IARPC 5-YEAR PLAN IMPLEMENTATION TEAMS

2013 STATUS REPORT AND VISION FOR 2014

IARPC Sea Ice Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Sea Ice Implementation Team (SIIT) addresses the need to understand sea-ice processes and climate feedbacks in the Beaufort and Chukchi Seas and the contiguous Arctic Ocean. In Year 1 (September 2012-October 2013), the team has implemented a number of activities that contribute to (1) development of a framework of observations, research, and modeling to support forecasting and prediction of sea ice extent on seasonal to annual scales for operational and research needs; and (2) identification and study of sites where climate feedbacks are active.

Implementation Team Contributors:

Agency	DHS	DOC	DOD	DOE	DOI	NASA	NSF	OSTP	SI	USARC	Invited Speakers
No. of participants	1	12	9	2	3	4	2	1	1	1	4

The Sea Ice Implementation team has met every month but one since September 2012. Until August 2013 the lead agency for the team was the Office of Naval Research (DOD). The lead agency is currently the U.S. Arctic Research Commission (USARC). A total of 35 different individuals from 11 agencies (see table) have participated in the 12 meetings. The number of agency participants per meeting has ranged from 14 to 21. There have also been four invited speakers from outside the Federal Government. Sea ice team meetings have not been open to any interested party.

What's been accomplished?

A major accomplishment of the team has been the unprecedented degree of interagency discussion of Arctic sea ice and related research and initiation of a number of interagency projects that have laid a firm foundation for the future.

An early success was the publication of the National Academy of Sciences report on "Seasonal-to-Decadal Predictions of Arctic Sea Ice: Challenges and Strategies". Supported by the intelligence community, NASA, and ONR, the report prompted a lengthy discussion, which also included the modeling implementation team, of the potential value of a sea ice inter-comparison project as part of a larger effort to improve large-scale coupled models and sea ice prediction. A significant outcome of that discussion was the initiation of a "Sea Ice Prediction Network" funded by NSF, ONR, NASA, and DOE, and which also includes the "Sea Ice Demonstration" project of the interagency "Earth System Prediction Capability" project (NOAA, USAF, US Navy, DOE, NASA, NSF). Also, NOAA and BOEM entered into a formal agreement intended to improve sea ice forecasts in the Chukchi Sea; this project will draw on

data and information from field and modeling investigations described below.

Observations and process understanding are essential for improving models and predictions, and the Sea Ice IT is making significant progress towards meeting this need. In summer 2013, the NASA/NOAA "Marginal Ice Zone Observations and Process Experiment (MIZOPEX)" main field experiment was conducted with a variety of unmanned aircraft systems (UAS) over the Beaufort Sea continental shelf immediately north of Alaska. Further offshore, the ONR "Emerging Dynamics of the Marginal Ice Zone" project conducted a pilot project, in partnership with the intelligence community, that involved declassified high resolution visible band imaging (intelligence community) and synthetic aperture radar (ONR) to track instrumented ice floes. The intelligence community contributed to the ONR-funded "Seasonal Ice Zone Reconnaissance Surveys (SIZRS)" project that takes advantage of USCG Arctic Domain Awareness flights to make a variety of atmosphere, sea ice, and ocean observations and measurements in the Beaufort Sea and Canada Basin.

The main field experiment of the ONR marginal ice zone project, scheduled for March-October 2014 in the Beaufort Sea and Canada Basin, will also involve NASA (Operation IceBridge), the intelligence community and, subject to availability, NOAA UAS assets. The 2014 marginal ice zone investigation will also include elements of pilot projects for the ONR "Sea State and Boundary Layer Physics of the Emerging Arctic Ocean" project and the BOEM-led "Marine Arctic Ecosystem Study (MARES)" project. MARES will be the subject of a NOPP (National Oceanographic Partnership Program) solicitation in FY14 that includes BOEM, NOAA, ONR, NSF, USCG, USGS, US Integrated Ocean Observing System (IOOS), and Shell. MARES and the ONR sea state project are planning main field experiments in 2015, and these will be coordinated to the fullest extent possible.

The "Sea Ice Prediction Network" is a direct consequence of the implementation of the IARPC 5-year research plan and exemplifies the value of regular meetings among agencies to exchange information, discuss common interests and synergies, and to develop jointly-funded projects. Other projects described above had been initiated or were in the planning stages by individual agencies before implementation of the IARPC 5-year research plan began. But, all have been enhanced by the deliberations of the sea ice team, which have helped transform single-agency projects into multi-agency efforts that will likely achieve far more than any individual agency alone.

What is the vision for this group moving forward?

A strength of the sea ice team has been the monthly meetings attended by the same core group of 10-15 individuals who have made significant progress with a number of activities and milestones. Consequently, we will continue this successful approach and also issue further invitations to speakers to provide information on key topics and emerging issues. But, we must open the meetings to a broader community and an effort is underway to identify non-Federal individuals and organizations from whom we can learn and develop partnerships. This would include representatives from academe, the private sector, state and local governments in Alaska, Alaska native organizations, other NGOs etc ….

We will undertake a review of the milestones with a view to identifying (1) priorities;(2) gaps, and thus potential new milestones; and (3) milestones which might be merged or dropped. Once that exercise has been completed the team will consider options for coordinated, multi-agency funding of projects, e.g., a NOPP solicitation, as exemplified by the imminent MARES announcement. One area that seems to

be ripe for a solicitation is improving the models themselves by, for example, developing better data assimilation methods or improving the simulation of key processes and elements of the coupled air-ice-ocean system. This indicates a further opportunity to work with the modeling implementation team and build on the establishment of the “Sea Ice Prediction Network”.

The basic rationale for improving the models is to improve predictions at a variety of time and space scales. At the very short end of the scale – daily to weekly – there is a need to engage with the operational forecasters and their stakeholders to determine what their needs are and what research is needed to meet those needs. This is a task for “interagency expert group on sea ice forecasting”, a sub-group of the sea ice implementation team.

The sea ice team’s successful engagement with the modeling team resulted in the co-funding of the sea ice prediction network. The sea ice team plans to engage more with the Beaufort-Chukchi Ecosystem, Distributed Biological Observatory, Atmosphere, and Arctic Observing Network teams to explore synergies and the potential for joint activities and co-funded projects.

The sea ice team’s responsibilities include research with international partners into ocean to atmosphere methane fluxes and their consequences. This topic will be given a higher priority in the coming year as the Russian-American Long-term Census of the Arctic (RUSALCA) project continues its synthesis activities and planning for resumption of significant field investigations in 2015-2020.

IARPC Distributed Biological Observatory Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The overarching goal of the Distributed Biological Observatory Implementation Team (DBOIT) is full implementation of standardized ocean sampling in five regions of high productivity and biodiversity that extend from the northern Bering Sea to the Chukchi and Beaufort Seas http://www.arctic.noaa.gov/dbo/. A pilot DBO program, initiated in 2010 and focused on two of the five regions, has demonstrated the utility of the DBO sampling protocol, with annual review of data facilitated through the international Pacific Arctic Group (PAG) http://pag.arcticportal.org/. Through development of a broad scale ocean observatory, the DBO IT aims to provide a long-term, biologically-focused science foundation to improve the ability of resource management agencies (e.g., BOEM and NOAA) to determine the effects of their actions on marine resources. Ultimately, this will result in improved conservation, protection, and management of Arctic coastal and ocean resources.

Implementation Team Contributors:

Participants by Group	Outside Partners	ARC	DOD	DOI	MMC	NASA	NSF	NOAA	NOC	OSTP	USARC
DBO	9	2	2	4	1	5	1	7*	1	1	2

*Lead Agency

The DBO IT has met 10 times via monthly teleconference since December 2012. All meetings have been included outside partners. The meetings have ranged in size from 7 to 16 participants.

What's been accomplished?

The DBOIT activities table consist of eleven milestones, four of which are completed, six in progress, and one not yet started (Appended at the end of this section). All members of the DBO IT that regularly join the teleconferences (~ 10 people) have been enthusiastic in their participation. Data products and contributions to IT milestones have come principally from NOAA, NASA, NSF, AOOS, and academic partners – see links here: http://www.arctic.noaa.gov/dbo/workshop_products.html.

Notably, funding from the NSF Arctic Observing Network (AON) program has been instrumental in the support of sampling in all five DBO regions at least once per year since 2012, and in the development of a physics-focused website at Woods Hole Oceanographic Institution (WHOI). NASA has provided a beta-version satellite product focused on DBO sampling regions, and the Alaska Ocean Observing System (AOOS) is providing a DBO workspace on their web site. NOAA has been instrumental in supporting forums for coordination and review of DBO progress, especially during spring and autumn Pacific Arctic Group (PAG) meetings. This consistent support has resulted in the DBO being identified by the PAG as a 'highlighted project' at the International Conference for Arctic Research Planning (ICARP) III, to be held in Japan in 2015.

How has the IARPC coordination mechanism resulted in research improvements for this activity area?

The IARPC coordination has facilitated improved and regular communication among academic scientists and US agency scientists and managers on the topic of standardized sampling to detect biological responses to extremes in physical oceanographic variability in the Pacific Arctic sector. Coordination among NSF, NASA, NOAA, and BOEM activities is especially useful with regard to the development of the Arctic Observing Network, the Alaska Ocean Observing System, research funded by BOEM/Alaska Region, and the contribution of the DBO in that context.

What is the vision for this group moving forward?

The vision for the DBO IT is to complete the build-out of the observatory to support consistent sampling in the initial five regions by 2015 and, if possible, to initiate sampling in 2-3 additional regions in the northern Chukchi and Beaufort seas by 2016. Since 2011, the DBO framework has been very well received and represented in US Arctic research planning documents, resulting in enthusiasm for similar biologically-focused sampling at the international level (e.g., the International Arctic Science Committee's Marine WG; Norway-US/Fisheries). There is a real opportunity now to build a pan-arctic ocean observatory focused on *biological* responses to rapid physical changes in the Arctic marine ecosystem.

What are the urgent priorities in this area?

An urgent priority is to demonstrate the long-term utility of DBO sampling, both to the academic science community and to US agency representatives charged with protection and management of living marine resources. Currently, the biggest obstacle to this 'next step' is providing financial support for the analysis (i.e. research scientist's time, thought and manuscript preparation) required to evaluate the biological data resultant from four years of DBO pilot-study sampling. While the physical oceanography data are posted at the WHOI website, there is an urgent need for biological data to be available to participating DBO scientists such that they can further develop hypotheses, conceptual models, and contribute peer-reviewed manuscripts on the topic of how the marine ecosystem in the Pacific Arctic is responding to rapid climate change. The DBOIT intends that, with the development of the AOOS DBO workspace, biological data will be posted and available in an interactive way providing capacity for DBO investigators to collaborate on research projects and manuscripts.

Indicate if new activities or milestones will be developed to address gaps

Rather than new activities or milestones, the DBO Activities Table could be streamlined to address which activities occur annually (a, e, i), which are completed and can be deleted (c & d), and which are goals that are still one to two years out (b, f, g, h, j, k). As above, a focus on development of data products from the DBO pilot study should be clarified and either included in goal 'j', or added as a stand-alone goal. Similarly, a discussion of adding new DBO regions is a priority (goal k), but regions must maintain consistency with the definition of the original five regions (i.e. high productivity and biodiversity), otherwise they should be designated 'annex-DBO' regions.

From the perspective of the team leader, what is the strength of this group? What is the weakness?

The strength of the DBOIT is the willing participation from multiple agency representatives and academic partners. The weakness is the lack of resources to support the time required for data

integration, visualization, and analysis pursuant to the development of DBO data products. Also a lack of meaningful integration of the work of the DBOIT with the work of other IARPC ITs, especially Sea Ice (SIIT), Chukchi Beaufort (CBIT), and Modeling (MIT). The DBO provides a framework that could be particularly informative to the work of the CBIT.

What would this implementation team look like, what would be happening, if it was fully realizing its potential?

Existing DBO data would be analyzed and developed to the conceptual model stage for each of the five regions, such that new data from annual sampling could be contributed to that framework, supporting follow-on steps of analysis and model development. To fully realize its potential, the DBO needs more active participation and integration with NSF AON and the CBIT, and improved synergies with Russian-American Long-term Census of the Arctic (RUSALCA), Circumpolar Biodiversity Monitoring Project (CBMP), PAG and with other IARPC ITs including Sea Ice, Observing, Arctic Data, Modeling, and Arctic Communities. Ultimately, sustained funding (similar to NSF's Long-term Ecological Research program) is essential to support a national DBO that contributes to an international pan-arctic DBO. This will require enhanced participation from external partners, improved coordination with the state of Alaska and other regional partners, and a coordinating body (e.g. Inter-agency program office) to streamline communication and provide oversight. With agreement that this goal is worthy, the development of a fully functional and internationally-linked DBO should be made a priority objective during the US Chair of the Arctic Council upcoming in 2015-17.

APPENDIX A

DBO Implementation Team: MILESTONES List & Status
[Nov 2013]

a. DBO partners conduct pilot research cruises (http://www.arctic.noaa.gov/dbo) – In Progress (FY13)
b. Creation of DBO-focused satellite sea ice, SST, SSH and ocean color products – In Progress (FY14)
c. The Arctic Observing Network (AON) subcommittee established by the IAPRC organizes the DBO interagency working group to develop U.S. plans and priorities – **COMPLETED** (FY12)
d. Initiate a dialogue with Roshydroment and Russian Academy of Sceince on developing DBO stations n Russian territory as a complement to those in U.S. waters – **COMPLETED** (FY13)
e. Pacific Arctic Group (PAG) meets annually to review results from DBO sampling activities –**COMPLETED** (for FY13)
f. Report in 2014 on International DBO activities and results to date (FY14; ref. item g) – In Progress; see PAG Report & DBO Data Workshop Report
g. Updated DBO concept and national/international plan for decadal-scale implementation release in 2014 will include identification of satellite resources that will be cricital to the DBO. Ocean color, SST, SSH, SS salinity, and winds are all key measurement (FY14; ref. item f) – In Progress; see PAG Report & DBO Data Workshop Report
h. Starting in 2015, DBO partners execute decadal-scale plans and prepare periodic assessments on physical and ecological state of Pacific Arctic marine (FY15) – Not Started
i. Report annually on DBO-related developments at the Alaska Marine Science Symposium and seek coordination with Alaska state agencies, oil industry and other non-Federal organization – **COMPLETED** (for FY13)
j. Ensure DBO data access and archiving are coordinated across agencies and among international partners – In Progress (FY 14) AOOS/Axiom Workspace & EOL Data Archive
k. Update and augment DBO regions and transects to accommodate interest in sampling expansion and support full implementation of the DBO – In Progress (FY 14) see DBO Data Workshop Report

SUMMARY = 11 Milestones: 4 Completed; 6 In Progress; 1 Not Started

IARPC Chukchi & Beaufort Implementation Team

Current Status and Vision for the Future
November 2013

Scope of Activities:

The Chukchi & Beaufort Implementation Team (CBIT) is coordinating multi-agency ecosystem research in the Chukchi and Beaufort seas. The aims are to understand how the ecosystem functions and how it is likely to change as sea ice diminishes.

Implementation Team Contributors:

Participants by Group	Outside Partners	ARC	DHS	DOD	DOI	MMC	NASA	NOAA	NPRB	NSF	OSTP
Chukchi/Beaufort	1	2	1	2	7	1	3	12	2	2	1*

*Lead Agency

The Chukchi & Beaufort Ecosystems Implementation Team has been meeting since October 2012. It has held 9 Federal-only meetings.

What's been accomplished?

The Implementation Team coordinated a collaborative synthesis study (http://pacmars.cbl.umces.edu/) supported by Shell, ConocoPhillips, NSF, and the North Pacific Research Board (NPRB). The synthesis study will be complete early in 2014 and will provide a review of current scientific and traditional knowledge of the ecosystem and an accounting of data sources and archives.

The team produced a straw-man conceptual ecosystem model of the Northern Bering, Chukchi, and Beaufort seas. That straw-man was used to provoke the thinking of 16 specialists in large ecosystems brought together in a three-day workshop at the White House. By design, those specialists included ecologists familiar with Arctic ecosystems and others whose with experience in non-Arctic systems. A workshop report is in final review and production.

Based on the synthesis and the workshop results, the Implementation Team has begun developing a road map of research necessary to our full understanding of the ecosystem and its likely responses to diminishing ice cover. The interagency writing team, with agency and industry support, will finish its work in the first quarter of 2014.

How has the IARPC coordination mechanism resulted in research improvements for this activity area?

Absent the deliberations of this Implementation Team, ecosystem research by the NPRB, NSF, NOAA, BOEM, ONR, and industry would have proceeded without coordination and without a common conceptual framework. Instead, these efforts are focused and coordinated toward a holistic view of the ecosystem while meeting the mandates of individual agencies.

What is the vision for this group moving forward?

A common conceptual model is a necessary but not sufficient precursor to a coordinated research program. The road map under development will provide an opportunity to maximize the leveraging of research by multiple agencies and industry. A large challenge, and perhaps the greatest weakness, will be overcoming differences in agency cultures and timelines to affect a coordinated research effort.

IARPC Glaciers/Fjords Implementation Team
Current status and Vision for the Future

November 2013

Scope of Activities:

The Glaciers/Fjords Implementation Team (GFIT) addresses the need to improve understanding of glacier-fjord interactions, particularly around Greenland. In Year 1 (September 2012 – October 2013) the team has implemented a number of activities that contribute to: (1) assessing the state of knowledge and ongoing federally-funded activities concerning fjord-glacier interactions, and (2) defining the requirements for observations, research, and modeling leading to predictability of accelerated mass loss to the oceans.

Implementation Team Contributors:

Participants by Group	DOD	DOE	DOI	NASA	NOAA	NSF
Glaciers/Fjords	1	3	1	3	2	4*

*Lead Agency

The Glaciers/Fjords Implementation Team has been meeting since October 2012. It has held 8 meetings. These were attended by agency representatives only. The number of participants has ranged from five to seven.

What's been accomplished?

A major accomplishment of the team has been NSF co-funding, with US CLIVAR, of an international workshop, entitled "*Understanding the Response of Greenland's Marine-Terminating Glaciers to Oceanic and Atmospheric Forcing*", in Beverly, MA, in June 2013. The purpose was to address the challenges to improving observations, process understanding and modeling of glacier-fjord interactions. The workshop participants included nearly 50 US scientists and 40 international scientists, representing 10 different countries. A workshop report is in the final stages of preparation and a brief follow-on meeting is planned in conjunction with the Fall AGU meeting. There was agreement amongst the agencies that such input from the research community was a necessary justification for and precursor to development of strategies to deal with the milestones assigned to this team.

An unforeseen outcome of the meeting in Beverly was that the US community learned of a German initiative to study oceanographic processes in the vicinity of Zachariae Glacier on the northeast coast of Greenland. As a result, one deployment of oceanographic observational equipment has been funded by NSF.

The community has suggested creation of a Greenland Ice-Ocean Observing System (GrIOOS). While such a large international program will be challenging to initiate, ongoing monitoring efforts have been maintained. The most notable of these include NASA's IceBridge campaign and NSF's funding of GNET.

New and repurposed instrumentation will be needed for both process studies and long term observations in the harsh environmental conditions associated with glacier-fjord systems. As initial investments, an award has been made by NSF to test the ability of pressure inverted echo sounders (PIES), an established deepwater oceanographic instrument, to monitor the heat content of fjords and another by NASA to develop novel technologies to retrieve bathymetric data from ice-choked fjords.

While the continued monitoring programs and the investment in PIES technology are likely to have occurred in the absence of this implementation team, the focus brought to these topics by the GFIT certainly supported the final investment decisions.

What is the vision for this group moving forward?

The Beverly workshop mentioned above was a successful approach for gaining input to the team from the non-federal community of researchers. This communication was designed to be one-way. In the coming year, the team must identify productive ways to open a dialogue with the community. This will likely involve community presentations to the team and solicitation of community representatives to participate in some of the regular teleconferences. Similarly, we have been unable to identify relevant program officers at non-US funding agencies with whom to engage in conversations concerning development of collaborative studies. We hope that the contacts established at Beverly will begin to facilitate such conversation.

An immediate goal for the coming year is coordination with the Modeling Implementation Team (MIT) to learn more about model needs from and potential contributions to the observational community. We have representatives from the MIT on our team and have begun discussions of approaches to these questions.

A major suggestion from the research community is the establishment of ‘megasites’ where comprehensive studies of the fjord-glacier environment can be initiated. These will be expensive and require interagency and potentially international cooperation. An immediate goal for the coming year is to determine interagency ability and willingness to invest in such studies and to identify an appropriate mechanism for identifying sites and soliciting proposals.

IARPC Terrestrial Ecosystem Implementation Team
Current status and Vision for the Future

November 2013

Scope of Activities:

Studying terrestrial ecosystem processes, ecosystem services, and climate feedbacks will contribute to the understanding of the cumulative impacts of changes taking place in the Arctic. The Terrestrial Ecosystem Implementation Team (TEIT) addresses a wide range data and research gaps associated with climate change in U.S. Arctic regions. Specific areas addressed include: improvements in range of project metadata standards that can be harvested and searched in one or more data portals; ascertaining and summarizing current and ongoing research involving multi-disciplinary terrestrial studies associated with climate change; identifying potential geographical information on traditional ecological knowledge, subsistence use and relationships to the effects of climate change; assessment of tools and methods for mapping or measuring the effects of climate change on the terrestrial environment; and identify pan-arctic areas vulnerable to carbon loss. The successful adjustment and substantial completion of the team's milestones will facilitate a more coordinated approach to understanding climate feedback on the terrestrial environment.

Implementation Team Contributors:

Participants by Group	Outside Partners	DOC	DOD	DOE	DOI *	NASA	NOAA	NSF	SI
Terrestrial Ecosystem	3	1	1	1	11	2	2	1	1

*Lead Agency

The Terrestrial Ecosystems Implementation Team has been meeting since February 2013. It has held eight meetings with limited outside participation.

What's been accomplished?

Two milestones have been completed – 3.2.2.a (project metadata) and 3.2.3.c (Wildcast). Both have been a concerted effort by multiple agencies.

Milestone 3.2.2.a (project metadata) has over 10 federal, state, university, and NGO participants, serving on the Alaska Digital Integration working group (ADIwg) and also utilizing the project metadata standards. Two aggregator sites (http://armap.org/ and http://www.gina.alaska.edu/) are in the process of compiling these data. Without the combined effort of multiple agencies and the support and leadership of the Alaska Climate Change Executive Roundtable, the metadata standards would not have been possible. Future activities will involve promoting the use of the standards to other entities in Alaska.

Milestone 3.2.3.c (Wildcast) was a combined effort of the USGS, NPS, and USFS, resulting in three publications (currently in review).

Based on team discussions, one milestones was re-scoped, two are being considered for combination, and one new one created:

- 3.2.2.b –language was changed slightly to include summarization of ongoing Arctic studies using and following the North Slope Science Initiative data calls;
- 3.2.3..a and 3.2.3.b – these two milestones have been discussed and modified and will be discussed again for potential merging as they appear to broadly overlap and cover similar topical areas.
- 3.2.3.f - this is a new milestone entailing the assessment of areas susceptible to carbon loss in Arctic and boreal regions.

A number of presentations have been made to the group on new digital elevation models (DEM) for coastal shoreline studies (Rebecca Anderson, USGS) and consultations and programs associated with local communities (Gary Kofinas and Todd Brinkman, UAF); in addition, new reports on Lidar mapping have been produced that cross over with a National Ocean Policy Arctic milestone.

The team has also produced a Milestone Interim Steps document to help guide the team towards the completion of each remaining milestone.

Obstacles to accomplishing milestones identified by team members include: ready access to subsistence data in suitable formats (e.g., GIS databases); time restraints by team members to compile, assess, and summarize information; and agency budget reductions. In addition, the team has a limited number of actively engaged members, in part, based upon current workloads.

How has the IARPC coordination mechanism resulted in research improvements for this activity area?

The milestones for this implementation team have provided increased awareness for a multitude of activities, and have improved communication between its members. It has also established a new milestone that might not have otherwise been identified as an important issue to address (3.2.3.f above). An important question that has been asked, however, is how are the IARPC milestones related and coordinated to other Arctic milestones that are being worked on, such as those being conducted by the National Ocean Policy (Arctic Milestones Implementation Subgroup) and those identified in the attached document *Arctic Strategies_ VS2.docx*.

What is the vision for this group moving forward?

The current priorities of the group are to assess its Milestone Interim Steps document to ensure that each step is doable and to assign a lead and time frame for each step for completion. It is the vision of the group to achieve as much of each milestone as possible given the current resources available.

One of the strengths of this group it breadth of awareness of other resources that can be tapped to help achieve the stated milestones and the knowledge base that its members brings. The group's primary weaknesses are time and funding constraints to perform some of the activities needed to accomplish the goals. Assuming that the team had a larger number of members with resources to directly apply towards each milestone, the desired accomplishment would be much easier to achieve and in the timeframe desired by the original proposers.

IARPC Wildfires Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Wildfires Implementation Team (WIT) addresses research gaps and area for improvement in knowledge relating to wildfire activity, succession, and effects on local communities in the Arctic, specifically focusing on tundra environment. The team chose to focus on the Arctic tundra rather than the wider forested Arctic in order to effectively manage the project and tasks. The primary focus has been on inventorying the existing research and using that to identify the gaps to enable researchers and funding agencies to fill those gaps going forward.

Implementation Team Contributors:

Participants by Group	DOE	DOI	NASA	NSF	USDA
Wildfires	1	10*	4	2	1

*Lead Agency

The Wildfires Implementation Team has been meeting since April 2013. It has held 6 Federal-only meetings with invited outside speakers.

What's been accomplished?

The WIT analyzed the milestones that were specific to Arctic wildfire and developed two additional milestones that they felt were precursors to, or complementary of, the existing milestones.

The team has completed an inventory of existing research on Arctic wildfires, observing that the bulk of the research in Alaska has been on the western rather than eastern or Yukon Delta tundra. The team has also created a consolidated listing of studies related to post-fire succession in the tundra. These inventories allowed the team to identify gaps relating to inventorying small fires and older fires that may have occurred decades ago and are only now being identified through remote sensing imagery analysis.

An inventory of NASA fire sensors is being developed that will aid researchers moving forward with projects that fit within the milestones identified for the Implementation Team.

The WIT is working with the Alaska Fire Science Consortium (AFSC), hosted by the University of Alaska Fairbanks (UAF,) to serve as a host/repository of the inventories, in addition to the IARPC. The WIT has brought additional agencies into contact with the AFSC which should lead to more opportunities for collaboration. The WIT has identified the UAF Resilience and Adaptation Program (RAP) as a potential means to help accomplish one milestone, the consultation with local communities and indigenous groups regarding their science needs and the impacts of fire on their cultural and subsistence needs.

The WIT has identified that milestone, 3.2.4.d, the development of a model, as outside the WIT's current ability to accomplish due to funding and personnel limitations.

How has the IARPC coordination mechanism resulted in research improvements for this activity area?

The AFSC had previously brought many of the WIT members together to work jointly and share/coordinate their work. The specific milestones of the IARPC have brought some additional focus to this and also brought additional agency representatives together. Actual additional research related to the milestones has not yet been accomplished, but if the above referenced RAP student is able to work toward milestone 3.2.4.b, then that will constitute additional research specifically because of the IARPC.

What is the vision for this group moving forward?

The group is working on identifying funding programs, such as the Joint Fire Science program, the specific needs that were identified through the inventories as well as articulating why those research needs are significant and the importance of funding that work. Concurrently, proposals to do the work and fill the gaps or develop the needed models must also come from the agencies or research community.

The strength of the group lies in the existing contacts that most of the group has and their willingness to work cooperatively across agency lines. Because the number of personnel involved in fire related work in Alaska is very small, they are very used to working cooperatively in order to accomplish their specific goals. This small number of personnel is also a significant liability as the membership is currently over-extended with existing work. If additional funds are made available to meet the milestones, a potential limiting factor will be the ability of the community to absorb and utilize the funds.

From the team leader's perspective, there are several things which would strengthen the group and improve the end products. Additional time and focus on the milestones and steps involved, similar to what is being done through the North Slope Science Initiative (NSSI), is one of those items. Involvement of State of Alaska agencies, additional to the UAF, as well as more international participation would also strengthen the outputs. International participation has been discussed to a small degree, and will be explored more going forward.

IARPC Atmosphere Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Atmosphere Implementation Team (AIT) addresses research gaps and areas for coordinating and improving integrated understanding of Arctic atmospheric processes. In year one, the AIT first focused on a consensus list of milestones and identified leads. The team also initiated a number of activities that focus on the development of a framework of needed observations and that will enhance interagency coordination of atmospheric process research.

Implementation Team Contributors:

Participants by Group	DOC	DOD	DOE	DOT	EPA	NASA	NSF	USARC
Atmosphere	2	1	2*	1	1	5	1	1

*Lead Agency

The Atmosphere Implementation Team has been meeting since February 2013. It has held 7 Federal-only meetings. Meetings range in size from 6 to 11 agency representatives.

What's been accomplished?

The major accomplishment of the Atmospheric Implementation Team is the development of a forum to support enhanced communication among the agencies that support and/or conduct atmospheric research. A routine agenda item has each agency providing an update on current or planned activities. In addition to reporting individual agency activities, these briefings have included updates on international and interagency activities such as the International Arctic Systems for Observing the Atmosphere (IASOA), and meetings on carbon and methane.

The team has developed a catalog of atmospheric data and is reviewing options for a series of webinars that will focus on priority areas of research and observations. To date two agencies have provided input to the catalog. A few agencies have also provided metadata to the IASOA data portal that is being developed for the international community. Since the sharing of data is critical for meeting several of the milestones, the catalog and data portal were given high priority.

The first webinar is focusing on black carbon. Although "black carbon" has recently become a popular term to use, "absorbing aerosol" is probably more appropriate. The importance of black carbon is the ice-albedo feedback from black carbon deposition on the ice and snow. Black carbon is a highly reduced aerosol, generated naturally in flaming fires such as grassland burning. Boreal forest fires typically produce much more "brown carbon," which is less absorbing of red than blue light, but would still be important for the ice-albedo feedback. Several agencies are engaged in observational and process study activities. Thus this topic is a natural area for discussion and possible future collaborations.

How has the IARPC coordination mechanism resulted in research improvements for this activity area?

The strength of the AIT has been the monthly meetings attended by the same core group of individuals. This approach has resulted in significant progress with a number of activities and milestones. We will continue this successful approach to identify opportunities for collaboration on key topics and emerging issues.

What is the vision for this group moving forward?

The team will focus on discussing a strategy for developing a Federal observational network. The critical science questions have been identified and will be the basis of the network requirements. This activity will be coordinated with the Arctic Observing Systems Implementation Team (AOSIT) which is investigating non-Federal partners for the network.

The team will also focus on either developing joint field campaigns or encouraging the participation in planned agency activities. The intent is to focus more resources on critical science questions and to accelerate progress in the research. This objective is closely tied to the observational network.

The webinars will be evaluated for their effectiveness in enhancing communication among the agency program managers, but the primary intent of the webinars is to build a forum for grassroots discussions on how to better address the critical science questions. Given the restrictions on travel and meeting, the webinars may provide an alternative to interagency supported meetings.

IARPC Arctic Observing Systems Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Arctic Observing Systems Implementation Team (AOSIT) addresses the assessment, planning, coordination, and integration of Arctic environmental and socio-economic observing during the period of 2008-2017. The group draws on inputs from other more disciplinary-focused implementation teams to populate programmatic and geographical overview products, which help inform the management, partnership, and future efforts of US investors in Arctic observing.

Implementation Team Contributors:

Participants by Group	Outside Partners	ARC	DHS	DOD	DOE	DOI	EPA	NASA	NOAA	NSF	OSTP
Arctic Observing	28	1	1	3	2	20	1	2	2	1*	1

*Lead Agency

The Arctic Observing Systems Implementation Team has been meeting since June 2012. It has held monthly or bi-monthly meetings, all open to outside partners from expert, industry, and NGO, and non-profit entities.

What's been accomplished?

Arctic observing is a very encompassing activity, and the membership of the AOSIT reflects the range of actors who fund and lead observing in the IARPC era. We benefit from the participation of 62 observing organizations, the majority of which are funders, and who represent research, management, regulation, community, industry, and advocacy perspectives.

The AOSIT has worked collaboratively to establish several key products, which are being used as models by other international Arctic organizations. The first is the master schedule for observing, which includes 26 different fields of information for each US-funded observing project. Project details include funding and leadership information, as well as facility usage, national and international collaborators, relationships to large-scale programs, and data archiving. The full schedule is intended for AOSIT use, but a subset of fields could be released publicly. Data entry into this table continues to incorporate all partner information.

To represent the observing density, geographical, and disciplinary gaps, as well as encourage scientific and community collaborations, an Arctic Observing Viewer (AOV) has been launched on the web: http://www.arcticobservingviewer.org . This effort draws on intra-Alaskan and international coordination to develop common metadata standards and recent observing inventories to map all US and international observing activity in the Arctic. The back-end of the system has undergone testing in the past year with assistance from the Alaska Ocean Observing System (AOOS), Geographic Information Network for Alaska (GINA), Advanced Cooperative Arctic Data and Information Service (ACADIS), and others to prepare for an international launch at the Arctic Observing Summit in Finland in April, 2014.

The system allows one to search by agency, investigator, discipline, time period, and geographical region, as well as export information to files and link to data directly in long-term archives. AOSIT members have made their observing information available to the AOV team via data centers, and there is interest from Arctic Council working groups and other nations to ingest their information for a more complete representation of observing activity. The development has been supported by NSF for possible future co-investment with interested organizations.

Face-to-face meetings with potential AOSIT partners, particularly from indigenous groups and the State of Alaska organizations were held in August. Presentations were made to over 65 different organizations, including the Inupiaq Council of the Arctic Slope, Inuit Circumpolar Council, North Slope Science Initiative, North West Arctic Borough, Alaska Village Council Presidents, Department of Environmental Conservation, Department of Natural Resources, and Alaska Department of Fish and Game. We continue to engage with these groups to show utility of the IARPC process and hopefully will be able to include them as partners in future activities.

On the international level, AOSIT progress was shared with the Sustaining Arctic Observing Networks (SAON) board and attendees of the first Arctic Observing Summit in Vancouver in May. We have successfully negotiated for the SAON executive board to post business on the collaborative online workspace dedicated to Arctic observing -- ArcticHub, http://www.arctichub.net . This agreement to engage on the Hub will make their dealings more transparent and relevant to observing practitioners, particularly as SAON undergoes a revisioning process with aims to build a more proactive organizational structure.

The last piece of the puzzle has been discussion of management and governance structures which best support the enormity of the Arctic observing endeavor. With contributions from a number of AOSIT agencies and observing leads, a series of questions was developed to address commonly held challenges for implementation of long-term observing. These questions have been shared with a very broad observing community via webinars, which will be held over the next 5 months. If webinar attendees are so inclined, they may apply for small discussion grants via ARCUS that will allow support of cyberinfrastructure, telecommunications, or professional facilitation of meetings centered on these management and governance questions. The crowdsourced input from these distributed discussions will be posted publicly on the ArcticHub. AOSIT will review this input at the monthly meetings and determine if there is consensus or best practices that could be implemented within funding agencies.

How has the IARPC coordination mechanism resulted in research improvements for this activity area?

Many of the AOSIT activities require “heavy lifting” and significant man-hours to be made ready for IARPC and the research community. The products, in particular, are still in a state of development and will be made more widely available at the second Arctic Observing Summit in Finland.

The AOSIT interaction has contributed to the development of the management and governance questions, which will encourage long-term thinking in the academic community as well as provide useful input to agencies and organizations to optimize investments in long-term observing.

What is the vision for this group moving forward?

The continued exposure to other agency activities and priorities has helped us develop a deeper understanding of other agencies' priorities, perspective, and process. However, progress could still be made in this area. At the January AOSIT meeting, we will begin a series of agency and organizational use cases to more clearly define the operational space of each organization. This information will allow us to better identify areas of partnership and co-funding for observing.

Once the products have been made broadly available, they can be used by the AOSIT to look at areas of overlap or shared interest. By including out-years and funding information in both the AOV and master schedule, we can also look at and prepare for possible gaps in funding.

No new milestones have been created. Those outlined in the IARPC plan for this theme are very high level and challenging, requiring perhaps more than the 5 years allotted to this effort.

This group is rich with experience and is genuinely interested in preserving the health of current observing systems, while also developing new activities to meet national and research priorities. However, the size of the group and scope of interest can be challenging. We have entertained several possibilities for restructuring the group so that the call is useful to all partners. In one scenario, it was suggested that we could coalesce around certain shared priorities so that we could advance more quickly in those focused areas. However, it may take some time to identify areas acceptable to all and not create an additional layer of work by sub-dividing. Without certain hooks or a very dynamic discussion, we are in danger of losing the attention of those with many obligations on their plate.

We also have the challenge that observing is core to all of the other implementation teams. It is not possible to participate as an observer in all of the other discussions, yet there is useful input from other IT groups that we should assimilate. We are currently looking for a mechanism to thread that into the AOSIT discussion.

In a fully realized AOSIT, the stream of information into the master schedule and AOV would happen at a faster rate. Analytical products based on the schedule and AOV would also be shared back with AOSIT members more quickly. A healthy AOSIT would have more participation from other members, allowing the burden of leadership and agenda-setting to be shared amongst many agencies. We would have more interaction with the state of Alaska, indigenous groups, and non-profits – either through presenting at their meetings or providing input to one of the many Alaskan coordination groups already in existence. And, ultimately, we would have an appreciation for the range of perspectives that engage in observing; proactive planning for out-years and possible funding shortfalls or decommissioned critical sites; and processes for partnership and co-managed networks.

IARPC Arctic Data Implementation Team
Current Status and Vision for the Future

November 2013

(In process of being formed)

IARPC Modeling Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Modeling Implementation Team (MIT) seeks to improve Arctic models guiding and being guided by understanding of ongoing processes research thereby improving our ability to project future Arctic changes and make informed use of those projections.

Implementation Team Contributors:

Participants by Group	DOC	DOD	DOE	DOI	DOT	NASA	NSF	USDA	USARC
Modeling	4	1	3*	6	1	5	3	2	1

*Lead Agency

The Modeling Implementation Team has been meeting since January 2013. It has held 8 Federal-only meetings and several intergroup and subgroup meetings. Discussions are ongoing regarding how to involve a larger community (e.g., stakeholders on both the research and implementation sides).

What's been accomplished?

The Modeling Implementation Team (MIT) has initiated efforts in two main thrusts: evaluating the current extent (and subsequently the needs of) of integrated Arctic process models across the Federal research communities; and planning and implementing opportunities to more closely integrate process and modeling research with respect to the Arctic.

While specific milestones and accomplishments are listed in the next paragraphs, another major accomplishment of the MIT has been the development of personal connections and awareness among program managers across the Federal complex. This has taken place within the MIT, between the MIT and other implementation teams (e.g., Sea Ice, Glaciers and Fjords, and Terrestrial Ecosystems), as well as between IARPC and other NSTC subcommittees (i.e., USGCRP). This is driven by the recognition that modeling is a cross-cutting activity that impinges upon (or should impinge upon) all of the other research areas.

Specific accomplishments (milestones completed or having made significant progress) are the following:

- Publish the SeaRise ice sheet model intercomparison results (The Cryosphere Discuss., 6, 3447-3489, 2012. (http://websrv.cs.umt.edu/isis/index.php/Publications)
- The most recent NASA ROSES solicitation for carbon cycle science was a collaboration among four agencies (NASA, NOAA, USDA and DOE) and emphasized the Arctic as a critical ecosystem. Proposals were encouraged to couple process and modeling research with the goal of improving the representation of Arctic processes in models.

- A template for surveying Federal, Arctic modeling efforts has been developed and approved by the Implementation Team. It currently is being populated by the MIT agencies and already includes more than 90 discrete activities. Once the survey is complete, it will be shared with all interested agencies and will be used to help identify opportunities for collaborative development and/or joint campaigns.
- Discussions are ongoing regarding the need for gridding standards for observational data. Initial conclusions are that translational capabilities exist (or can be easily created) to re-grid most any observational data sets to meet the requirements of the target model. Thus is appears that it may not be necessary to constrain observations in this way. Final discussions and an ultimate decision are expected in early FY 14.
- Efforts are underway to improve communication between the modeling and process research communities with the goal of identifying and satisfying the needs of each community, thereby improving the flow of knowledge, data, and needs. The highlight of this effort are two-large Federal research efforts underway and planned for the Arctic – DOE's NGEE-Arctic and NASA's ABoVE. These two efforts each seek to improve our understanding of high latitude ecosystems with the ultimate goal of translating that improved understanding into improved model representation of these systems and their properties. Though envisioned prior to the IARPC 5-year plan, the coordination of these two projects is the result of collaboration through IARPC. NGEE and ABoVE are being designed collaboratively such that each project can take advantage of the other and the unique capabilities of the sponsoring agencies. As these project become operational, they will provide a resource (both physical and virtual) for use by other agencies or researchers with interests in these areas. As an example, the Arctic LCC is trying to develop a surface form map for northern Alaska. It is clear that the only feasible way to do this is through automated mapping methods using existing remote sensing products. The LCC was made aware of NGEE and is currently in discussions to see if the NGEE efforts to translate remote sensing data in topographic datasets is transferable to the LCC needs.

The accomplishments above are a combination of activities underway (e.g, SeaRise MIP) and activities that were initiated by the MIT. The MIT was able to complete or make significant progress on three of its four FY13 milestones.

As a result of the formation and regular meetings of the MIT coordination and connection between process and modeling research is improving. It is expected that such improved connection will lead to more efficient advancement in our ability to represent and project the Arctic and its processes. While traditional modeling relied on the harvest, translation, and parameterization of published research results, IARPC seeks to coordinate activities so that understanding and observations mesh well with modeling needs and that modeling output is designed to inform future process research.

What is the vision for this group moving forward?

We feel that the MIT milestones capture the urgent priority for Arctic modeling: improved coordination between modeling and process scientists. Through both hard and soft coordination between modeling and process research, we can develop Arctic testbeds (such as NGEE-Arctic and ABoVE) whereby multiple models can be evaluated against observations, ultimately improving the models and informing future observations and process research.

While the Model Implementation Team will continue to evaluate current and future milestones, at this time, the group is comfortable with the milestones as they exist.

Over the past year, the group has been interested and enthusiastic. Program managers from different agencies (and sometimes within agencies) have developed strong connections and appreciation for the missions and capabilities of other agencies. This is true with the MIT, but also among the other implementation teams. From the Team Leader's perspective, it is clear that the group is too large, the scope of milestones too broad, and the cross-cutting nature of modeling too great to expect continued progress using only one-hour, monthly group meetings. In FY14, we will group milestones into a small number of categories and identify subcommittee leads and members to tackle those milestones. This would include collaboration with other implementation teams. In this way, the monthly MIT meetings can become a venue for progress reporting and discussion rather than the actual mechanism for progress.

As an example, the following milestones from different topics within modeling could be consolidated under one group which would focus on bringing model-intercomparisons along with model validation together to create an Arctic Test-bed. This would be an Arctic Climate Model/Data Synthesis effort that would consolidate observations, facilitate model evaluation, enable models to inform observational campaigns, and also inform model development.

The observational focus would be to:

- consolidate observations to help evaluate current global and regional models;
- standardize and develop the metadata standards to enable quick, and easy model evaluation; and
- develop an observational database.

The modeling focus would be to:

- develop new model experiments based on gaps in current model predictions;
- use the design of the newer set of experiments to guide the collection of more observational data;
- inform model development based on processes not captured well;
- foster a community that shares model codes; and
- inform where and what next observations will be made.

This could potentially be started as an effort within the MIT, or as a joint effort between the MIT, and SIIT team and then expanded to include other implementation teams as needed.

The ultimate goal of the MIT would be to have a Federal Arctic modeling capability that seamlessly spanned scales, disciplines, and agencies to provide the Nation (and the world) with the capabilities needed to inform critical decisions regarding the Arctic's future. The MIT recognizes the need to include stakeholders in at least parts of these discussions and will develop mechanisms and venues to accomplish that.

IARPC Arctic Communities Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Arctic Communities Implementation Team (ACIT) research gaps and areas for improvement in: (1) issues of food security as impacted by the rapid pace of climate and environmental change; (2) factors enhancing community sustainability and adaptation, well-being, and health in the face of rapid technological, social, and ecological change; (3) methods of preserving and enhancing culture and language retention; and (4) bridging mechanisms that enhance collaboration between human and natural sciences and the resident communities of the Arctic.

Implementation Team Contributors:

Participants by Group	Outside Partners	DOI	DOS	EPA	HHS	NASA	NOAA	NSF	SI
Communities	34	13	2	1	1	4	2	3	4

*Lead Agency

The Arctic Communities Implementation Team has been meeting since January 2013. It has held 5 meetings open to outside partners. Most of these meetings have been teleconferences. One was an open meetings of key players convened in Anchorage.

What's been accomplished?

Our major activity, besides many conference calls, was a meeting of partners in Anchorage in March, facilitated by Igor Krupnik and James Partain. This was a modest, initial step that brought together people from only a few agencies. Nonetheless, it demonstrated our willingness to put our Alaskan colleagues in the lead or as equal partners in most of the fields under our supervision. We have identified three areas of focused activity (above) and a fourth dealing with bridging activities linking social and natural sciences, and communities. We have identified team leaders and have tentative lists of sub-team members, and we have agreed on general strategies to accomplish a number of our milestones. A major accomplishment has been recognition that the current plan will need to be modified and milestones will need to be changed toward more pragmatic and less theoretical aims. We are in the midst of devising strategies for doing this, including better methods of communication.

Group 1. Local Resident Priorities and Adaptation (a.k.a. Community Sustainability and Social Indicators) (Anna Kerttula NSF and Roberto Delgado NSF, AAAS Fellow): A successful first meeting of this group was held in July under the chairmanship of Nikoosh Carlo, NSF. 15 individuals participated in the call and shared useful information about ongoing adaptation programs. Subsequent personnel shifts have delayed future work of this sub-group. Players include NOAA, NSF, SI, NPS, UAF, UAA, AK state agencies, and community and Native organizations.

Group 2. Food Security and Climate Change (team leader: Amy Holman, NOAA): Personnel shifts have delayed the activities of this group which is just getting organized and has a tentative list of players from NOAA, BLM, DOI and other agencies. This topic is a prime area for collaboration between social and natural sciences, and numerous models exist for implementation.

Group 3. Language and Cultural Heritage (team leader: Igor Krupnik, SI): Here our partners include Alaska Native Language Center, Alaska Native Language Archives (UAF), Inuit Circumpolar Conference-Alaska Office, Alaska Native Language Preservation and Advisory Council, NSF, NPS, NEH, BLM, Smithsonian. This part of the plan has a cohesive group of players who generally agree on how to enhance culture heritage and language preservation.

A major contribution covering all of these topics was the Inuit Studies Conference organized by the Smithsonian in October 2012, just as the new5-year research plan was being published. Although IARPC was not the sponsor, it participated and outlined the 5-year plan for the community and adjusted the plan accordingly. In addition, during the past year there have been numerous meetings in Alaska that discussed our target issues.

Obstacles to accomplishing milestones:

There are too many milestones for ACIT, and many of them are too theoretical and difficult to measure progress. Another obstacle is uncertainty about future government funding. Issues related to community preparedness and heritage/language preservation are often at the bottom of most agencies' long list of programs, and the sequester has cut much support in these 'lower priority' areas. Developing effective cross-agency collaboration and sharing may be achieved with more resources available to the partners or when/if the partners develop new strategies for collaboration under a much tighter budget climate. Finally, some milestones are highly dependent on State and local collaboration that cannot always be mustered by a plan that has to be responsive to Federal managers.

How has the IARPC coordination mechanism resulted in research improvements:

The improvement resulting from IARPC plan-related work to date has been the communication it has fostered among diverse parties at the Federal, State, and local level.

What is the vision for this group moving forward?

Apart from specific funded research (NSF, etc.), what is most needed within the ACIT is more communication and awareness of what agencies are doing or not doing. There is need for more research in all the sub-group areas, but in the absence of dedicated resources and agency backing, more and better communication may be the best way to approach our goals.

Future Activities:

1. ACIT is exploring holding a series of webinars on the four areas identified above. This would promote synergy among the various sub-group topics. Many of the topics within each sub-group cross-cut other sub-group interests; for example, food security is important to local residents, adaptation strategies, socio-economic research, climate scenarios, and language and culture. These topics can only be explored in full through interdisciplinary thinking and research, which we would like to talk about through this group.

2. Considering the need for revising and promulgating a new set of research guidelines and standards to account for new advances in theoretical and empirical approaches (particularly in the face of climate change); to recognize new political structures (devolution) and to enhance inclusion and promote deeper participation by indigenous communities throughout all stages of Arctic research, from design and data collection to analyses and reporting.

3. Utilizing existing networks and regional/annual conferences as venues for advancing goals.

4. Re-evaluate milestones in light of all above.

Strengths and Weaknesses: The strength in the group is in its diversity and 'unusual' composition (agency people, scientists, indigenous activists, community and language documentation experts – that is, at least *four* components versus the usual *two*, for most other groups). This also creates non-anticipated weakness, as it is unclear who is going to lead the efforts and how the 'power structure' should be organized. We are very different from many other groups where a single agency lead may dominate by virtue of it being the key funding agency. In the ACIT , there is neither a clear funding nor administrative leader, and sharing can be mostly achieved in the information and planning domains.

IARPC Human Health Implementation Team
Current Status and Vision for the Future

November 2013

Scope of Activities:

The Human Health Implementation Team (HHIT) addresses research gaps and areas for improvement in circumpolar surveillance and research for infectious diseases, non-communicable diseases, trauma, injury, sanitation services, and indoor air quality to help prevent morbidity and mortality; impacts of climate change and environmental contaminants on human health and wildlife; mental health including substance abuse and suicide, obesity, diabetes, and cancer; and engaging indigenous communities and tribal groups in research activities and projects in the Arctic.

Implementation Team Contributors:

Participants by Group	Outside Partners	ARC	DOI	EPA	HHS*	NASA	NOAA	NSF
Human Health	5	1	3	1	3	2	1	2

*Lead Agency

The Human Health Implementation Team has been meeting since November 2012. It has held 4 meetings open to outside partners. There were approximately ten people on each call.

What's been accomplished?

Significant progress has been made on all projects. Accomplishments include:

A Fatigue Prevention Training Tool for Air Taxi Pilots was completed. This milestone encouraged CDC's National Institute for Occupational Safety and Health (NIOSH) to conduct focus groups with pilots and company owners flying to remote villages to identify strategies to combat pilot fatigue, particularly in the high-risk summer months. The focus groups have been completed. Now NIOSH will develop a fatigue prevention training tool for air taxi pilots.

A paper was published on Occupational Fatalities in Alaska entitled, "Two Decades of Progress, 1990-1999 and 2000-2009"[1].

A manuscript describing zoonotic infections that occur in humans and animals in Alaska was published in the International Journal for Circumpolar Health[2].

A report was published related to the Alaska Violent Death reporting System and National Youth Risk Behavior Surveys to provide data for analysis, reports, and to assist with future suicide prevention efforts[3] .

An Alaska interagency "One Health" Working Group was formed to implemented a NOAA-CDC memorandum of agreement for environmental and public health impacts providing exchange of scientific expertise and resources in the areas of climate, weather, water, and environmental, oceanographic, and atmospheric health as it relates to public health. The Alaska "One Health" Working Group meets quarterly and is comprised of representatives from Tribal groups (ANTHC), Federal agencies (CDC, NOAA, US Fish and Wildlife, US Geological Survey), State of Alaska departments (Public Health, Veterinary, Fish and Game), and researchers from the University of Alaska. The purpose of the group is to share information on activities related to impact of environmental change on human and wildlife health; to provide a forum for identifying areas of common interest and collaboration; to determine linkages between weather and climate, and infectious diseases, biotoxin and pollutant prevalence and distribution, and to develop collaborative work plans.

Efforts are being made to focus interagency efforts on research gaps in the area of behavioral and mental health, substance abuse, and suicide. Federal responsibility for supporting research in these areas is contained with the National Institute of Mental Health (NIMH), Substance Abuse and Mental Health Sciences Administration (SAMSHA) at NIH, and the National Center for Injury Prevention and Control (NCIPC) at CDC. However, little research support is being focused on Arctic region. The IARPC plan is being used to increase awareness within these agencies of this gap and need. Four new milestones have been added to this section of the plan. In addition, these efforts are also being assisted by research proposed by the Public Agency of Canada and the Canadian Institutes of Health Research entitled "The evidence base for promoting mental wellness and resilience to address suicide in circumpolar communities" as part of Canada's Chairmanship of the Arctic Council 2013-2015. The US is supporting this proposal with in-kind support and consultations from NIH and CDC.

What is the vision for this group moving forward?

Plans for 2014 are to engage stakeholders within the State of Alaska in the plan implementation and revision, to consolidate interagency efforts to address behavioral and mental health, substance abuse and suicide, and to look for opportunities to enhance and raise the profile of interagency research efforts in the areas of obesity, diabetes, food, and water security.

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IARPC Team Leaders' Meeting Summary Conclusions

December 2013

The IARPC Team Leaders met on December 5th to evaluate progress in 2013 and discuss plans for implementation in 2014. A few themes emerged from that meeting.

The primary accomplishment for most teams is the improved communication and cooperation between agency representatives who now talk on a regular basis. Many formal and informal arrangements have gotten underway as a result of these conversations.

Communication *between* implementation teams needs to improve. There is a lack of communication between teams which hinders potential collaboration on cross-cutting issues. The secretariat and team leaders should look for ways, through joint meetings, webinars, and workshops, to improve cross-cutting discussions.

Balancing the amount of time in meetings with the benefit of increased communication is an increasingly important consideration. Ensuring that the time of busy people is utilized wisely must be an ongoing consideration in meeting/webinar/conference discussions.

Communication with outside partners has been spotty. Those teams that have not yet included outside partners are exploring ways to do so within the guidelines established by the Office of Science and Technology Policy.

Most teams made progress on their milestones. Approaches to the milestones have varied. Some teams have made revisions to the milestones and these revisions have been closely tracked by the secretariat. Other teams are regrouping milestones and creating themes which can address groups of milestones rather than trying to address each milestone independently. Allowing flexibility for teams to address milestones in a way that responds to their research community is important to the success of the teams and ultimately implementation.