**Belmont Forum BFXXX**

 **February 2013**

**Introduction to development of a CRA for interdisciplinary Arctic science**

**Purpose of Paper**

This brief synthesizes the output from the first Arctic Belmont workshop in Montréal and proposes a Collaborative Research Action that would leverage facilities, expertise, and a shared focus on integrative, innovative, and inclusive interdisciplinary Arctic science.

**Background**

1. The Belmont Forum has recognized both the vulnerability of the Arctic to environmental and social change and the strong interest among nations to develop collaborative circum-Arctic scientific capacity to conduct research within a timeframe relevant to the pace of change. An Arctic CRA leverages existing programs within Belmont member countries to build the necessary cohesive international research, monitoring, and educational networks that will inform decision making and scenario planning from local to global scales. The proposed CRA would meet the Belmont challenge by:

• addressing each of the Belmont Challenge priorities

• leveraging existing Belmont Forum Members’ investments through international added value

• coordinating and building capacity through new international partnerships of interdisciplinary and community scientists

• providing a mechanism to encourage international collaboration and implementation without requiring cross-national funding

1. Two complementary scoping workshops are proposed in 2013 co-organized by NSF/USA and RCN/Norway to gather a large basis of Arctic stakeholders:
	1. Spring Workshop in Vancouver, link to the Arctic Observing Summit, April 27-28, 2013, to identify broad priority and working groups
	2. Fall Workshop in Oslo, to revised research priorities and associated instruments for implementation by funders.

It is envisaged to develop both specific joint call and co-alignment mechanisms on observing system and sustainability science issues, gathering funding members from IGFA/Belmont Forum, European JPI Climate and Russia.

**Attached papers**

• Annex A: Whitepaper for CRA: Arctic Integrated Science

**Actions**

1. Members are invited to:
2. **DISCUSS** the progress and plans in developing this CRA
3. **DETERMINE** whether another scoping workshop suite is necessary
4. **DECIDE** which Belmont Members would like to participate in refining the scope of this topic
5. **CONFIRM** attendance of Belmont Members in the Spring and Fall Arctic CRA workshops, if deemed necessary

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 ANNEX A

**CRA: Arctic Integrated Science**

1. **Summary**

This paper provides a synthesis of discussion from the first Belmont Arctic CRA workshop and develops a call for proposals on the topic of Arctic Integrated Science.

1. **Background**

The Belmont Challenge, while outlining issues of global relevance, has a particular timeliness for Arctic science, which must keep pace with a rapidly changing natural, economic, built, and political environment while developing the international capacity to observe, model, and interpret changes for a range of stakeholders, both within the Arctic and around the world. A number of scientific foci for an Arctic CRA were identified by the Belmont Forum leadership in January 2012 and later expanded upon during an initial Arctic CRA workshop in Montreal. Those nations participating in the workshop underscored the need for international coordination to develop a cohesive, circum-Arctic approach for:

* 1. advancing the implementation of integrated observing systems through coordinated facilities’ usage, common measurement protocols and metadata, sharing of user needs, and collaborative optimization modeling
	2. increasing the participation of stakeholders from all sectors to allow for better information exchange, grow scientific capacity within communities, provide educational opportunities in remote and rural areas, and develop a balanced and responsive science plan for research and management
	3. preparing for changes in the natural, social, and built environments through encouraged interdisciplinary research which addresses key aspects of Arctic sustainability and how lessons learned in the Arctic might translate to or learn from other latitudes
	4. partnering with the e-infrastructures CRA to ensure the seamless delivery of information for policy application and decision making while also providing interpretative services to increase the utility of extant archives and future data gathering

These themes draw not only on the Belmont Challenge itself, but also on needs expressed by international governance and scientific bodies, such as the Sustained Arctic Observing Network, the WMO Cryosphere Watch, and the International Polar Initiative. A Belmont Arctic Collaborative Research Action would lead implementation of the above research activities by allowing for coordinated funding and shared usage of Arctic expertise and facilities.

1. **Purpose of the CRA: Answering an International Need for Coordination**

Interest in the Arctic – for scientific, economic, and political ends – has largely been an inverse function of the ice extent and volume present in the high north. As the cryosphere diminishes, the international focus on Arctic issues has increased dramatically. While several governing bodies exist to discuss new Arctic policy and the environmental, socio-cultural, and economic opportunities and hardships that accompany rapid climate change, the funding capacity of those bodies to translate discussion into a scientific and educational reality is small. The majority of Arctic scientific research, training, and infrastructure development has been achieved using monies from national funding agencies, NGO’s, and industry.

Due to the vastness, complexity, and extreme nature of the Arctic, collaboration has long been a keystone of research in the high north. The International Polar Years have demonstrated the willingness of individual researchers to coordinate amongst themselves towards a greater goal, but coordination amongst funders has lagged. This CRA would provide a much-needed funding mechanism and global partnership to advance science and education in areas of shared international interest, using monies, programs, and facilities already in place or planned: a task not yet fully realized by the International Polar Years nor the existing science governing bodies in the Arctic.

The CRA would draw on a number of new indigenous, agency, national, and international assessments and strategic plans which focus on Arctic sciences, security, trade, and education. A common theme in these documents, which resonates at all levels of implementation, is the prioritization of needs-driven science that informs and empowers northern residents, decision makers, and global governance. An Arctic CRA scoping workshop held in Montréal further underscored this trend towards an intersection of fundamental and applied science in funding priorities.

1. **Potential Scope of the CRA**

It is envisioned that the Arctic CRA would focus on two complementary issues with particular emphasis on interdisciplinary and user engagement:

* + 1. **Arctic Observing System** : design, optimization, technological development, communication, and integration of disparate data streams, including traditional knowledge and citizen science.
		2. **Sustainability Science** : including arctic societal transformation and issues to promote sustainability science across sciences (natural, social, computational, informational), engineering, and education.
1. **Next Steps and Potential Time Line**

At the Belmont Forum meeting in Stockholm, the Principals recommended that the scope of this CRA be refined further by NSF/USA and RCN/Norway, in connection with NSERC/Canada. Two complementary scoping workshops are proposed in 2013 co-organized by NSF/USA and RCN/Norway to gather a large basis of Arctic stakeholders:

a. Spring Workshop in Vancouver, link to the Arctic Observing Summit, April 27-28, 2013 (http://www.arcticchange.org/arctic-observing-summit), to identify broad priority and working groups;

b. Summer/Fall Workshop in Oslo, to revise research priorities and associated instruments for implementation by funders.