

**C43A-0774: Landforms indicative of former glaciations and permafrost along continental margin of the Chukchi and East Siberian seas**

Thursday, 17 December 2015

13:40 - 18:00

- Moscone South
- - Poster Hall

In the western Arctic Ocean glacial landforms are interpreted as a complex pattern of Pleistocene glaciations along the continental margin of the East Siberian Sea and the Chukchi borderland. These landforms include moraines, drumlinized features, glacial debris flows, till wedges, mega-scale glacial lineations (MSGSL), and iceberg plough marks. Orientations of some of the landforms suggest the presence of former ice sheets on the Chukchi Borderland and the East Siberian shelf. In seismic and sub-bottom profiles as well as sediment cores, there is evidence that glaciations have occurred repeatedly. Typically, several generations of glacial wedges intercalate with well-stratified (interglacial) sediments in ice-distal locations. MSGSL of former ice grounding in present water depths of more than 1200 m suggests that some ice sheets developed significant thickness and size. The extent of glacial features and deposits into the Arctic Ocean decreased with time. We interpret this as indication that ice sheets in the western Arctic Ocean were thicker and larger during earlier times of the Pleistocene and became restricted to the Chukchi Borderland during the most recent glaciation (Last Glacial Maximum, LGM). Finally, icebergs intensively ploughed the sediments along the Chukchi and East Siberian margin in a range from 350m to 80m present water depth. In water depth shallower than 80m, sub-bottom profiles in the East Siberian Sea exhibit acoustic facies more typical for submarine permafrost. Discontinuous (permafrost) reflectors mask sub-bottom strata beneath an unfrozen 10m thick top sediment layer. In places, unfrozen sediment-filled depressions (taliks) are visible to about 20m below the seafloor, which may be related to former thermokarst and/or channels. We suggest that only during the LGM permafrost formed in the exposed area of the entire East Siberian Sea, whereas some areas have been largely covered by ice sheets during previous glacial periods.

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