

*Mapping and Characterization of Recurring Spring Leads and Landfast Ice in the Chukchi and Beaufort Seas, Coastal Marine Institute Project (NOFA MMS09HQPA0004T)*

**Monthly progress report, September 2009**

*(1) Summary of work performed and progress made during preceding month*

*A. Analysis of ice distribution and lead patterns*

We continue to scan the daily AVHRR satellite imagery of covering the Chukchi Sea to identify those needed for studying fast ice stability and for statistical analysis of lead openings. Work on the migrating code into IDL for AVHRR imagery analysis has started.

*B. Analysis of landfast ice extent*

**SAR Data Mining**

SAR data mining continued for RADARSAT-1 data granules. Key IDL scripts developed for managing data, creating mosaics and gradient difference images for the previous study are being updated and refined for the current project.

*C. Assessing potential alternative approaches at deriving landfast ice edge locations and landfast ice stability*

More PALSAR datasets have been ordered and processed to verify the reliability of the technique discussed in previous reports. These additional data sets could confirm the previous finding that landfast ice retains high interferometric coherence in 46 day L-band SAR interferograms. A comparison with traditionally derived RADARSAT ScanSAR landfast ice measurements will be performed in September.

An abstract entitled “Monitoring Landfast Ice Through L-band SAR Interferometry” has been submitted to the 3rd ALOS Joint PI Symposium and was accepted for publication (attached with this report).

*D. Assessing potential alternative approaches at deriving landfast ice edge locations and landfast ice stability*

More PALSAR datasets were ordered and processed to verify the reliability of the technique under development by our team. These additional data sets could confirm the previous finding that landfast ice retains high interferometric coherence in 46-day L-band SAR interferograms. A second test site has been established to increase the number of samples in the reliability analysis. This second test site covers the coast of the Seward Peninsula, Alaska at the southern edge of our study region (see Figure 1). InSAR data of interest has been identified and ordered. Landfast ice measurements from RADARSAT ScanSAR data were produced for the additional test site and will be compared to InSAR results.

An undergraduate student, Casey Denny, has started work on the project to help with the InSAR data compilation and analysis. Ms. Denny has previously worked for the

Alaska Satellite Facility and brings significant expertise in SAR data processing to the project.



Figure 1: Additional study area for testing the reliability and performance of landfast ice mapping from InSAR coherence measurements.

#### *D. Miscellaneous activities*

##### Web Site and Data Systems update

Jason Grimes from GINA has implemented the Content Management System (CMS) for the project web site and is building the page templates for the new, expanded site. The existing project website has been updated with information about the expanded geographic scope of the project. A new data file format—comma separated Values (CSV)—has been added to the existing public site. Gaylord and Grimes are migrating the content and data from the current public site to the new site and placing it under management in the CMS. When complete, the new site will be for internal project use and hosted behind a password until final release of the project data.

*(2) Summary of significant technical, schedule or cost problems encountered during preceding month*

n/a

*(3) Summary of resolutions agreed to between Contractor and MMS re item (2)*

n/a

*(4) Significant meetings held or other contacts made in connection with project during preceding month*

In communications with John Cologgi, Allan Reece and Warren Horowitz, a project meeting has been confirmed for Wednesday October 14 in association with the MMS Workshop held in Anchorage, AK. Goal of the meeting is to obtain feedback from

industry on any more specific information that may be of value in the lease sale area and address any other open questions.

*(5) Action items, open questions etc.*

n/a