AGU FALL MEETING
San Francisco | 12–16 December 2016

PP13A-2041: An XRF Geochemical Investigation of the Deglaciation of Hall Basin, Naires Strait

Monday, 12 December 2016
13:40 - 18:00
Moscone South - Poster Hall

Sediment core HLY0301-5GC, raised from Hall Basin, Nares Strait, documents the early Holocene opening of Nares Strait at about 9,000 cal yr BP (dR = 0), containing a lithological transition from high accumulation rate laminated sediments to low accumulation rate bioturbated sediments coupled with changes in paleoceanographic proxies at the transition (see Jennings et al., 2011, *Oceanography*). New sediment cores recovered from Hall Basin during the multidisciplinary OD1507 expedition onboard the Swedish Icebreaker Oden contain similar lithologic changes and provide new spatial context to the deglacial stratigraphy of Hall Basin. High-resolution x-ray fluorescence (XRF) and computed tomography (CT) scans of the new OD1507 cores and HLY0301-5GC were obtained to augment the existing data set and to study the down-core and between core variations in elemental composition and lithology. The laminated interval of HLY0301-5GC is characterized by high frequency variability in titanium (Ti) normalized to calcium (Ca) superimposed on longer wavelength variations. Nearby cores OD1507-31PC to the west, near the mouth of Archer Fjord, Ellesmere Island, and OD1507-18GC to the east, near the Polaris Foreland, Northwest Greenland, form a west-east transect with HLY03-01-5GC. While all three cores have broadly similar lithology, Ca is enriched relative to Ti in cores closer to Greenland. 18GC shows an abrupt shift not captured in the two other cores to high Ca relative to Ti at about 3 meters. Geochronologic work on the new OD1507 cores is in progress, however paleomagnetic measurements on u-channel samples isolate a strong and stable characteristic remanent magnetization, allowing for paleosecular variation (PSV) based stratigraphic correlation, independent of paleoenvironmental variability. These data are used to investigate lithologic, temporal, and spatial geochemical variations to better understand changes in sediment process and provenance during the deglaciation of Hall Basin.

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