

## Abstract Preview - Step 3/4

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Session: GG-2 Arctic and Antarctic past ice sheet dynamics and paleoclimate evolution

Polar program: None

**Title: Ice sheet instability in the western Ross Sea during the Last Glacial Maximum**

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Text: Last Glacial Maximum (LGM) deposit in the western Ross Sea is represented by glacial diamicton facies, and with an absence of sediment facies other than diamicton, it has been assumed that thick ice sheet was extended to the outer shelf and was grounded to the sea floor during the LGM. However, we cannot preclude the possibility that the ice sheet did not remain stable in the western Ross Sea, considering the unstable nature of a marine-based ice sheet, presence of deep Drygalski Trough that makes warm water-intrusion easier, and sporadic warm climate events such as AIM2 during the LGM. Here we show that diatomaceous mud layers underlie diamicton in cores collected from the Southern Drygalski Trough (SDT), indicating there was an open marine environment prior to the latest glacial event in the western Ross Sea. Ramped PyrOx (RP) <sup>14</sup>C dating on the diatomaceous mud revealed that ice sheet on the western Ross Sea retreated at ~26.6 ky BP (all ages here are uncorrected <sup>14</sup>C), and the SDT remained ungrounded until the latest ice sheet advanced at ~20.8 ky BP. The latest ice sheet retreated from the SDT at ~8.7 ky BP. This chronology is remarkably consistent with previous RP <sup>14</sup>C ages on glacial and deglacial successions from condensed sections on the open Ross Sea. Combined with a result from the eastern Ross Sea implying an earlier retreat of ice sheet prior to the LGM, it is possible that large areas of the Ross Embayment remained ungrounded during the global LGM period.

**Preferred Presentation Type: Oral Presentation**

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