



**XXXI SCAR Delegates Meeting**  
**Buenos Aires, Argentina, 9-11 August 2010**

Agenda Item: 5.1  
Person Responsible: A. Capra

## **Report on IBCSO Status**



## Executive Summary

**Title:** Report on IBCSO Status

**Author:** H.-W. Schencke (AWI) and C. Summerhayes

**Relevant URLs or references to other reports:** <http://www.ibcso.org/>,  
<http://www.scar.org/about/constitution/>

**Introduction/ Background:** In 2004 SCAR agreed to make the International Bathymetric Chart of the Southern Ocean (IBCSO) project an Expert Group under the SSG-GS. The IBCSO will lead to an upgrade of the bathymetric chart of the Southern Ocean as an aid to biologists (for habitat mapping), to geologists (for identifying clues to seafloor processes), and to physical oceanographers (by defining the sills controlling exchange of water between deep basins, as a key component for numerical ocean modeling). The chart will contribute to the General Bathymetric Chart of the Oceans sponsored by IOC (UNESCO) and the International Hydrographic Office.

**Important Issues or Factors:** IBCSO required the activity of a full time contract staff member of AWI. Funding for that post recently came to an end following the development of all of the IBCSO infrastructure and the compilation of large amounts of bathymetric data submitted by 11 SCAR nations. Far more such data exists and needs to be integrated into the database by an appropriate expert for the project to be completed.

**Recommendations/Actions and Justification:** It is recommended that efforts be made to either persuade AWI to continue to fund the position under the direction of Dr H.-W. Schencke, or to find shared sponsorship to cover the cost of the IBCSO post at AWI under his direction, until the project is completed. The SCAR Secretariat could be asked to work with AWI to find a solution to staffing problems concerning the future success and completion of SCAR's IBCSO project within a reasonable time-frame.

**Expected Benefits/Outcomes:** The outcome of the project – a map of the Southern Ocean floor - is entirely consistent with SCAR's aim to support the broadest possible range of top quality science in a pan-Antarctic way. This is a collective endeavour requiring the sharing of resources by operating agencies owning bathymetric data in a way that leads to an end result of benefit to all SCAR ocean scientists. Bathymetry is in addition a key ingredient of SCAR's SOOS programme. IBCSO is the offshore equivalent of BEDMAP, SCAR's programme to establish the under-ice shape of the continent.

**Partners:** IOC and the IHO. The outcome of the project will also be of considerable interest to SCOR.

**Budget Implications:** Funding of the post should be primarily external by the interested national agencies, but could be supported with some seed-money from SCAR central funds as a means of attracting further sponsorship.

## Report on IBCSO Status

The International Bathymetric Chart of the Southern Ocean (IBCSO) is an Expert Group of SCAR, operated under the SSG for Geosciences. The IBCSO is a major project for the ocean research community, since it contributes not only to SCAR projects like SOOS, SCADM and others, but also to international global scientific projects by contributing to the international General Bathymetric Chart of the Oceans (GEBCO), which is co-sponsored by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, and the International Hydrographic Organization (IHO) based in Monaco. The Alfred Wegener Institute for Polar and Marine Research acts as the lead scientific editor for IBCSO (Resolution IOC EC-XXXVII.5) and has invested until today three years of labour cost for this project. The IBCSO itself comprises representatives from all SCAR countries with an interest in developing better bathymetric maps of the Southern Ocean for scientific purposes, which include (a) the basis for habitat maps; (b) the basis for mapping the paths of deep ocean currents, hence placing constraints on input to ocean and general circulation models, and (c) the basis for interpreting the geology of the seabed.

The objective target of the IBCSO is the compilation and modelling of a homogeneous and seamless geo-data base for the Southern Ocean on the base of available bathymetric data, land topography, and actual coast line. This product is urgently needed by most scientific disciplines dealing with the Southern Ocean.

IBCSO was adopted as part of the IOC International Bathymetric Charting program at the IOC XXXVII Executive Council Meeting in June 2004, and later in 2004 at the XXVII SCAR Conference in Bremen as Expert Group under the SCAR GSSG. IBCSO has established strong ties to GEBCO (General Bathymetric Chart of the Oceans, [www.gebco.net](http://www.gebco.net)), the IHO Hydrographic Committee for Antarctica (HCA), and the Southern Ocean Observing System (SOOS) in order to scale up sources for data exchange and product utilization. IBCSO is considered as the equivalence to the highly admired and widely used International Bathymetric Chart of the Arctic Ocean (IBCAO).

Practical work on IBCSO started in late 2006 when Norbert Ott was employed at AWI as data manager and scientific editor for this specific project. The SCAR Circulars 768 and 770 published in 2007 and 2008 provided excellent support for the project, which received international attention and interest for cooperation and collaboration.

As of today, the Editorial Board includes representatives from 11 SCAR countries. Three IBCSO-Meetings were organized - in 2007 (ISAES, Santa Barbara), in 2008 (SCAR Conference, St. Petersburg), and in 2009 (AWI, Bremerhaven). More than 10 reports and presentations about IBCSO were prepared and are available on the IBCSO web site at [www.ibcso.org](http://www.ibcso.org). IBCSO was advertised widely via talks at several international meetings: 2<sup>nd</sup> GEBCO Bathymetric Science Day 2007; XXXI ATCM in Kiev, 2008; Intergeo Bremen, 2008; IHO-HCA-9 Meeting in 2009. IBCSO is firmly tied in the work of the preparation of new Nautical Charts within the INT chart scheme as established by the IHO Hydrographic Commission on Antarctica (HCA), and the regional mapping programs of GEBCO.

The handing-over of bathymetric data and metadata by operating agencies, however, is proving to be sluggish. Single beam sonar data from ~500 cruises (mainly extracted from international archives) and multi beam sonar data from ~140 cruises and 10 regional bathymetric grids are stored in the database, forming a total archive of 220 GB. However, this is nowhere near the total amount of the available existing bathymetric data. Some countries still hold multibeam data, which were not submitted in raw data format. In some cases bathymetric data is submitted as raster files without any track control and meta data, which is not useful for the determination of a new bathymetric digital terrain model (DTM) based on soundings from all cruises.

Aside from the data submission being slow, the necessary data reformatting and quality assessment turned out to be very time consuming. The project is set-up and structured in a GIS-based digital environment, as this is the modern way of handling this amount and type of data. This scientific work requires considerable technical and scientific knowledge, and GIS-skills, and cannot be conducted by students. A dedicated staff member is required to do the work to the requisite standard.

Since April 2010, when the contract of Norbert Ott expired, the work on IBCSO has been interrupted; no more personnel have been made available for the project at AWI. The IBCSO-network, the software

infrastructure and the database have all been established during the last two years. However, completion of this large and challenging project now requires an investment of personnel time.

Given the build up of the project facilities at AWI, the IBCSO management team requests that Delegates ask the SCAR EXCOM to explore with AWI management the possibility of continuing the provision of a post, either with sole funding from AWI or with joint funding from AWI and other interested institutions, perhaps also including a commitment of funds from central SCAR funds. A transfer to another institution could create an additional and undesirable delay, but does offer an alternative.

**Recommendation:** *Secretariat to work with AWI to find a solution to staffing problems concerning the future success and completion of SCAR's IBCSO project within a reasonable time-frame.*