SEARCH Regional Sea Ice Outlook 2011 May Report
Region of Interest: Western Parry Channel region of the Northwest Passage
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Clearing of the Northwest Passage:
As of the end of May, total sea ice area in the Western Parry Channel region of the Northwest Passage is similar to the historical average (Figure 1a). The multi-year ice (MYI) area is well below the historical average and just slightly above what it was at this time of the season in 2010 (Figure 1b). By this time last year breakup was well under way and the region contained considerable amounts of open water by the first week of June, eventually leading to record low conditions. The very warm spring in the western Canadian Arctic facilitated an early breakup in 2010, but warm spring temperatures are not solely responsible for clearing. In 2007, the region was virtually ice-free in August, yet it was preceded by a much cooler spring. Light MYI conditions at the start of the melt season within the Western Parry Channel are also not a precursor to complete clearing – 1999, 2008 and 2009 are evidence of this. Clearing of this region of the Northwest Passage in recent years seems to depend on the rate of seasonal ice loss in July and August as MYI typically remains fairly stable with the exception being 2007 (Figure 1b). The distribution of MYI within the Canadian Arctic Archipelago is also an important factor as it can delay breakup in the Western Parry Channel.

Will the Western Parry Channel region of the Northwest Passage clear in 2011? Spring air temperatures over most of the Canadian Arctic are slightly below normal and breakup seems to be proceeding normally. There are high concentrations of MYI in the centre of the Western Parry Channel which may further delay breakup (Figure 2). Based on these factors clearing seems unlikely at this point but given the events in recent years it does seem very likely that sea ice will be less than the historical average in the region.

It should be noted that the clearing of the Western Parry Channel is very difficult to predict several months in advance. Much will depend on air temperatures during July and August but the biggest factor will be if an atmospheric pattern develops that prevents MYI in the Queen Elizabeth Islands and/or the Arctic Ocean (via the M'Clure Strait) from entering the Western Parry Channel region of Northwest Passage.

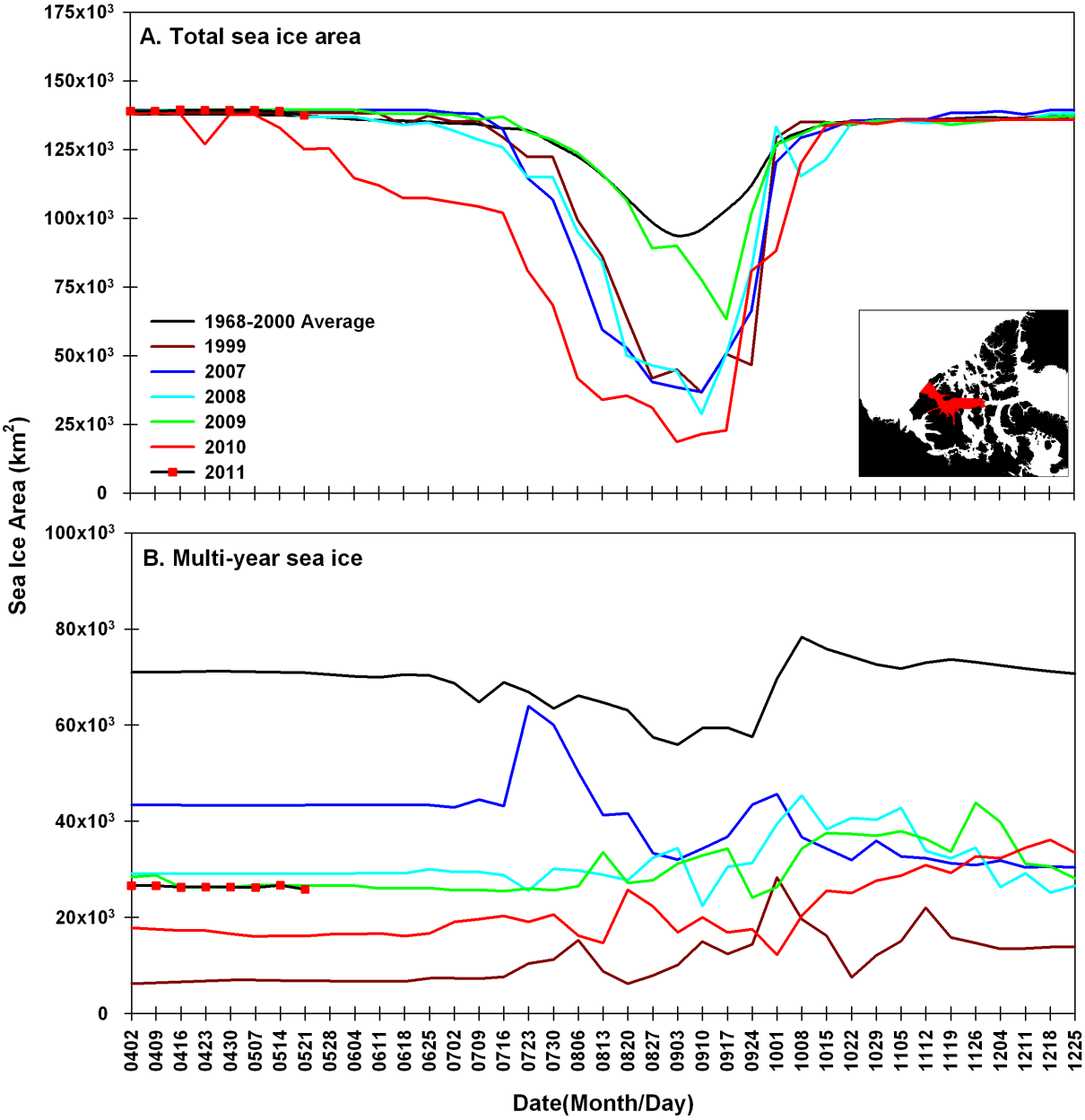

Figure 1. Time series of a) total sea ice and b) multi-year ice (MYI) area for selected years within the Western Parry Channel. Data is from the Canadian Ice Service.

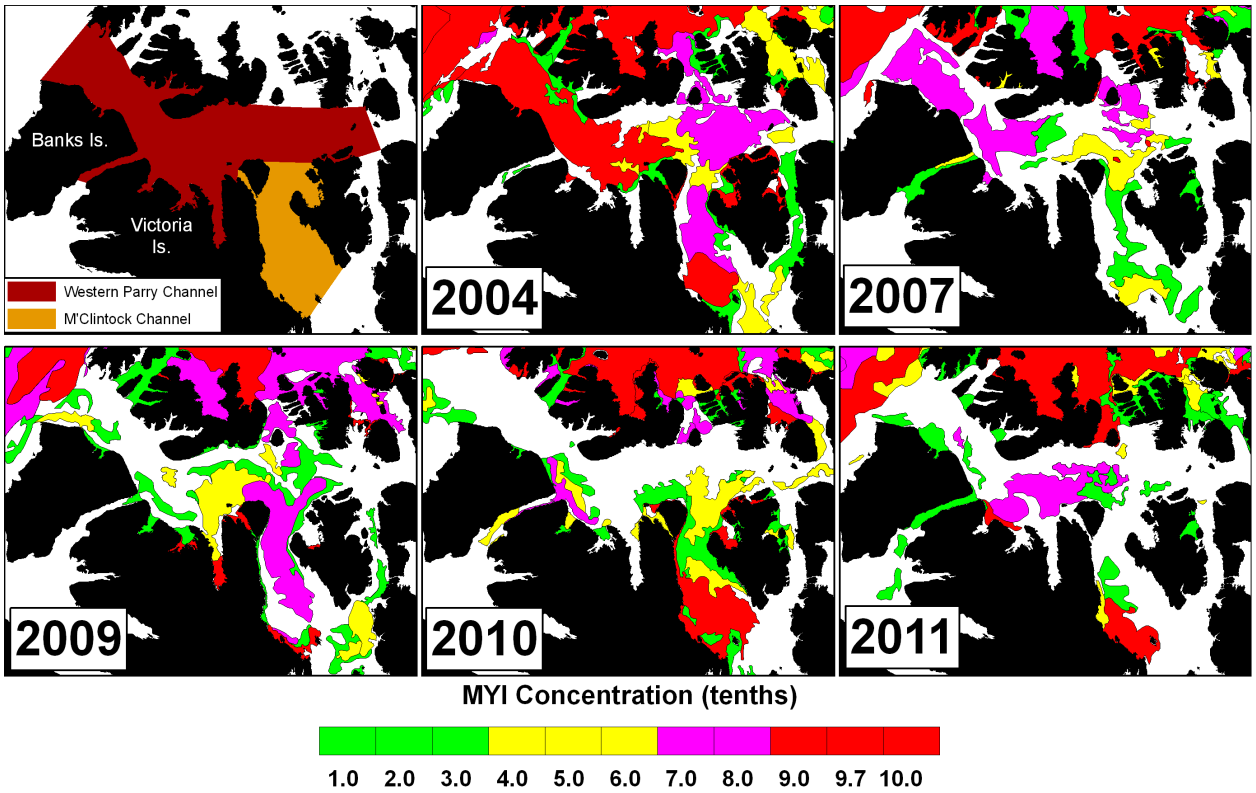

Figure 2. Spatial distribution of multi-year ice concentration (in tenths) within the Western Parry Channel region of the Northwest Passage circa mid-May for the heavy ice year of 2004 and the recent years of 2007, 2009-2011. Data is from the Canadian Ice Service.