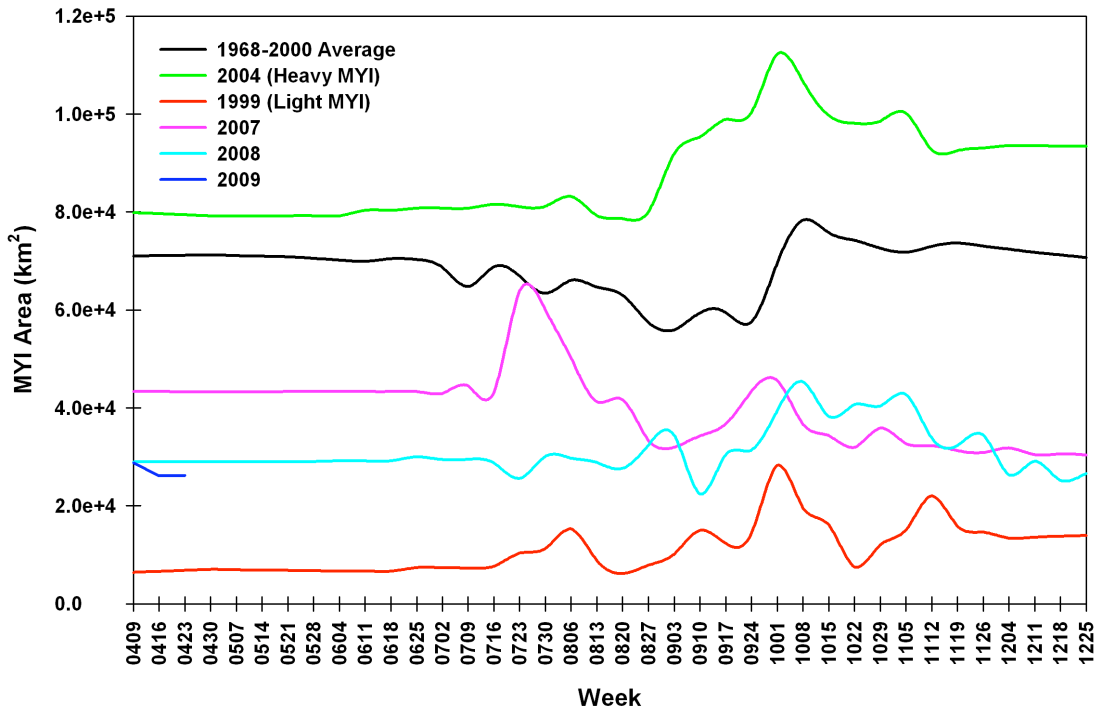


Figure 2. Time series of the evolution of multi-year ice area within the Western Parry Channel region of the Northwest Passage.

Reference

Howell, S. E. L., C. R. Duguay, and T. Markus (2009), Sea ice conditions and melt season duration variability within the Canadian Arctic Archipelago: 1979–2008, *Geophys. Res. Lett.*, 36, L10502, doi:10.1029/2009GL037681.