

*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, August 2009**

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

*A. Analysis of ice distribution and lead patterns*

The workflow of AVHRR data processing, building on the catalog of suitable imagery being assembled, is being developed. In order to streamline the process, it was decided to migrate programs written for analysis of earlier imagery over into the processing environment at GINA. This migration process and associated programming work is expected to take roughly two months.

*B. Analysis of landfast ice extent*

**Study Area Refinement / SAR Data Mining**

Refinements to both portions of the study were made. After reviewing the data ordered for the 2004-05 ice season, it was determined that several additional scenes would be required to provide coverage of Kotzebue Sound and that the Northern portion of the Chukchi study area could be reduced since it is very unlikely the landfast ice will extend far offshore in the Chukchi. The Beaufort portion of the study area was also reduced slightly along the Northern boundary (to the extent of the maximum landfast ice extent from the previous study.) This will decrease the volume of data to manage and process substantially. In addition, it was noted that images that are a minimum of 10 frames apart are required to provide sufficient overlap. The image footprints in the ASF interface show that there is an overlap for images that are 11 frames apart, but the actual frames received have a small gap between frames. Additional frames were ordered to fill the gap.

Allison Gaylord met with team members at UAF on August 13<sup>th</sup> and 14<sup>th</sup>. During this time the IDL scripts from the 2003-05 were retrieved from archive and reviewed. It was determined that some code updates would be required to adapt the scripts for the new study. Updated study areas were generated for use in clipping SAR mosaics (Figure 1). Updated coast masks were also produced for use in generating the gradient difference imagery for the “supervised” landfast ice delineations. These will be used in testing the updated scripts.

## Landfast Ice Mapping - Refined Study Area

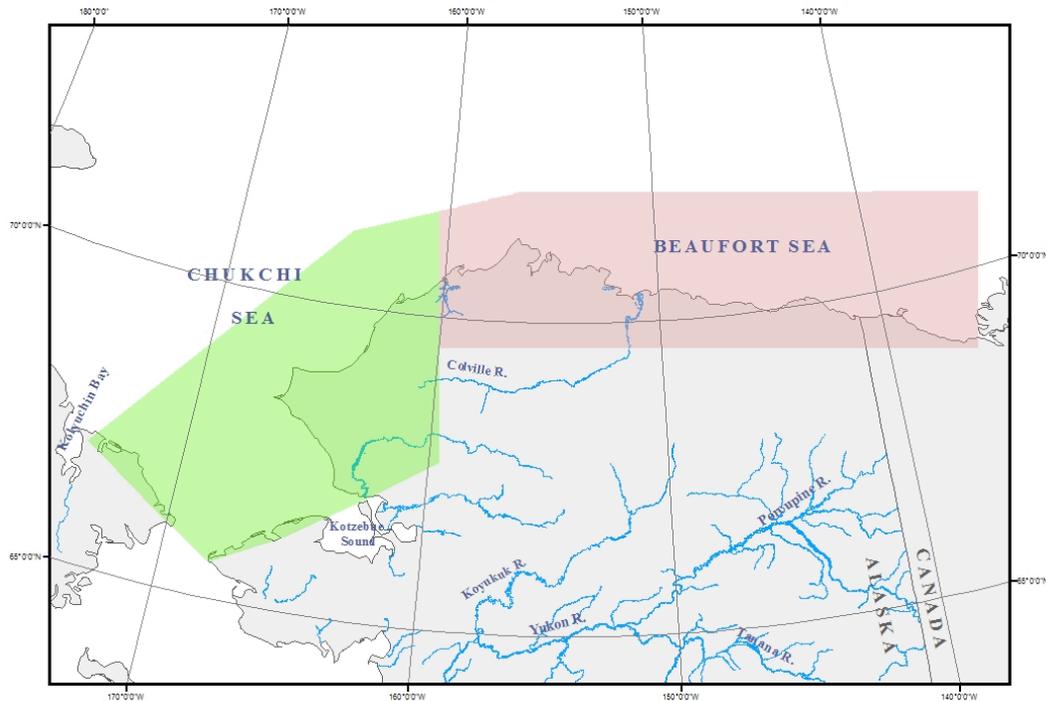


Figure 1: Refined study areas for landfast ice extent analysis, taking into consideration the observed maximum landfast ice width and project goals.

Discussions also included coordinating landfast ice mapping in the Southern Chukchi and northern Bering Sea (Bering Strait area) with the MMS study to extend the coverage further south for a few years where detailed field measurements have been collected at Wales. SAR data mining in the Northern Chukchi will be coordinated with data acquisition in the Southern Chukchi.

### *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. Miscellaneous activities*

Web Site update

Gaylord and Eicken discussed requirements for updating the project web site used for the 2003-06 study. Jason Grimes from GINA recommended utilizing a Content Management System (CMS) called Radiance for sharing the products from the new study (amongst team members and the MMS contracting officer) via a password protected web site. The CMS structure will be similar to that used by the web site developed for the 2003-05 study. GINA will eventually migrate the legacy project web site to the Radiance CMS as well and work is now underway to implement the new environment.

*(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*

A series of project meetings involving all investigators (with the exception of Lew Shapiro, who was inspecting water wells in Ghana for much of August) was held during Gaylord's visit to UAF over a period of 2 two days in mid-August.

In communications with John Cologgi at Conoco-Phillips it was decided to have short, informal meeting during the MMS Workshop in Anchorage, most likely in the morning of Wednesday Oct 14. While Allan Reece (Shell) cannot attend, we may be able to involve somebody from Shell in his place.

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

n/a