PROJECT SUMMARY REPORT - 2014 CAMBRIDGE BAY CAMPAIGN

Subproject: Microwave Scattering from Sea Ice Pressure Ridges

Actual field dates: April 25-May 25, 2014
Field site: Dease Strait, Nunavut, Canada
Number of man-days in the field: 14

Summary:
Unfortunately, there were no ridges anywhere in Dease Strait so the original project had to be changed. The roughest ice found in the project area was only slightly deformed sea ice. Data was acquired in Dease Strait, near the community of Cambridge Bay, Nunavut, in order to examine small-scale surface topography changes over a three-week period in May. An area of untouched slightly deformed snow-covered sea ice was used to measure a time-series of surface topography, while transects of ice and snow thickness were completed opportunistically outside of the non-invasive site. The objective of this project was to examine how the surface topography of slightly deformed ice, and associated snow and ice thicknesses changed throughout the month of May in Dease Strait. The LiDAR topographic surface measurements (MS Data) were acquired as a complementary dataset to the snow and ice thickness transect dataset (JI Data).

The data collected in May of 2014 in Dease Strait is still currently being processed. All of the LiDAR scans have been registered in order to create three-dimensional models with limited shadowing (gaps in the data). These models have all been cleaned up (bad data points removed (i.e. precipitation)), and some post-processing for analysis has been completed. These models will be used to measure various parameters including average and RMS heights, large scale surface topography changes, and small-scale surface roughness changes.

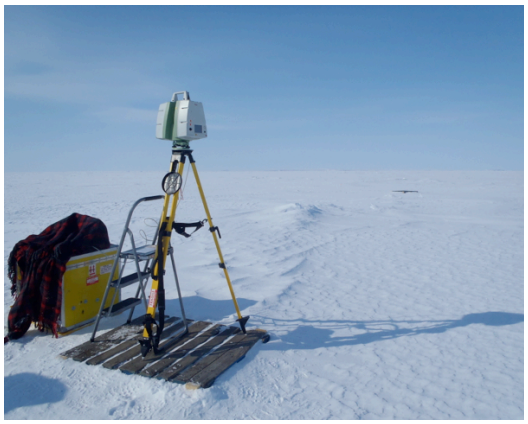

Figure 1

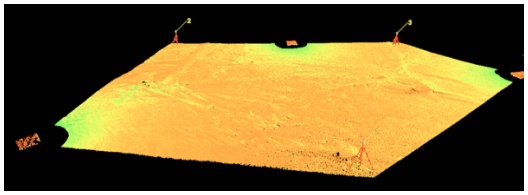

Figure 2

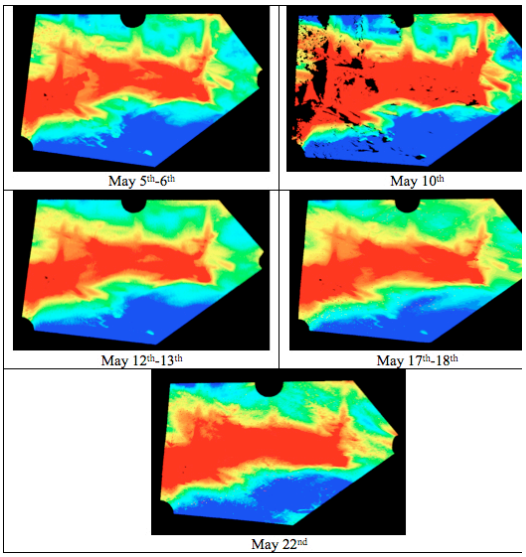

Figure 3

Photos:
Fig.1: The LiDAR scanner acquiring surface data of the non-invasive sampling site.
Credit: Megan Shields
Fig. 2: A point cloud model displayed by intensity post-processed from the May 5th and 6th scans (platform scanning locations and targets have been left in the model). Areas of small deformation on the snow surface are clearly visible.
Credit: Megan Shields
Fig. 3: Point cloud models mapped by elevation. Red represents areas of highest elevation and blue represents areas of lowest elevation.
Credit: Megan Shields

Participants:
Megan Shields (CEOS); John Iacozza (CEOS); David Barber (CEOS)

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