



EXPRESSION OF INTENT FOR ACTIVITIES IN IPY 2007-2008.

Deadline for Submission - January 14, 2005

Email to jcel@bas.ac.uk or Fax to +44-1223-221270

1.0 PROPOSAL INFORMATION

1.1 Title of proposed activity

An enhanced network of Antarctic Sea Ice Buoys: an optimal deployment for the International Polar Year 2007-2008 developed by the WCRP/SCAR International Programme for Antarctic Buoys

1.2 Acronym or short form title of proposed activity

BEARDS (Buoys Encompassing the AntaRctic enhanced Deployment Strategy)

1.3 Concise outline of proposed activity

400 words max

The WCRP/SCAR International Programme for Antarctic Buoys (IPAB) proposes to implement and coordinate the collaborative deployment of a dense network of instrumented surface drifting buoys within the Antarctic Sea Ice Zone (ASIZ) during IPY. We will seek contributions to this initiative from the participant institutions of IPAB and from other interested bodies, and will make use of the expected increase in research logistics in the Southern Ocean during the IPY to deploy and maintain an optimum array of buoys. Individual institutional contributions to the initiative may be as small as the provision of one buoy and associated data relay costs, but there is a unique opportunity to build a large circum-Antarctic network for the duration of IPY 2007-2008.

Specifically, IPAB proposes a circum-Antarctic buoy deployment effort during the IPY to realize and maintain an optimal coverage of the ASIZ with autonomous platforms equipped with sea ice, oceanographic and/or meteorological sensors, most reporting via the GTS. An initial circumpolar distribution, to resolve scales of the order of the atmospheric mesoscale, will require 50-100 buoys, and subsequent deployments will be needed to fill gaps due to dispersion out of the ASIZ. Basic platforms such as ocean surface drifters and ice beacons will measure at least position and surface pressure, but more sophisticated platforms will also be deployed, including iceberg stations. We also propose the development of new instrumental concepts. Denser clusters of platforms equipped with GPS may be nested within the basic array for detailed studies of ice dynamics and deformation. Integration of such an array with oceanographic networks (such as ARGO) would additionally provide a system of surface transmission centers for deep ocean buoys operating beneath the ice cover. Further integration is planned with remote sensing centers, and with meteorological agencies.

An enhanced surface observation network will contribute to many other IPY initiatives. Among the major outcomes of this proposal:

- improvement of the Southern Hemisphere meteorological analyses, which will in turn contribute to investigation of atmosphere-sea ice-ocean interactions, properties and processes in the Southern Ocean.
- a snapshot of circumpolar ice drift around Antarctica which, combined with accurate meteorological fields, will contribute to the analysis of circumpolar sea ice dynamics, kinematics, thickness, and mass balance.
- validation of satellite-derived ice motion products and capabilities for synthesis of buoy and remotely sensed measurements (e.g. on subdaily motion, see §1.6).

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	N
Theme 5 -The polar regions as vantage points	N
Theme 6 - Human societies in polar regions	N

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	N
Data Management	N
Legacy	N
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

Theme 1: BEARDS will provide a synoptic observation network in areas not otherwise regularly covered, improving the accuracy of surface analyses and of products using them (e.g. Earth geoid estimates), also locally providing information complementary to satellites, such as subdaily motion, improving, e.g., estimates of surface fluxes.

Theme 2: BEARDS will enhance weather forecasting in high southern latitudes for short-term change studies. The full BEARDS “snapshot” will provide a benchmark for longer-term change studies.

Theme 3: Individual studies will aim to understand global balance processes and teleconnections.

BEARDS addresses the WMO high priority activities 1, 4, 5, 6, and 7.

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

50 words max

BEARDS is an EoI of WCRP/SCAR International Programme for Antarctic Buoys, a cooperative programme with 15 member institutions working in Antarctica and the Southern Ocean from 11 countries. BEARDS will be integrated within the “Climate in Antarctica and the Southern Ocean (CASO)” umbrella EoI of CLIVAR/CliC/SCAR Southern Ocean Implementation Panel.

2.0 FIELD ACTIVITY DETAILS

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

50 words max

The BEARDS area of operations is (Antarctic) circumpolar and consists of the Southern Ocean and the Antarctic Sea Ice Zone, respectively defined as the ocean south of 55 degrees South and the region of the Southern Ocean and Antarctic marginal seas within the maximum seasonal sea ice extent.

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

Arctic Fieldwork time frame(s)	Antarctic Fieldwork time frame(s)
N/A	03/07 – 03/09

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

BEARDS data will be gathered by autonomous platforms which will have to be deployed from ice breakers and ice-strengthened ships, helicopters, and possibly research or transport aircraft. It is planned that most deployment opportunities will be provided within other IPY activities. Satellite information will also be gathered by other programmes.

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

50 words max.

Demonstration of enhanced SH weather analyses and forecasts from BEARDS data will stimulate continuation of observations at a minimal optimal network as defined from BEARDS results. Some instruments will operate beyond the IPY timeframe, and BEARDS will establish a benchmark for future studies. Technological and cyberinfrastructure development will also result.

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	N
Commercial operator	N
Own support	N
Other sources of support	N
Further details - <i>50 words max</i> The planned circum-Antarctic deployment is only conceivable within a broad initiative such as the IPY. BEARDS plans to take full advantage of the logistics for other IPY initiatives, and in turn to make its logistics at other IPY initiatives' disposal.	

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

Y	Further details – <i>50 words max</i> The BEARDS concept was approved at the fourth meeting of WCRP/SCAR/IPAB Participants, and endorsed by the two parent organizations; supported by the CLIVAR/CliC/SCAR Southern Ocean Implementation Panel, and coordinated within their CASO EoI. It is coordinated with the IABP EoI. It is supported by NCs of several of the Participants.
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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 YES	Component of an existing or planned activity YES
Further details – <i>50 words max</i> BEARDS is a large and IPY-specific enhancement of the ongoing IPAB activity. It aims to leave a legacy by broadening future IPAB networks and to fully utilise their potential. BEARDS is directly coordinated with CASO, which is an overarching coordination and integration initiative focused on the Southern Ocean and Antarctica.	

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

<i>100 words max</i> BEARDS will directly utilize the existing international management structure of IPAB. This includes an executive committee, technical coordination, database, web infrastructure and regular meeting and reporting processes. Like IPAB, BEARDS will essentially be a coordination and integration effort among participants. Individual logistic and administrative issues are expected to be handled by the participating agencies and institutions, with support from IPAB management and from the IPO to identify potential wider IPY support.
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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

The IPAB website will be enhanced and regularly updated to provide BEARDS information. Much of EO&I will be undertaken within individual contributing projects and through National Committees. BEARDS can play an important role in locally promoting capacity building in polar sciences for prospective new participants, and attracting new national funding.

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

BEARDS will utilise IPAB's data bank, hosted by the technical coordinator, responsible for maintenance of a research quality data set of ice motion, meteorological and oceanographic data from the network. This is regularly submitted to an appropriate WDC. GTS data are automatically archived by the Marine Environmental Data Service.

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

50 words max

As IPAB is a self-sustaining programme, individual projects and bodies contributing to BEARDS will seek funding from national and international funding agencies. BEARDS envisages a hierarchy of contribution levels, which can be as small as funding a few platforms or a fraction of satellite data transmission costs.

3.6 Is there additional information you wish to provide?

100 words max

BEARDS initiative was supported by the First CliC SSG Meeting (October 2004). BEARDS provides an opportunity to address resolution 15 (EC-LV), adopted by WMO 55th Executive Council Session ["Maintenance of, and support to, the WCRP IPAB"] and the formal Recommendation of the XXVIII Meeting of SCAR Delegates for an enhanced Southern Ocean buoy network.

BEARDS will contribute to establishment of Southern Ocean GOOS.

Planned collaboration with the International Arctic Buoy Program will result in enhancing data integration also by creating consistent products and formats for both areas, thus making polar information more easily accessible to researchers and emphasizing polar-global links.

4.0 PROPOSER DETAILS

4.1 Lead Contact for the Expression of Intent

Enrico Zambianchi, IPAB Chairman
Università degli Studi di Napoli "Parthenope"
Via De Gasperi 5
80133 Napoli, ITALY
tel. +390815476583

ANNEX I, p.6

fax +390815513679
enrico.zambianchi@uniparthenope.it

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

Ian Allison
Australian Antarctic Division and Antarctic Climate and Ecosystems CRC
Hobart (Tasmania), AUSTRALIA
ian.allison@aad.gov.au

Mark Drinkwater
European Space Agency, ESTEC
Noordwijk, NETHERLANDS
Mark.Drinkwater@esa.int

Cathleen Geiger
USACRREL
Hanover (NH), USA
cathleen.a.geiger@erdc.usace.army.mil

Christian Haas
Alfred-Wegener-Institut
Bremerhaven, GERMANY
chaas@awi-bremerhaven.de

Jouko Launiainen
Finnish Institute of Marine Research
Helsinki, FINLAND
Jouko.Launiainen@fimr.fi

Peter Wadhams
DAMTP, University of Cambridge
Cambridge, UK
Peter.Wadhams@damtp.cam.ac.uk