

*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, November 2010**

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

A. *Analysis of ice distribution and lead patterns*

The daily AVHRR images for the Alaskan Beaufort Sea for Dec-Jun of the years 2004-05 through 2009-10 have been examined, and a "best" quality image for each day has been selected for analysis. The next step is to look at the selected images in more detail to identify a suitable set for statistical analysis of lead patterns as was done for OCS Study MMS 2005-068. That work should be completed within the next few weeks.

B. *Analysis of landfast ice extent*

Processing of SAR imagery in support of the landfast sea ice mapping continued, this month. We have focused on identifying additional imagery to fill gaps in the ASF archive and correcting some mosaicking and georeferencing problems we have identified iteratively during the SLIE delineation processes.

One problem we have identified in the mosaicking process is ensuring a consistent order in which the individual scenes overlap. The far western scenes, at the edge of the ASF station mask, are sometimes of lower quality than others and so we wish to preferentially place them underneath other scenes. Similarly, there are additional scenes that were acquired to cover Kotzebue Sound when we expanded the study region in March. We are re-processing some mosaicks so that these scenes lie underneath others so they do not interfere with SLIEs that have already been partially delineated.

The careful manual examination involved with delineating the SLIEs has revealed some large georeferencing problems affecting imagery during springtime in 2006. Rudi Gens has implemented a new technique to refine the georeferencing using a digital elevation model, but we may have to manually correct others on an individual basis.

The tables below summarize the current state of progress made by ice season.

**Table 1: Data acquisition status for Chukchi study region**

	<b>Order Placed</b>	<b>Retrieved from archive</b>	<b>Geocoded</b>	<b>Gradient Diff</b>	<b>Uploaded to web site</b>	<b>Notes</b>
1996-1997	Y	Y	N	N	N	Frames ready to be geocoded/mosaicked (only 2 mosaics available for Oct)
1997-1998	N	N	N	N	N	No data for October
1998-1999	Y	Y	Y	Y	N	
1999-2000	N	N	N	N	N	
2000-2001	N	N	N	N	N	
2001-2002	N	N	N	N	N	
2002-2003	N	N	N	N	N	Only 2 mosaics available in December
2003-2004	N	N	N	N	N	
2004-2005	Y	Y	Y*	Y*	N	* Re-process mosaics with frames in original order (4 new frames 4 Kotz were added; need to wrap up Kotz delineations)
2005-2006	Y	Y	Y*	Y*	N	* Re-run mosaics with frames in original order (11 new frames 4 Kotz added; 8 Mosaics w/ 1km+ geocoding errors)
2006-2007	Y	Y	Y	Y	N	
2007-2008	Y	Y	N	N	N	Frames ready to be geocoded/mosaicked (data only through April)

**Table 2: Data acquisition status for Chukchi study region**

	<b>Order Placed</b>	<b>Retrieved from archive</b>	<b>Geocoded</b>	<b>Gradient Diff</b>	<b>Uploaded to web site</b>	<b>Notes</b>
1996-1997	Y	Y	Y	Y	Y	Complete (Previous study)
1997-1998	Y	Y	Y	Y	Y	Complete (Previous study)
1998-1999	Y	Y	Y	Y	Y	Complete (Previous study)
1999-2000	Y	Y	Y	Y	Y	Complete (Previous study)
2000-2001	Y	Y	Y	Y	Y	Complete (Previous study)
2001-2002	Y	Y	Y	Y	Y	Complete (Previous study)
2002-2003	Y	Y	Y	Y	Y	Complete (Previous study)
2003-2004	Y	Y	Y	Y	Y	Complete (Previous study)
2004-2005	Y	Y	Y	Y	Y	Complete
2005-2006	Y	Y	Y*	Y *	N	*Geocoding errors on 7 mosaics; mosaics need to be reprocessed
2006-2007	Y	Y	Y	Y	N	Complete
2007-2008	Y	Y	N	N	N	Frames ready to be geocoded & mosaicked (Data only available through April)

**Table 3: SLIE processing status for Chukchi study region**

Chukchi	SLIE Delineations	Shapefiles	Grids	GeoDB	Uploaded to web site	Notes
1996-1997						Need mosaics
1997-1998						
1998-1999	Y	Y	Y	Y	Y	Complete
1999-2000						
2000-2001						
2001-2002						
2002-2003						
2003-2004						
2004-2005	In progress					Delineations for Kotz area almost complete (pending mosaic updates)
2005-2006						Need updated mosaics (unresolved geocoding errors, etc.)
2006-2007	Y	Y	Y	Y	Y	Complete
2007-2008						Need mosaics

**Table 4: SLIE processing status for Chukchi study region**

<b>Chukchi</b>	<b>SLIE Delineations</b>	<b>Shapefiles</b>	<b>Grids</b>	<b>GeoDB</b>	<b>Uploaded to web site</b>	<b>Notes</b>
1996-1997	Y	Y	Y	Y	Y	Complete (Previous study)
1997-1998	Y	Y	Y	Y	Y	Complete (Previous study)
1998-1999	Y	Y	Y	Y	Y	Complete (Previous study)
1999-2000	Y	Y	Y	Y	Y	Complete (Previous study)
2000-2001	Y	Y	Y	Y	Y	Complete (Previous study)
2001-2002	Y	Y	Y	Y	Y	Complete (Previous study)
2002-2003	Y	Y	Y	Y	Y	Complete (Previous study)
2003-2004	Y	Y	Y	Y	Y	Complete (Previous study)
2004-2005	Y	Y	Y	Y	Y	Complete
2005-2006	In progress					Need mosaics (unresolved geocoding errors)
2006-2007	Y	Y	Y	Y	Y	Complete
2007-2008						Need mosaics

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

A manuscript presenting the interferometric approach to delineating landfast ice extent is in the final stages of review among authors. We hope to submit before the end of 2010, or early in 2011.

D. *Miscellaneous activities*

n/a

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*

n/a

5) *Action items, open questions etc.*

n/a