



EXPRESSION OF INTENT FOR ACTIVITIES IN IPY 2007-2008.

Deadline for Submission - January 14, 2005

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1.0 PROPOSAL INFORMATION

1.1 Title of proposed activity

Study of Environmental Arctic Change

1.2 Acronym or short form title of proposed activity

SEARCH

1.3 Concise outline of proposed activity

400 words max: The Arctic has been characterized in recent decades by a complex of significant, interrelated, pan-Arctic changes including, but not limited to increased air temperature over most of the Arctic, reduced sea ice cover, warming of permafrost, changing Arctic Ocean circulation, or northward movement of tree lines and vegetation zones. Although these changes in physical, chemical, and biological components of the Arctic system have large impacts on society (e.g., ACIA, 2004), we are presently lacking the knowledge required for their proper understanding, attribution and projection into the future. Establishing this knowledge base requires a pan-arctic, system-scale, long-term project transcending traditional studies of the physical domain by investigating the driving forces that shape the Arctic system across the human/environment interface.

The **Study of Environmental Arctic Change (SEARCH)** has been designed as a response to the challenge of understanding pan-arctic, system-scale change. SEARCH is a U.S. program that formed the foundation for the development of the International Study of Arctic Change (ISAC). The main objective of SEARCH is to understand the nature, extent, and future development of the complex, interrelated changes presently seen in the Arctic.

Environmental change in high latitudes has been identified as a major theme in both the international and the U.S. IPY plans. We propose to use the opportunity for intensified efforts in high latitude activities expected from the IPY for development of SEARCH from pilot mode to a fully implemented program. Major elements of SEARCH science and implementation plans include a system-scale, cross-disciplinary, long-term observing system (determination of extent and nature of change), a data assimilation and modelling component (understanding and projection

of change), and translation of the combined results from observations and modelling into impact assessments (interplay with the human domain). These elements match closely several themes of the international and U.S. IPY plans; it is expected that successful implementation of SEARCH will contribute significantly to reaching the U.S. national and international IPY goals.

Implementation of SEARCH is well positioned through the availability of a science plan and an implementation strategy, both developed with large input by the U.S. and international Arctic science community. A science steering group and an interagency working group are guiding the transition of SEARCH from pilot mode to fully implemented program. Full implementation of SEARCH as part of ISAC during the IPY would be closely coordinated with activities targeting similar goals such as the IAOOS or the CLIC ACP activities.

1.4 Which IPY 2007-2008 theme(s) will be addressed by the project (see Note 1)

Theme 1 – The current state of the polar environment	Y
Theme 2 - Change in the polar regions	Y
Theme 3 - Polar-global linkages and interaction	Y
Theme 4 - Investigating new frontiers	Y
Theme 5 -The polar regions as vantage points	Y
Theme 6 - Human societies in polar regions	Y

1.5 What is the major target of the proposed activity (specify one – see Note 1)

Natural or social science research	Y
Education/Outreach and Communication	Y
Data Management	Y
Legacy	Y
Other Targets	N

1.6 What significant advance(s) in relation to the IPY themes and targets can be anticipated from this project?

100 words max

Coordinated research will advance all IPY themes:

- Physical, biological, and social observations will provide information on the *state of the Arctic*, against which to measure change.
- As the primary goal of SEARCH, activities will advance understanding of pan-arctic *change*, including the impact on *human societies*.
- SEARCH will result in an improved understanding of *linkages* between the arctic system and lower latitudes, including ocean and atmospheric teleconnections and socioeconomic dynamics.
- SEARCH will contribute to the public's understanding of the Arctic through *education and outreach* initiatives, result in new *datasets* and a *legacy of research and observational networks*.

1.7 What international collaboration is involved in this project? (see Note 2)

50 words max

As a component of the IASC and AOSB sponsored International Study of Arctic Change (ISAC), SEARCH will closely coordinate with the international community. Scientific linkages to programs such as CLIC (ACP), iAOOS, or CLIVAR will ensure coordinated international logistics, observing, research, and outreach activities.

2.0 FIELD ACTIVITY DETAILS

2.1 Outline the geographical location(s) for the proposed field work (see Note 3)

50 words max

Fieldwork related to SEARCH IPY activities will be pan-Arctic in extent, including the entire Arctic, as well as the main gateways to the low latitudes such as, for example, Bering Strait, Fram Strait or the Canadian Archipelago.

2.2 Define the approximate timeframe(s) for proposed field activities?

Arctic Fieldwork time frame(s)

04/07—03/09 and beyond.

2.3 What significant logistic support/facilities will be required for this project? Can these resources be usefully shared with other projects? (see Note 4)

50 words max

Facilities and infrastructure include multi-instrumented platforms including autonomous observing devices, long-term field stations, satellites, and cyberinfrastructure. SEARCH will utilize and coordinate between existing stations, facilities, and sites, while adding capacity for better spatial and temporal resolution and filling in gaps in major thematic or geographic areas.

2.4 Will the project leave a legacy of infrastructure? (see Note 1)

50 words max

SEARCH IPY activities will leave a legacy of observational sites and accessible data, as well as analysis tools. This observational, data, and research network will benefit future research and education activities. We envision that SEARCH will produce significant scientific assessments of the Arctic and projection into the future.

2.5 How is it envisaged that the required logistics will be secured? (one or more options can be identified)

Consortium of national polar operators	Y
Own national polar operator	Y
Another national polar operator	Y
National agency	Y
Military support	Y
Commercial operator	Y
Own support	Y
Other sources of support	
Further details - 50 words max Logistics will be secured through coordination and use of existing arctic logistics providers at regional and national levels.	

2.6 Has the project been "endorsed" at national or international level (see Note 5)

Y	50 words max This expression of interest is in the process of being considered by the US National Committee for the IPY.
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3.0 PROJECT MANAGEMENT AND STRUCTURE

3.1 Is the project a component (established over the IPY 2007-2008 timeframe) of an existing plan, programme or initiative or is it a new autonomous proposal?

New Project: No	Component of an existing or planned activity: Yes
Further details – 50 words max The development of the SEARCH program began in the late 1990s in response to observed rapid changes that appeared to be interrelated. Presently, SEARCH is in a pilot mode, with published science/implementation plans and several implemented field and modelling activities. It is well situated for implementation during the IPY.	

3.2 How will the project be organised and managed? (see Note 6)

100 words max SEARCH has an established management structure, including an existing Science Management Office. The SEARCH Interagency Working Group (IWG) represents the eight sponsoring agencies: Department of Interior, Department of Energy, Department of Defense, NOAA, NASA, National Science Foundation, Smithsonian Institution, and the U.S. Department of Agriculture. SEARCH science priorities and implementation are guided by the Science Steering Committee, as well as focused panels (Detecting Change, Understanding Change, and Responding to Change) populated from the broader research community. SEARCH will convene an IPY committee to manage and coordinate IPY activities.
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3.3 What are the initial plans of the project for addressing the education, outreach and communication issues outlined in the Framework document? (see Note 7)

50 words max Education, outreach, and communication activities will target a variety of audiences, and include: <ul style="list-style-type: none"> • Website with news, searchable data catalogue, and communication tools. • Online, real-time seminars. • Teacher participation in fieldwork. • Museum exhibitions. • Communication of SEARCH IPY research to the media. • Presentations at scientific meetings.

3.4 What are the initial plans of the project to address data management issues (as outlined in the Framework document)? (see Note 8)

50 words max

SEARCH is convening a data working group to guide data management issues. Multi-disciplinary data will be collected and managed according to international data and metadata standards and made available to the public. Data will be searchable and indexed over a central website, with long-term storage at relevant data centres.

3.5 How is it proposed to fund the project? (see Note 9)

50 words max

SEARCH will seek project funding through the SEARCH Interagency Working Group funding agencies.

3.6 Is there additional information you wish to provide?

100 words max

Part of the Arctic Subarctic Ocean Fluxes study (ASOF) is a component of SEARCH and full implementation of SEARCH will benefit implementation of ASOF. The same holds true for the SEARCH-affiliated program BEST (Bering Ecosystem Study), a component of ESSAS (Ecosystem Studies of Sub-Arctic Seas) a new regional GLOBEC program. BEST is planning observations of Arctic change in the Bering and Chukchi seas, and a high level of collaboration and cooperation between SEARCH and BEST is expected in the Pacific Arctic.

4.0 PROPOSER DETAILS

4.1 Lead Contact for the Expression of Intent

Title

First Name Peter

Surname Schlosser

Organisation Lamont-Doherty Earth Observatory

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4.2 List up to six other project members and their affiliation.

Name 1 Lawrence Hamilton, SSC Vice-chair

Organisation University of New Hampshire

Name 2 James Morison, SEARCH SSC Past Chair

Organisation University of Washington

Name 3 Gaius Shaver, SEARCH SSC Executive
Organisation Marine Biological Laboratory
Name 4 George Hunt, Jr., SEARCH SSC Executive
Organisation University of California
Name 5 Helen Wiggins, SEARCH Project Office
Organisation Arctic Research Consortium of the U.S
Name 6 **Agency contact person:** Neil Swanberg, Chair,
Organisation Interagency Program Management Committee (IPMC)

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Accompanying Notes for submission of IPY 2007-2008 Expressions of Intent

Note 1 – IPY projects can take a number of forms.

a) 1.4 - They may address one or more of the IPY 2007-2008 themes and if so will be expected to have component activities addressing education, outreach, data management and possibly legacy.

b) 1.5 - The main focus can be on science or on one or more aspects of education, outreach and communicating the Polar Year, an activity that addresses data management or that explicitly leaves a legacy (such as building a new polar facility or establishing new systems).

Note 2 - An important characteristic of IPY 2007-2008 projects will be their international structure in order to facilitate research impractical for a single nation to undertake. Whilst project components are likely to be primarily funded at a national level, the projects are expected to be established and coordinated internationally. The Joint Committee will be looking for evidence of international collaborations developing in the Expressions of Intent and established by the June 2005 full proposal deadline.

Note 3 – The geographic locations need not be precise but logistic operators will want to broadly know where activities will occur, e.g. West Antarctic Ice Sheet, Weddell Sea, Svalbard, Greenland, etc. If you have more detail please supply. An IPY project can also be one that involves no field activities.

Note 4 - This refers to major facilities and infrastructure and some examples (not comprehensive) are given below.

Ice-breaker	Multi-instrumented platforms	Snow terrain vehicles
Ice strengthened research ship	Helicopters	Existing field stations
Ship-based drilling capability	Fixed wing geophysical aircraft	New field station
Ship recovery of buoys etc	Fixed wing transport aircraft	Observatories
Submarines	Rockets	Fuel depots
Autonomous Underwater Vehicle	Satellites	Ice drilling capability
Remotely Operated Vehicle	Radars	Rock-drilling capability

Please note if your project will share facilities with other IPY activities, or if there is capacity to support other projects as part of your activity (e.g. a marine biodiversity cruise could feasibly offer to deploy or recover buoys, moorings, etc., for an ocean/climate project)

Note 5 - All IPY projects will ultimately be subject to assessment by National (and/or International) funding agencies. However it will be important to establish coordination of IPY 2007-2008 at the national and international level. Both National IPY Committees and International bodies supporting IPY 2007-2008 will have an important role in this. Contact with these bodies may occur before January 14 2005 but should certainly take place before the June 2005 deadline for full proposals.

Note 6 – The Joint Committee for IPY 2007-2008 will be overseeing Polar Year activities but will not be managing the individual projects. It is anticipated that IPY projects will be self-managed, free-standing activities or be part of a planned or existing programme that has an established management structure. The JC will need to be satisfied that all proposals have realistic plans for structuring and managing activities. For the larger proposals the JC anticipates that a Project Steering Committee will be established.

Note 7 – It will be a requirement of IPY proposals that there is a clear plan for Education, Outreach and Communication (EOC) activities in the full proposal for the June 2005 deadline. If initial ideas for EOC have been established these can be outlined in the Expression of Intent.

Note 8 – It will be a requirement of IPY proposals that there is a clear plan for the management of project data, including its early availability to the community, presented in the full proposal for the June 2005 deadline. Initial ideas for data management should be outlined in the Expression of Intent, including which data organisations are likely to be involved, e.g. ICSU World Data Centres, Joint Committee for Antarctic Data Management, WCRP, etc.

Note 9 – It is anticipated that funding for IPY 2007-2008 will be primarily obtained through national funding agencies but in some cases will involve international funding agencies (e.g. European Union) and in some cases will come from private sources. Certain projects will be part of programmes already funded and if so these can be identified here.