Graduate Research Fellowship Annual Progress Report – Oil Spill Recovery Institute

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April 30, 2008

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3. Grant number.
07-10-14

4. Research Project Title.
Promoting Sustainable Oil and Gas Development on Alaska’s North Slope through Local-Scale Integration of Geophysical and Traditional Knowledge

5. Starting and ending dates of reporting period.
July 2007 – June 2008
6. Statement of schedule whether or not the project is meeting its milestone schedule and brief description of research activities. Please include whether any alterations to the procedures or focus of research as described in the funded proposal have occurred. If the milestone schedule is not being met and/or if significant changes to the originally funded research procedures or focus have occurred, a brief explanation is required.

In general, the project’s milestone schedule is successfully being met through research activities in Barrow and Wales, Alaska (see below). Participation in a number of conferences and workshops has greatly improved upon my understanding of where my research may contribute to sea-ice geophysics and oil and gas development issues, and accordingly how local knowledge may be utilized in these areas. With support from OSRI and also from the Seasonal Ice Zone Observing Network, I’ve attended the North Slope Borough’s Traditional Knowledge Workshop (Anchorage, 09/2007), and the Oil and Ice Workshop (Anchorage, 10/2007), the Arctic Energy Summit (Anchorage, 10/2007), the Arctic Frontiers and related PhD workshop (Norway, 01/2008) and the Arctic Seas Scenarios Workshop (Univ. of New Hampshire, 03/2008). Much of what I’ve learned here will be incorporated into the approach used in the planning of the workshops described in Section 7. To date, I am on schedule to deliver the project’s culminating products – the GIS-based map of “windows of opportunity” for sea-ice system services and ice hazards, the curriculum for a North Slope Borough sea-ice seminar, and detailed compilation of sea-ice use maps. The one area where I have yet to make much progress and may represent an area where my research work is diverging from its initial goals is in the area of improving coastal radar capabilities for monitoring the landfast ice environment.

7. Research description and how it is being implemented.

Research work in Barrow now involves: (1) working with local sea-ice observers to provide continued documentation of local ice conditions from the perspective of communities, (2) mapping the use of the landfast ice by the whaling community using GPS and providing these maps to the community (www.sizonet.org/barrowicetrails), (3) performing electromagnetic thickness measurements along with high precision GPS surface topography measurements of whaling trails and other sea-ice features of interest (e.g., grounded ridges) (4) interviewing members of the whaling community regarding their observations and interpretation of ice stability and safety, and (5) analyzing the ice cover using SAR satellite imagery and coastal radar data. These last data sources are serving to update our understanding of the local ice conditions, and providing both a resource to guide other types of data collection and a source for more detailed future analysis. Similar work is also being done in Wales; however on a much smaller scale.

Recent discussions with departments within the North Slope Borough and the Alaska Center for Climate Assessment & Policy (ACCAP) have indicated the need for carefully planned and strategic workshops that bring together scientists and key local community members (planners, leaders, scientists, technical staff, etc.) to discuss and improve upon sea-ice information and resources. During an internship spanning summer and fall 2008, I will organize a series of two sea-ice workshops to focus on training for the use of these resources and understanding how these can be improved or adapted to better meet local needs and incorporate local knowledge of
the sea-ice and related ecosystems. The workshops proposed here aim to improve information flow from operational and academic observation programs to key stakeholder groups. If successful, these workshops may serve as a template for similar events in other communities and regions and contribute to improving products distributed by operational agencies such as the National Weather Service Ice Desk and others. While a range of outcomes are anticipated that benefit those on the community level, such as participants knowing how to access and interpret relevant environmental information, it is also believed that this process may reveal ways in which local and traditional sea-ice knowledge and expertise may be incorporated into informational products that may benefit a range of other stakeholders (e.g., those looking to develop in the offshore sea-ice environments and planning for oil spill response). These workshops are to be carefully planned so that they may complement the activities planned under UAF’s North by 2020 initiative that is focused on oil and gas development in the Arctic and aims to bring together various stakeholder groups with a range of expertise, including those with both traditional and western knowledge, to improve planning and decision making. A more detailed description of the internship and resulting workshops is attached as a draft planning document.

We’ve been in communication with Alaska Clean Seas regarding a possible collaboration, which would begin with a presentation of our work to their research committee; however, have had difficulty finding those willing to devote time to the discussion of how local sea-ice knowledge may be considered in oil spill response planning. We intend to follow up with other groups, such as Alaska Slope Regional Corporation Energy Services and Shell, and hope that these efforts will expand this discussion to include offshore exploration and development in the Chukchi and Beaufort Seas. I also intend to further my knowledge on how local sea-ice knowledge may be incorporated into oil spill response planning by developing a discussion with the Village Response Teams and undergoing the training required to join these teams.

8. List of manuscripts published
None published.

Druckenmiller, M.L.; H. Eicken; D. Pringle; M. Johnson; C. Williams. Towards an integrated coastal sea-ice observatory: System components and a case study at Barrow, Alaska. (In prep.)

9. List presentations or seminars given during the year that resulted from or were relevant to this fellowship.


10. Other notable events, significant research accomplishments, etc. concerning this fellowship.

I am currently working with Igor Krupnik (Smithsonian Institution), Winton Weyapuk (sea-ice expert in Wales, Alaska), and Hajo Eicken to produce an Inupiaq sea-ice dictionary for Wales. This book, which discusses the importance of understanding Native terminology for different sea-ice types and processes, as well as how this knowledge relates to and may benefit current geophysical studies, will be in the final stage of production in summer 2008.
April 30, 2008

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5. Starting and ending dates corresponding to the work plan
July 2008 – June 2009
6. Work Plan

Summer 2008 (July – August)
– Planning for sea-ice workshops (see Section 7 of Annual Progress Report) with the North Slope Borough and ACCAP will be underway requiring close communication with not only these organizations, but also with other relevant groups, such as the North Slope Borough’s oil spill Village Response Teams and the US Coast Guard. The tentative dates for the first workshop are August 14-15.
– Finish contribution to the “Wales sea-ice dictionary” (see Section 10 of Annual Progress Report)
– At the 2008 annual meeting of the International Congress of Arctic Social Sciences in Nuuk, Greenland during August 22-26, I will present a paper titled “Whaling Trails on Landfast Sea Ice at Barrow, Alaska”. ICASS Annual Meeting, Nuuk, Greenland. This paper will discuss how Barrow hunters monitor the development of the landfast ice and assess the environmental variables that contribute to ice stability. Eight years worth of whaling trail data alongside a geophysical record of changing landfast ice conditions will be examined. While at this meeting, I also plan to attend the various sessions that will address indigenous peoples and the extractive industries in the Arctic.

Fall 2008 (September – December)
– The written draft of my thesis proposal will be presented to my committee in October.
– Planning for the second sea-ice workshop in Barrow will take place, requiring detailed consideration and follow-up of the discussion and activities from the first workshop. The second workshop will take place in mid-November.

Spring 2009 (January to May)
– Comprehensive exam and proposal defense
– Fieldwork in Barrow and Wales to continue the research components discussed in Section 7 of the Annual Progress Report

Summer 2009 (June)
– Complete paper on “Whaling Trails on Landfast Sea Ice at Barrow, Alaska” for inclusion in a book being complied by Igor Krupnik that highlights contributing works to his IPY “Sea-Ice Knowledge and Use (SIKU)” Project.

7. Budget

To be provided shortly.