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| Agenda Item: | 3.2 |
| Person Responsible: | Mike Sparrow |

**EXCOM 2013**

**Barcelona, Spain 22/23rd July 2013**

# Standing Committee on Antarctic Geographic Information (SCAGI)

# Executive Summary

**Title:** Standing Committee on Antarctic Geographic Information (SCAGI)

**Authors:** Adrian Fox and Jean-Yves Pirlot, SCAGI co-Chief Officers

**Introduction/ Background:**
All work in Antarctica relies on a consistent geographic framework, and the main function of the Standing Committee on Antarctic Geographic Information (SCAGI) is to manage and improve the geographic framework not only for Antarctic scientific research but also for other activities including operations, environmental management and tourism. SCAGI continues to deliver, and actively develop, a range of Geographic Information products through its various projects. These products include: the SCAR Composite Gazetteer of Antarctica, the SCAR Antarctic Digital Database, and the SCAR Map Catalogue. The usage statistics included in the report below show that these are active products that are used and valued by the Antarctic community.

SCAGI integrates topographic and names information received from national Antarctic programmes into the SCAR ADD and SCAR Composite Gazetteer of Antarctica. In keeping with Article III.1.c of the Treaty that Scientific observations and results from Antarctica shall be exchanged and made freely available, SCAGI promotes an open standards approach to support free and unrestricted data access and develops the respective specifications.

**Important Issues or Factors:**
Most of the effort in SCAGI comes from a few committed members. To ensure maximum effectiveness for SCAR, SCAGI is focusing its limited resources on delivering the three main SCAR-SCAGI products: Composite Gazetteer of Antarctica (CGA), Antarctic Digital Database (ADD), SCAR Map Catalogue (MapCat).

The SCAR products can only be as good as the data that are in them. It is critical for the continued relevance and utility of the SCAR-SCAGI products that SCAR members contribute all new maps, topographic data, and place-names information to the ADD, MapCat and CGA in a timely manner.

The SCAR Composite Gazetteer of Antarctica is a key product for SCAGI that is widely used by the Antarctic community (see usage statistics below). It has for many years been managed by Roberto Cervellati and Chiara Ramorino, of the Italian National Antarctic Research Programme (PNRA). Both Cervellati and Ramorino have done outstanding work on the CGA, but are both now retired and wish to step back from this role. There is uncertainty (June 2013) about whether PNRA Italy is able to continue to manage the CGA and the identity of successor staff. This needs to be resolved soon to ensure continued provision of this important SCAR product.

**Recommendations/Actions and Justification:** Delegates should ensure that they are familiar with the work that SCAGI does and encourage their national representatives to become involved with and contribute all new data to SCAGI products. Delegates should ensure that retiring national representatives are replaced with a successor national representative and that the SCAGI co-Chairs are informed of this change.

**Expected Benefits/Outcomes:** Wider engagement by the Antarctic community would help SCAGI to continue to develop, and deliver effectively, reliable relevant Geographic Information Services to the Antarctic science and operations communities. Maintaining the position of SCAR as the source of Geographic Information Services such as the ADD and CGA supports the SCAR Strategic Plan objective of an international leadership role for SCAR.

**Partners:** SCADM, SCAR member countries, other organizations with an interest in Antarctic geographic Information such as COMNAP, CCAMLR, Antarctic Treaty System, IHO, NASA, Google.

**Budget Implications:** For the SCAR CGA and SCAR ADD to be improved, it requires that, either SCAGI members take on the necessary work or the work is outsourced.

Continuation of $4k a year allocation.

# Standing Committee on Antarctic Geographic Information (SC-AGI)

## *1. Community Projects*

The SCAR Standing Committee on Antarctic Geographic Information is responsible for three SCAR Community Projects. These are:

1. SCAR Antarctic Digital Database
2. SCAR Composite Gazetteer Antarctica
3. SCAR Map Catalogue

In addition to those projects, national institutions develop products that benefit the wider Antarctic community. The SCAR SCAGI has proved a valuable arena for setting up collaborations between national institutions, for example:

a) The Landsat Image Mosaic of Antarctica (LIMA) developed by the United States Geological Survey, NASA and BAS. This originated in discussions at the SCAGI meeting in Hobart, 2006.
b) Initiative led by USGS to scan the archive of Antarctic aerial photography including collections held by BAS and AAD.
c) Access through US Polar Geospatial Center to Digital Globe high-resolution satellite imagery at a discounted rate for Antarctic applications.

### 1.1 SCAR Antarctic Digital Database www.add.scar.org

***Introduction***

The SCAR Antarctic Digital Database (ADD) is a compilation of the best available international topographic mapping for Antarctica. It is merged into a single seamless dataset with fully structured, topologically correct data, with metadata about source and date. It is available for web-download in a variety of formats for use in science and logistics applications and in other web-services.

The ADD has been maintained and developed by BAS on behalf of SCAR since 1993. This is an active project and continues to develop to include new data as it becomes available and to improve access to the information for the international community. The British Antarctic Survey remains fully committed to supporting the ADD. Contact person for ADD is Dr Adrian Fox (a.fox@bas.ac.uk).

***Achievements in the last year***

Version 6.0 was launched on 1 June 2012 and included major improvements to the content, website and delivery systems. It was widely advertised at the SCAR Business meetings and OSC in Portland, July 2012, including presentations at the Science Programmes Plenary meeting and the OSC, and subsequently through Cryolist and the SCAR mailing list.

During the year we contributed the ADD data to the Global Map, as the coverage for Antarctica (http://www.iscgm.org/cgi-bin/fswiki/wiki.cgi). Co-Chief officer Adrian Fox will attend the International Steering Committee for Global Mapping 2013 meeting in Cambridge, UK on 20 July 2013.

During the year 2012-13 we have continued to develop the ADD service:

Content:

- Inclusion of BEDMAP2 (http://www.antarctica.ac.uk//bas_research/our_research/az/bedmap2/) dataset comprising new DEMs for the surface, ice-thickness and sub-ice rock surface.
- Incorporation of data supplied by Australian Antarctic Data Centre.
- Upgrades from new mapping by British Antarctic Survey, particularly for the South Orkney Islands.

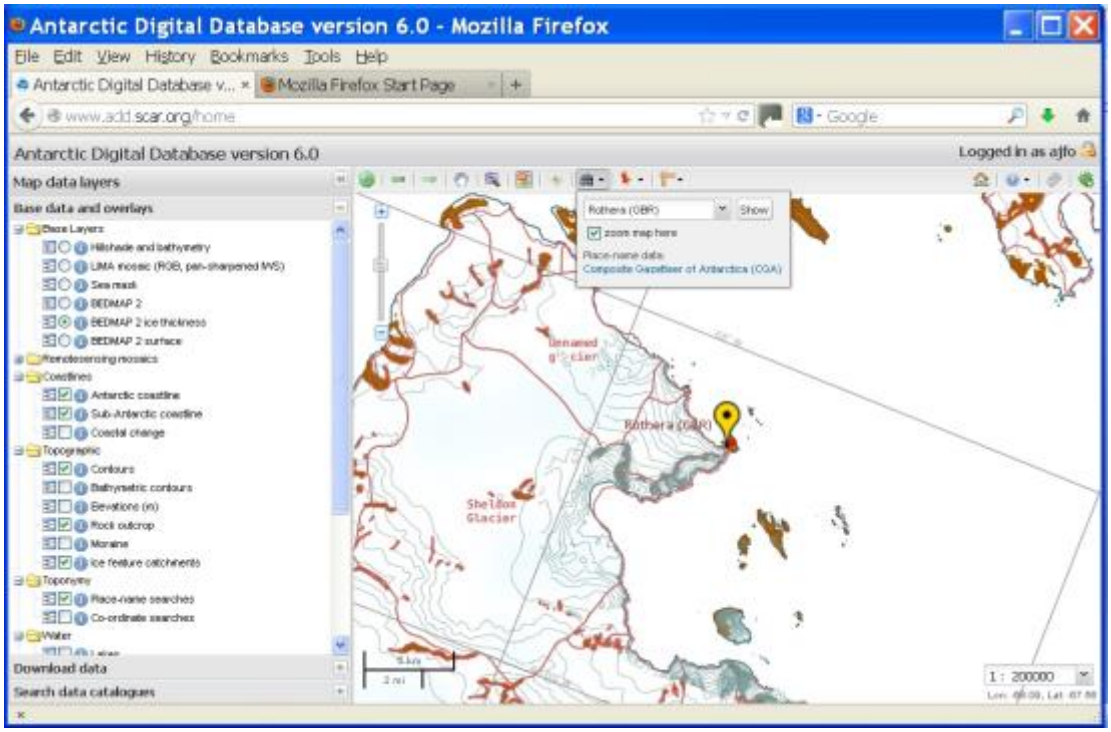
- Creation of a new glacier/ice stream catchment data layer. This is based on published work by Andrew Bliss (University of Alaska) [Bliss, A., R. Hock, and J.G. Cogley. A new inventory of mountain glaciers and ice caps for the Antarctic periphery. *Annals of Glaciology*. 54(63), 191-199. doi:10.3189/2013AoG63A377, 2013. http://www.igsoc.org/hyperlink/63a377.html]; Alison Cook, (University of Swansea) (Cook, A. J**.,** Murray, T., Luckman, A., Vaughan, D.G. and Barrand, N.E. (2012). A new 100m Digital Elevation Model of the Antarctic Peninsula derived from ASTER Global DEM: methods and accuracy assessment. *Earth Syst. Sci. Data*, 4, 129–142, doi:10.5194/essd-4-129-2012) and new mapping from satellite imagery at British Antarctic Survey.

Website

Further development of the website functionality, including: Zoom to SCAR Composite Gazetteer of Antarctica place name and improved registration and login.

Usage statistics for period 1 July 2012 to 20 June 2013

- Number of new registrations = 404
- Total number of registered users = 6402
- Total data downloads = 6099
- Total number of logins by registered users = 1616




*Screenshot of ADD 6.0 showing zoom to CGA place name facility and new glacier catchment dataset*

***Planned future developments:***

Continued improvement of the underlying topographic data and website. We are in discussions with US Polar Geospatial Data Center to include improved rock outcrop for Antarctica derived from image classification of high resolution (sub-metre) satellite imagery.

Issues:

The ADD can only be as good as the data that is in it. It is critical for its continued relevance and utility that SCAR members contribute all new topographic data to the ADD.

## 1.2 SCAR Composite Gazetteer of Antarctica http://data.aad.gov.au/aadc/gaz/scar/

***Introduction:***

The SCAR composite gazetteer of Antarctica (CGA) is a compilation of the national Antarctic gazetteers of countries active in Antarctica. For historical reasons names in many areas have evolved with multiple naming and different geographic coordinates for the same feature in separate gazetteers. In 1992 SCAR started the CGA, as an effort to put in order this complex field comprising a huge amount of data. A relevant, practical aspect of this effort has been to identify which place names were applicable to the same feature and to group those names under a unique identifier (UID).

The purpose of the CGA is to allow features to be unambiguously identified for scientific and operational uses, and to identify which features have already been named to discourage further duplicate naming.

Italy (ENEA/PNRA, Roberto Cervellati: roberto.cervellati@enea.pnra.it) are responsible for capturing and including new names/features or amendments to existing names in the CGA. The Australian Antarctic Data Centre (Henk Brolsma henk.brolsma@aad.gov.au) runs the web-site that provides access to the CGA database and has implemented improved search tools. Cooperation between Italy and Australia is excellent.

Today the SCAR CGA is based on a database which includes about 19,000 features and contains more than 37,000 names. It collects the geographical information received from 23 Countries, plus the General Bathymetric Chart of the Oceans (GEBCO). It is an active project and continues to evolve:

- While all major features in Antarctica have already received a name and are stored in the database, minor features continue to be named by the Geographical Boards as a consequence of the activities of the national expeditions in Antarctica. These new features have to be added to the database.
- Many of the major features are still lacking a comprehensive description, such as the size or the position relative to other features.

***Achievements in the last two years:***

The quality of the maps available when many features were first named has impacted on the accuracy of many of the coordinates in the CGA. Many of the names lack coherence with the current available continent-wide web products such as LIMA or Google Earth which is a disincentive to use the names.

It was recommended at the July 2010 SCAGI meeting in Buenos Aires to check the national gazetteers against LIMA or other satellite imagery sources and revise the coordinates. Much progress has been made with this: Italy, Norway/Belgium UK and USA have completed or are actively working on this task.

***Usage statistics from 1 July 2012 to 20 June 2013:***

- Number of (genuine) hits on the CGA website 24,386
- Number of new place names in the CGA = 188.
- Total of place names now (July 2013) in the CGA = 37025
- Number of unique features (= features which have got a single name) = 7718
- Distribution of new place names: Argentina = 1; Bulgaria = 137; Japan = 25; New Zealand = 3; Spain = 5; UK = 16; and USA = 1.

It is notable that Bulgaria is by far the most active place-naming country.

***Distribution by Country for the CGA place names:***

| | | | |
|---|---|---|---|
| Argentina | 2545 | Japan | 345 |
| Australia | 2432 | Republic of Korea | 17 |
| Belgium | 117 | New Zealand | 2597 |
| Bulgaria | 956 | Norway | 1647 |
| Canada | 2 | Poland | 365 |
| Chile | 1865 | Russia | 4808 |
| China | 279 | South Africa | 2 |
| Ecuador | 9 | Spain | 35 |

| | | | |
|---|---|---|---|
| France | 223 | United Kingdom | 4962 |
| Germany | 393 | USA | 13162 |
| India | 21 | Uruguay | 5 |
| Italy | 53 | GEBCO* | 185 |

*Note: GEBCO = General Bathymetric Chart of the Oceans, there is some overlap between names for under-sea features created by GEBCO and the national gazetteers included in the SCAR CGA.

***Planned future developments:***

New names and amendments to existing names and coordinates will continue to be included in the CGA.

Issues:

There are no place-name submissions in 2012-2013 from some countries with active Antarctic programmes and that have submitted names in the past, including Australia, Chile, China, France, India, Korea, Norway, Russia and others. It is not known to what extent this is due to lack of naming activity, or failure to submit new national place names to the CGA. It is critical for the continued success of the CGA that National Naming Authorities submit any new names to the CGA.

Multiple names for the same feature remains a problem - there are about 37,000 names for 19,000 features in the CGA, showing an average of nearly two names per feature. The problem is much worse in places like the South Shetland Islands where many features have three or four names. The CGA unique identifier aims to reduce confusion by grouping together names for the same feature. Delegates are requested to encourage their National Naming Authorities to use the CGA to check for existing names for features proposed for naming, to avoid further duplication and confusion.

The SCAR Composite Gazetteer of Antarctica is a key product for SCAGI that is widely used by the Antarctic community. It has for many years been managed by Roberto Cervellati and Chiara Ramorino, of the Italian National Antarctic Research Programme (PNRA). Both Cervellati and Ramorino have done outstanding work on the CGA, but are both now retired and wish to step back from this role. There is uncertainty about whether PNRA Italy is able to continue to manage the CGA and the identity of successor staff. This needs to be resolved soon to ensure continued provision of this important SCAR product.

### 1.3 SCAR Map Catalogue http://data.aad.gov.au/aadc/mapcat/

This is compiled and maintained by the Australian Antarctic Division Data Centre (Henk Brolsma henk.brolsma@aad.gov.au).
It contains entries for over 6200 maps from 26 countries, of which about 950 are digital maps from five countries (up from 3640 hard copy maps and 698 digital maps on 1 June 2009).

New maps included: 1 (USA); 1 (UK); 1 (Japan); 2 (Germany); 19 (China); 90 (Australia) and another 32 where country of origin was not added to metadata.

During 1 July 2012 to 20 June 2013 there were 69,189 unique visits.

## *2. Future plans for SCAGI*

SCAGI is holding a meeting in July 2013, hosted by Adrian Fox at the British Antarctic Survey. Discussions are underway about a series of maps covering the continent at 1: 1M scale, focused on Operations planning.

## *3. Important Issues or Factors:*

Most of the effort in SCAGI comes from a few committed members. To ensure maximum effectiveness for SCAR, SCAGI is focusing its limited resources on delivering the three main SCAR-SCAGI products: Composite Gazetteer of Antarctica (CGA), Antarctic Digital Database (ADD), SCAR Map Catalogue (MapCat).

The SCAR products can only be as good as the data that are in them. It is critical for the continued relevance and utility of the SCAR-SCAGI products that SCAR members contribute all new maps, topographic data, and place-names information to the ADD, MapCat and CGA in a timely manner.

Encouragingly, the 2012 SCAGI meeting had a greater attendance than recent meetings, with 17 attendees from 13 countries, but there were only South American attendees from Brazil, and this lack of engagement remains a concern. While it is recognized that to be physically present at a meeting can be expensive and sometimes not possible for the Members, it should be possible however to work by e-mail or, as a minimum, to reply to e-mail. Despite efforts to ensure that SCAGI has up-to-date contact details for national representatives, often there is no acknowledgement or reply to contacts.

## *4. Recommendations/Actions and Justification.*

4.1 Delegates should ensure that they are familiar with the work that SCAGI does and encourage their national representatives to become involved with and contribute data to SCAGI products.

4.2 Delegates should seek to ensure that where a national representative retires or leaves their post a successor is appointed and supported to be involved with SCAGI.

4.3 Delegates should note that US representation changed to Paul Morin of US Polar Geospatial Center, University of Minnesota, following the retirement of Jerry Mullins of USGS. The SCAGI co-Chairs are very pleased at the continued commitment of the US to the work of SCAGI and would like to highlight the exceptional contribution and collaborative spirit of Jerry Mullins and the USGS over many years, and welcome Paul Morin to the SCAGI group.

## *5. Expected Benefits/Outcomes.*

More engagement by a wider range of SCAR members would help to ensure the continued development and value of the SCAGI Geographic Information Services and promote their wider usage.

Effective provision of reliable, accurate and relevant geographic information services through SCAGI is highly beneficial for science and operations in Antarctica and contributes to the international leadership of SCAR, in line with the Strategic Plan 2011-16.

## *6. Partners.*

Partners for SCAGI include: The SCAR member nations and other SCAR related groups such as SCADM; The Antarctic Treaty System, CCAMLR and COMNAP.

Other international organizations that are involved with or are users of Antarctic Geographic Information, including: The International Hydrographic Organization, national hydrographic organizations; national place-naming organizations; NASA; Google, Global Map.

## *7. Budget Implications.*

For the SCAR CGA and SCAR ADD to be improved, it requires that, either SCAGI members take on the necessary work or the work is outsourced. Funds for collaboration visits for key members working on the SCAR-SCAGI products to resolve specific issues would be useful in some cases.

Continuation of $4k a year allocation.