

Report for the 2018 meeting of SCAR-SCAGI

Adrian Fox and Jean-Yves Pirlot, Co-Chief Officers, 5 September 2018

Monday 18 June 2018: Conference Centre, Davos, Switzerland.

Attendees:

Yuichi Aoyama (Japan)	NIPR Japan	aoyama@nipr.ac.jp
Carlo Baroni (Italy)	University of Pisa	Carlo.Baroni@unipi.it
Rhonda Bartley (Australia)	Australian Antarctic Data Centre	Rhonda.Bartley@aad.gov.au
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Adrian Fox (UK)	British Antarctic Survey	a.fox@bas.ac.uk
Peter Fretwell (UK)	British Antarctic Survey	ptf@bas.ac.uk
Antonie Haas (Germany)	Alfred Wegener Institute	Antonie.Haas@awi.de
<i>Ursula Harris (Australia)</i>	Australian Antarctic Division	Ursula.Harris@aad.gov.au
<i>Brad Herried (USA)</i>	US Polar Geospatial Center	herr147@umn.edu
Shridhar Jawak (India)	NCAOR ²	shridhar.jawak@ncaor.gov.in
Yngve Melvaer (Norway)	Norwegian Polar Institute	Yngve.Melvaer@npolar.no
<i>Paul Morin (USA)</i>	US Polar Geospatial Center	lpaul@umn.edu
Andrey Mukhin (Russia)	ROSREESTR Russia ¹	Mukhin_AY@rosreestr.ru
Daniel Nyvlt (Czech Republic)	Czech Geological Survey	Daniel.Nyvlt@seznam.cz
Jun'ichi Okuno (Japan)	NIPR Japan	okuno@nipr.ac.jp
Jean-Yves Pirlot (Belgium)	Belgian National Geographic Institute	Jean-Yves.Pirlot@ngi.be
Peter Pulsifer (Canada)	Polar Knowledge Canada	pulsifer@nsidc.org
Ai Songtao (China)	Wuhan University	ast@whu.edu.cn
<i>Wendy Shaw (NZ)</i>	New Zealand Geographic Board	wshaw@linz.govt.nz

Delegates in italics joined the meeting remotely

¹ Federal Service for State Registration, Cadastre and Cartography, Russia.

² National Centre for Antarctic and Ocean Research, India.

Welcome and introductions (Jean-Yves Pirlot, and Adrian Fox co-COs SCAGI).

Introductions and welcome for those joining by Skype.

Adrian Fox and Jean-Yves Pirlot welcomed the participants and the new delegates Ekaterina Evdokimova and Andrey Mukhin (Russia). Rhonda Bartley (Australia), Shridhar Jawak (India) and Peter Pulsifer (Canada) joined for parts of the meeting.

Prof. Hideki Miura and Prof. Koichiro Doi could not attend the SCAGI meeting, however, Dr Yuichi Aoyama and Dr Jun'ichi Okuno of NIPR were able to attend the meeting and Dr Okuno presented a Japanese National Report.

Apologies were received from Ricardo Rodriguez from the Polytechnic University of Madrid. Due to last minute problems, he could not attend, but he sent a presentation that was shown *in absentia* during the meeting.

Australia, New Zealand and USA delegates joined the meeting via Skype but the connections were rather difficult, despite efforts to test beforehand. We will try to improve this for coming meetings.

The Co-COs thanked the delegates attending via skype for their efforts and flexibility to join out-of-hours due to the constraints of time zones.

The National Reports were taken early in the agenda in order to accommodate people calling in from Australia and New Zealand. The US National Report followed after lunch.

1) Review of minutes and actions from last meeting, AWI, Bremerhaven 2017.

The minutes of the Bremerhaven meeting were approved without comments. Good progress has been made with Actions from the 2017 meeting with most actions completed. See Section 9 for detailed information about progress with 2017 actions and new actions from the 2018 meeting.

Adrian and Jean-Yves had prepared reports for the SCAR EXCOM meeting at Brno Czech Republic, August 2017 (<https://www.scar.org/excom-meetings/scar-excom-2017-brno-czech-republic/4275-ec17-17/>) and in advance of the 2018 SCAGI meeting for the Davos EXCOM meeting immediately after Polar18 (not yet published by SCAR).

2) National reports

National reports are an important part of the SCAGI meeting – they are an opportunity to inform delegates from other organisations about current and planned activities, which can highlight opportunities for collaboration and sharing of resources.

Delegates were specially requested to include any information about topographic mapping activity with UAV (drone) platforms.

Interesting and informative National Reports were presented by Australia, Belgium, Bulgaria (*in absentia* AJF), Canada, China, Czech Republic, France (*in absentia* JyP), Germany, Italy, Japan, Norway, New Zealand, Russia, Spain (*in absentia* JyP), UK, and USA. The new reports from Canada, Russia and Spain were very welcome.

ACTION: Add the National reports to the SCAGI website when possible. AJF to make all the material available for the 2018 SCAGI meeting available through an ftp site in the meantime. **[A.I.1].**

Done: ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/

2.1 Summaries of National Reports

These are very brief summaries to act as an index so that people can follow up areas of interest in the full reports, available at: ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/National_Reports

Australia: Progress with Map catalogue; info on new icebreaker and survey ship *RSV Nuyina*; progress with CGA database and website.

Belgium: Completion of Air Ops Planning maps sheets 9 and 10; mapping support for planning of new ASPA around Belgian Princess Elisabeth Station; Place names WG.

Bulgaria: Activities related to 30th anniversary of Bulgarian Expedition to Antarctica; development of St. Kliment Ohridski Station over the period including *Lame Dog Hut* as HSM 91; 32 new place names.

China: Mapping and modelling work to support planning and CEE for new station at Inexpressible Island; UAV photogrammetry monitoring of Dalk Glacier; UAV photogrammetry for 3D modelling of Great Wall and Zhongshan Stations.

Czech Republic: Publication of geological map for NW James Ross Island; UAV photogrammetry for mapping glaciers and geomorphology close to Mendel Station.

France: Reorganisation of how place names are handled by TAAF; Updates to TAAF website giving access to place name gazetteer; Three new names.

Germany: Near real-time viewer for operational support for ship cruises showing ice coverage, chlorophyll, weather in geospatial context; data portal for cruises; begun checking of place names in German gazetteer.

Italy: Update on work supporting the Composite Gazetteer (see Section 3.3).

Japan: Detailed new mapping for Syowa Station area from helicopter aerial photography, terrestrial laser scanning and UAV images; Report on publication of topographic maps 50,000 scale to 250,000 scale 2016-17 and future plans; Details for download of maps and data.

Norway: new 1:2,500,000 scale map of Dronning Maud Land; New 1:250,000 scale map of Fimbulheimen – best Norwegian map 2018; Quantarctica Version3; Geodetic survey and blue ice runway monitoring at Troll Station.

New Zealand: Geodetic work supporting POLENET and monitoring surveys of historic huts and wind turbines; Update on hydrographic charting plans; New Antarctic topographic base map to be available from LINZ tile server and underlie gazetteer; Work on place-naming processes; Substantial work on Validation and correction of place names and rationalisation with CGA.

Russia: Introduction to Rosreestr; Background information about the organisation; detailed explanation of their rigorous process for proposal and approval of place names. National Atlas of the Arctic.

Spain: Mapping of evolution of glaciers on Hurd Peninsula, Livingston Island.

UK: Topographic mapping work; Web-map and Web-GIS progress; UK place names activity; airborne survey including upgrade to DMC camera and UAV photogrammetry; 3-D building modelling for historic stations from terrestrial photogrammetry; Future plans.

USA: Expansion of PGC map catalogue; Support to COMNAP – facilities database and AFIM; Air Ops Planning Maps; Place names - new names and progress with name validation; Maps and other geospatial products for operations support; Updates to 50 cm image mosaic; Arctic DEM final products imminent; Update on REMA (see Section 5 and separate paper).

2.2 Questions/points/actions arising from National Reports

Please refer to National Reports.

New Zealand National Report: Wendy Shaw, via Skype.

Q/A: Is the NZ Bathymetric Charting organisation (NZ Hydrographic Authority) in contact and sharing data with the ongoing IBSCO project (International Bathymetric Chart of the Southern Ocean)? Wendy is not aware of this but she will check it after the meeting as an A.I. **[A.I.2]**.

Australia National Report: including MapCat and support to the Composite Gazetteer of Antarctica (CGA). Ursula Harris via Skype.

JyP will forward the new wording for the Map Catalogue page for the SCAR website to Rosemary Nash at the SCAR Office. Limited edits are possible via this way. **[A.I.3]**. Done 24/7/18

Q/A: Adrian Fox emphasised the importance of the Map Catalogue. It is important that members check their catalogue entries for completeness and then keep the catalogue up-to-date with any new publications. **[A.I.4]**.

Carlo Baroni asked if AAD can link the MapCat database with other websites that list many maps (for instance the repository of PGC) - they already do this.

Comments for the working group on place names are included later the afternoon.

Germany National Report: There are German place names missing from the current CGA. Some other delegates noted that there are other place names missing as well, possibly due to a backlog in submitted names. This will be checked by Carlo Baroni with Jacqueline Müller who briefly joined the meeting **[A.I.5]**. Done August 2018. Carlo and Jacqueline have investigated and resolved.

France National report: Elisa Dupuis (*JyP in absentia*)

France intends to propose three new place names. Carlo Baroni explained that he has received information about these proposals and that he has sent the CGA form to generate new place names. He is waiting for these forms to be filled in and returned to him. **[A.I. 6]** JyP to liaise with Elisa to get the forms filled in.

UK National Report: Adrian Fox.

The UK report included information on recent use of UAVs for mapping applications and an update on the project to develop a long-range, fixed-wing UAV platform – Prion 3. This will have a 1000 km range with an 8 kg payload and an operational ceiling of up to 4000 m and runs on a just a few litres of aviation fuel. However the project is delayed and is still in a flight testing phase.

Q/A: Brad Herried asked about the scientific drivers for long-range UAV use. At this stage these are not fully identified, but the expectation is that once the platform is operational and scientists are aware of the capabilities of the system, previously un-tapped requirements will emerge. It's a 'chicken and egg' problem, where this step-change in capabilities does not currently exist, so scientists have not been planning projects that require this kind of platform. It is expected that the UAV will also have a logistics role – e.g. delivering spares or medical supplies to remote field parties, and a mapping role.

Will the platform be opened up to the wider scientific community? BAS is always interested in developing scientific collaborations. For the moment the focus is on making the platform operational, followed by a campaign of less challenging 'low hanging fruit' data collection to build experience and resilience with the system before deploying to its full capabilities.

Norway National Report: Yngve Melvær.

A question about QGIS and Quantarctica integration was asked – Yngve confirmed that Quantarctica runs on the QGIS platform (and that this is one of its strengths, removing the need for software licences and the associated administration). Two presentations about Quantarctica will be given during the OSC.

Norway has forwarded 53 place names to the CGA. Carlo Baroni asked for more information about four place names in the Norway gazetteer but of UK origin, following a query from Peter Noble. The descriptions for the names are shown to be incorrect due to a misunderstanding back in the 1960s when the names were first applied. They have now been amended in the Norway gazetteer and should propagate though to the CGA.

Japan National Report: Yuichi Aoyama. Japan has a very active mapping programme at very diverse scales, including work with both fixed-wing and multi-copter UAV platforms. There is new mapping data that should be included in the ADD. **[A.I. 7]**. Peter Fretwell to liaise with NIPR about inclusion of new mapping data.

USA National Report: Paul Morin and Brad Herried.

Brad gave a presentation about the American national programme, including the access to a browser for NGA sub-metre resolution satellite imagery for SCAGI members to use for place names correction. Member organisations can ask for a licence from NGA via PGC. **[A.I. 8]** Interested organisations to ask PGC for NGA licence.

Paul Morin then gave a detailed presentation on the Reference Elevation Model of Antarctica (REMA) project, this showed that this product has really astonishing possibilities for Antarctic mapping, science and logistics. See also Section 5, Horizon Scan.

Many members of the group are certain that they will use this data and asked about release date – latest information is August 2018. An obvious early application would be to integrate this elevation data in the Air Operations Planning Maps.

A question arose if contour lines will be generated from the DEM. This is not a planned output for the US Polar Geospatial Center - there are many derived products possible.

Canada National report: Peter Pulsifer.

Peter explained that Polar Knowledge Canada (PKC) was formed in 2016 and has responsibility for Canadian activity in Antarctica. Peter is not at the meeting in an official capacity and a Canadian delegate is yet to be identified, but for the moment, Peter will remain the PoC for Canada. He agreed to forward a note on Canadian activity after the meeting.

3) SCAGI products:

Progress reports, future plans and discussion about SCAGI products:

3.1 Map Catalogue (Ursula Harris, Australian Antarctic Data Centre). Ursula presented progress with the MapCat as part of the Australian National Report in the morning. ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/National_Reports/

Each month an email showing new maps added to the SCAR Map Catalogue is sent out. Members should email mapping@aad.gov.au if they would like to be added to the mailing list.

The MapCat has a facility for listing maps within a theme. There is now a theme list for Air Operations Planning maps. See: http://data.aad.gov.au/aadc/mapcat/list_view.cfm?list_id=57

AAD have done more work on streamlining the process for adding map entries to the MapCat. There is a new tab with instructions for creating and validating a file for uploading into the SCAR Map Catalogue and there is a template for preparing maps entries which can be obtained by emailing mapping@aad.gov.au. One can add a link in the MapCat entry to a download site for the map.

For the catalogue to continue to be of benefit to the SCAR community, agencies are encouraged to forward map details to AAD.

Comment from the co-COs. Ursula and her team have put a lot of effort into developing the MapCat and making upload of map entries as easy as possible. There really is no excuse for not submitting an organisation's Antarctic maps to the MapCat. It's a really good way to promote access to your maps!

[A.I. 4. Above]. All delegates to check that their organisation's Antarctic maps are in the MapCat and update accordingly.

3.2 Antarctic Digital Database (Peter Fretwell and Adrian Fox)

Presentation by Peter Fretwell available here: ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/SCAR_Product_Reports/

3.2.1. Summary of progress since the 2017 meeting: The latest release of the ADD was in June 2018. Significant data updates include a new coastline for the James Ross Island and Prince Gustav Channel area, northern Antarctic Peninsula, based on sub-metre resolution satellite imagery, supplied by US PGC and more recent Sentinel2 imagery; updates to the coastline in the Adelaide Island area (Antarctic Peninsula, BAS) and an update to the Larsen Ice Shelf front following break-off of iceberg A68.

As always, delegates are reminded that the ADD can only be as good as the data in it, and that they should ensure that any new topographic data is offered to the ADD please.

3.2.2. 25 years of the ADD in 2018: Peter and Adrian have a presentation about 25 years of the ADD in the Polar18 science programme. Adrian presented this on Saturday 23 June. It covers: background to the ADD; how the ADD has documented both real changes and changes in knowledge about Antarctica; how the ADD methods have tracked the evolution of geospatial data and methods over the period, and how the original vision of the ADD needs to evolve for the future. The presentation is available here: ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/ADD_25years_talk/

This will be followed up with a publication where contributors of data to the ADD will be credited as co-authors.

3.2.3. Future of the ADD - strategy for the way forward

The ADD continues to be well used and valued by the Antarctic community. Data downloads are typically about 10,000 per year. It is used as the source mapping for published and operational maps, several web-services applications (e.g. CCAMLR GIS <https://gis.ccamlr.org/>) and the high proportion of talks and posters at Polar 18 containing maps based on the ADD showed that it is well used by scientists.

The original vision for the ADD as a compilation of published mapping data from National Mapping Agencies is no longer valid. We are now in the era of region- or continent-wide datasets extracted from satellite imagery, often with automated processes, for example rock outcrop (Burton-Johnson et al, 2016) and ice-shelf grounding line (Bindschadler et al 2011). The availability of the REMA dataset (see US Report and Section 5) will provide a step-change in the quality of elevation data for Antarctica and will render obsolete much of the existing elevation/contour data included in the ADD.

The ADD is now an extremely complex mosaic (English word *palimpsest*) of data compiled from mapping from different epochs, using different methods and different data sources. Each of these datasets was the best that could be achieved at the time, but they each have their own inherent spatial error budgets and level of detail, so that quality is highly variable across the data and often difficult to assess due to lack of detailed information about the source mapping.

Comparison of the existing data in the ADD with recent well-georeferenced satellite imagery and image-based products has shown that for historical reasons much of the data in the ADD based on published mapping now lacks spatial accuracy and/or detail for modern applications.

A strategy is now needed for a response to these challenges to ensure the continued value and relevance of the ADD. Peter and Adrian presented the main points of a future strategy for discussion at the meeting (summarised below).

1) Products to be offered.

High resolution – The primary dataset designed for use by mapping, science and logistics applications at regional scales. Nominally 1:250,000 scale but usable for most applications over the range 1:100,000 to 1:500,000 scale. Some of the data will be from recent published topographic maps, normally at 1:250,000 scale, but will increasingly be supplemented by satellite derived data.

Coastline: Based on a combination of data from the most recent published topographic mapping and satellite imagery interpretation from Landsat 8, Sentinel 1 and 2. The aim is to keep this up-to-date as the best source for continent wide coastline data. Key operational and science areas will be updated twice a year for the ADD update cycle, other areas updated periodically in response to significant change.

Rock outcrop: The primary offering will be the continent-wide rock outcrop dataset published by Burton-Johnson et al (2016), superseded by newer versions based on more recent and higher resolution Sentinel 2 data when available.

The existing 2018 rock outcrop data-set will remain available through the ADD, because it is a source for various down-stream products such as geological maps, but will be fossilised and backed up by a clear statement that this is no longer being updated.

Elevation data: The current contour data set will be superseded by new data based on REMA. There are no plans to publish a continent wide contour set linked to the launch of REMA, so production of new contours based on REMA will probably happen over a period of years as responsible agencies review their mapping in response to the DEM.

Medium resolution – Generalised to a nominal scale of 1:1M from the Scale 0 data. Intended for use for regional over-view mapping, wide-area operational planning (eg SCAR Air Operations Planning Maps series) and for location maps in reports and publications.

Local – A repository of new large scale, detailed mapping for key areas, usually published photogrammetric mapping from aerial photography or sub-metre resolution stereo-satellite imagery. Provided by organisations such as National Mapping Agencies or Polar Research Centres and included in the ADD as supplied. The map data will normally be linked to an entry in the SCAR Map Catalogue.

Low resolution – generalised to a nominal scale of 1:10 M scale and intended for use for continent – wide maps and location diagrams.

We are proposing to no longer support the Low resolution coastline. Testing has shown that the medium resolution coastline can be used perfectly well even at A5 size and is only 4Mb of data.

2) Acceptance and QA processes

BAS to write detailed descriptions of the metadata requirements and Quality Assurance (QA), and acceptance processes used to manage the ADD data and publish these on the ADD website.

BAS to review recent developments in GIS generalisation to assess whether the current generalisation methods can be improved.

Outcome: There was general consensus at the meeting for the proposed future direction of the ADD. This will be followed up by a strategy paper for SCAGI. Implementing the proposed strategy will put the ADD onto a sound footing for the future and ensure the continued usefulness and relevance of the ADD.

[A.I.9] ADD strategy paper. Peter Fretwell and Adrian Fox to write a short strategy paper setting out plans for the ADD.

Bindschadler, R., Choi, H., Wichlacz, A., Bingham, R., Bohlander, J., Brunt, K., Corr, H., Drews, R., Fricker, H., Hall, M., Hindmarsh, R., Kohler, J., Padman, L., Rack, W., Rotschky, G., Urbini, S., Vornberger, P., and Young, N.: Getting around Antarctica: new high-resolution mappings of the grounded and freely-floating boundaries of the Antarctic ice sheet created for the International Polar Year, *The Cryosphere*, 5, 569-588, <https://doi.org/10.5194/tc-5-569-2011>, 2011.

Burton-Johnson, A., Black, M., Fretwell, P. T., and Kaluza-Gilbert, J.: An automated methodology for differentiating rock from snow, clouds and sea in Antarctica from Landsat 8 imagery: a new rock outcrop map and area estimation for the entire Antarctic continent, *The Cryosphere*, 10, 1665-1677, <https://doi.org/10.5194/tc-10-1665-2016>, 2016.

3.3 Composite Gazetteer of Antarctica (Carlo Baroni).

Progress with the CGA.

At the date of 8 June 2018 the current number of place names in the CGA is 37,631, referring to 19,844 recognized different features (June 2018) an increase of 74 and 34 since June 2017. There are 32 names submitted by Bulgaria in May, not yet included in the gazetteer.

The CGA team have sent a listing of all Chilean names in the CGA to Dr Ricardo Jana for review. One new Chilean name has also been added to the CGA.

There are new instructions for batch edits of the CGA by downloading and editing names in a *.csv template: https://data.aad.gov.au/aadc/gaz/scar/batch_instructions.cfm

The contact for submitting new names to the CGA is:

Jacqueline Muller
Museo Nazionale dell'Antartide Felice Ippolito,
Università di Siena
Via del Laterino 8, 53100 Siena, www.mna.it
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3.4 Air Operations Planning Maps Series (Adrian Fox).

3.4.1. Current status: Adrian Fox gave a presentation about the current status of the AOPM Series. ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/SCAR_Product_Reports/

A workshop after the 2017 SCAGI meeting reviewed and updated the map specification in response to feedback from users following use in Antarctica in 2016-17 and comments from AAD.

A series of 16 maps at 1:1M scale to the agreed updated specification were available for the 2017-18 operations season. They cover about 3/5 of the continent. There is now also a continent-wide overview map with distances between stations and magnetic declination isogons.

The maps are listed in the CGA, are available for free download from IGN Belgium, British Antarctic Survey, Norwegian Polar Institute and US Polar Geospatial Center for both printing and upload into GIS or on-board iPads.

The maps were promoted at COMNAP, and Adrian Fox (BAS) and Brad Herried (PGC) made direct approaches to Antarctic air operators including Chile/UK/US national programmes, UK Royal Air Force, Kenn Borek Airways.

Feedback from 2017-18 is that the maps are highly valued by the Antarctic air Operations community. After the Davos meeting COMNAP have asked if the maps can include the COMNAP logo. This endorsement should be welcomed.

3.4.2. Plans for 2018-19 Air Operations Season.

It was agreed that we should do only minor updates to respond to operations facilities changes this year, to be achieved by each map publisher checking against the COMNAP facilities database. PGC, who host the database, will advise when the updated data are available.

[A.I. 10] Brad Herried to confirm with COMNAP their plans to update the facilities database and send links.] Update – released on 8 August. Data can be downloaded from:

<https://github.com/PolarGeospatialCenter/comnap-antarctic-facilities>

The updated maps should be available before the Antarctic season starts on the 1 of October, to allow users time to download and implement the 2018-19 maps in their systems.

3.4.2. Plans for 2019-20. REMA will supersede the elevation information on the maps. Whilst it is due for release in autumn 2018 it will be too late for 2018-19. It will be imperative to update the maps in response to the new data available through REMA for the 2019-20 Antarctic air operations season. This will involve release of a new version of the maps. Discussion on methods to extract a 1:1M scale contour dataset and extract spot heights from REMA will be required once the REMA dataset is available. The Pisa workshop may be too late for this for BAS and PGC who have a large spatial area to cover with their sheets.

4) Website (Jean-Yves Pirlot, NGI Belgium)

There are ongoing problems with the SCAR website. It is not available for editing by SCAGI groups. An objective for this year should be for SCAGI to review and update the web-pages, once these are accessible.

[A.I. 11] Adrian and JyP to lead review of the SCAGI web-pages. We are responsible for key SCAR products and the group has a huge amount of important and interesting activity to report, so with some effort we should be able to have some of the best pages on the site.

5) Horizon scan – if not already covered in the previous discussions

5.1. New sources of elevation data for Antarctica:

Paul Morin gave a detailed presentation about the Reference Elevation Model of Antarctica (REMA). This is an astonishing dataset and is a huge step-change in the quality of elevation data available for the continent. It is set to have a paradigm shift impact on mapping, logistics and science. The presentation is available here: ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/National_Reports/

UPDATE: REMA was launched on 4 September 2018. See <https://www.pgc.umn.edu/data/rema/> for full details and access to the data. Key points are:

- Eight metre posting mosaic with metre-level elevation accuracy
- More than 200,000 2-8 m posting time-dependent strips (100-200 TB) fall 2018
- Mosaic web service
- Product paper to be published after mosaic delivery

5.2. Developments with UAV operations for mapping: Previous SCAGI meetings had shown emerging activity with UAV platforms. Delegates had been asked to include a report of any mapping activity with UAVs in the National Reports for 2018. Initial observations are that: 1) There is lots of activity with multicopters, mainly for areas around stations. 2) Agisoft Photoscan is the most commonly used software. 3) Projects are using GNSS ground control to achieve rigorous results – applying classical photogrammetry approaches to data collection and SfM (Structure from Motion) processing (which is what you would expect from geospatial organisations).

[A. I. 12] Adrian to compile this material into a short report on UAV use for mapping applications by SCAGI members. It is hoped that it will be a resource for identifying other groups who are doing similar work to facilitate sharing of experience.

15.30 Coffee break

6) Working Group on Antarctic Place-naming Guidelines (Jean-Yves Pirlot)

6.1. Progress with WG on Antarctic place-naming guidelines: Jean-Yves Pirlot presented a report on progress so far with the WG, particularly the kick-off meeting held in association with the UNGEGN (UN place-names group) meeting in New York in August 2017. (included in Belgian National Report).

Q/A Carlo Baroni welcomed the first progress in this field and underlined the need for a standardized procedure to create place names - this will be part of the revision of the guidelines paper.

Daniel Nyvlt made the very good point that SCAGI is a part of SCAR and SCAR should push for adherence to the SCAR Composite Gazetteer. This concerns scientific papers as well and is even more important than maps. Antarctic Science is a good example of a journal that already has a firm policy on Antarctic place names. David Walton is chief editor and has been closely involved with place naming – he was previously on the UK APC.

[A.I. 13] Adrian and JyP to discuss with Chandy Nath (SCAR Executive Director) how to reinforce this point (Adrian meeting with Chandy in Autumn).

6.2. Web-map for place-name checking: Brad Herried stated that US PGC is willing to develop an online tool for SCAGI members to check the coordinates of place names. PGC already have a web-based tool for checking place names against satellite image backdrops built for ACAN (US place names committee). Brad showed a presentation with questions that need to be addressed before they can develop this tool. ftp://ftp.nerc-bas.ac.uk/pub/ajfo/SCAGI_2018/SCAR_Product_Reports/

- Who will use this? What existing workflows can it supplement / replace?
- What reference datasets should be included and are they available?
- How can we prevent this from being an “online GIS”?
- What information should be stored (or shared) within the application for members?
- Should anything be permanently saved back to official databases?
- Who can help (technical use education, future developments, etc.)?

Discussion:

It was agreed that this would be a very helpful initiative and particularly useful for national place-name committee members who are not geospatial professionals and do not have the knowledge or software to easily view place names information in its geospatial setting. With this in mind, the tool should be as simple as possible.

A quick survey of the procedures of the different naming authorities would be a good approach.

Carlo Baroni suggested to choose a hierarchical approach, starting with the major features first.

There are two main requirements:

1) *Checking the accuracy of existing names.* This requires the ability to view names against geospatial backdrops to check and if necessary extract a new coordinate to correct an existing CGA entry (or for proposal of a new feature). The tool already used by ACAN already answers this requirement very well.

2) *Ability to view existing place names in an area* that are in the CGA. This is critical to achieve convergence between features that are common to several national gazetteers and have multiple CGA entries and to avoid duplication of existing features by new name proposals.

The UK webmap is already a nice tool and can be a kind of example (<https://apc.antarctica.ac.uk/>). It could be a specification for the tool to develop at a global level.

REMA and the PGC mosaic would be excellent for the underlying geospatial layers. REMA has the best available georeferencing and would be the best reference frame to extract coordinates. REMA will be very good for issues such as mountains with three summits where the existing coordinate does not give the precision required to resolve the meaning.

Virtual meetings: The WG will follow up these points in a virtual meeting planned for August, probably to run as two meetings and eastern one and a western one, due to time-zone issues.

[A.I. 14] Jyp to organise follow-up virtual meeting for the WG.

7) AOB (Any Other Business)

Adrian informed the group that at Polar18 there was a kick-off meeting for BEDMAP3 – a DEM of the bedrock surface for Antarctica based on merging of airborne and overland radio-echo sounding data and modelling. This is relevant to SCAGI because statistics about ice volume and hence sea-level impact are based on subtraction of the bed and surface DEMs – which is SCAGI's domain. Clearly REMA will be important for this.

UK glaciologist Dr Anna Hogg (University of Leeds) is considering proposing a SCAR Group on Remote Sensing/Earth Observation. After discussion, SCAGI agreed to see how this develops rather than be directly involved at this point and noted that there are already SCAR groups covering aspects of Earth Observation eg Ecology.

8) Date and location of next meeting

2019 – Inter-sessional meeting: Carlo Baroni has kindly offered to host the 2019 SCAGI meeting at the University of Pisa, Italy in early June 2019. This is anticipated to be a 1.5 day meeting including workshops for updating and integration of REMA data into the Air Operations Planning Maps series and Place-names Working Group.

2020 – Meeting linked to SCAR Open Science conference/Polar20. To be held by AAD in Hobart Tasmania.

17.00 Close and depart

Delegates attended a Drinks reception for the Polar18 conference in the Davos conference centre, followed by a SCAGI dinner at the Davos Hilton Garden hotel.

9) Action Grids

9.1 Actions from the 2017 meeting at AWI Bremerhaven, Germany, June 2017.

Number	Action	Owner	Due by	Status
1	Add 2017 National Reports to SCAGI website	JYP	In parallel with the minutes	Active. SCAR has serious problems with the website and it was not easy to edit the SCAR website. Small edits are possible however done on behalf of groups by the SCAR Office.
2	Liaise with the Russian Polar authorities to identify a SCAGI delegate/point of contact.	JyP and SCAR		Done – Russian delegates welcomed at the 2018 meeting.
3	SCAGI representatives to review their organisations' content in the MapCat and update as appropriate. Completed spreadsheets to be sent to Ursula Harris. Any duplicate map entries that are noticed are to be notified to Ursula Harris.	ALL	As practical	Active (from 2016). AAD have put a lot of effort into making map entry easy. There is no excuse for not bringing entries up to date.
4	Liaison over inclusion of hydrographic charts in the SCAR MapCat	Robert Ward and Ursula Harris	Ongoing.	Active (from 2016). Ursula is in contact with Robert Ward. SCAGI delegates are encouraged to contact their national Hydrographic Organisation for inclusion of charts in the SCAR MapCat.
5	Amend text on SCAGI website for MapCat as advised by Ursula Harris	JYP	When new SCAR website online	Done.
6	Discuss creation of a catalogue of Antarctic aerial photography with organisations that hold material.	AJF	Report at 2018 meeting	Not started. Keep as an action.

7	Update and improve the SCAGI website.	JYP/AJF and ALL	When website is editable	Active
8	SCAGI members to email Ursula if you wish to be included in the new map circulation list and with any suggestions for map list categories.	ALL	Ongoing	Reminder issued at 2018 meeting and in report.
9	SCAGI members to contact Peter Fretwell with any new data for inclusion in the ADD.	ALL	Ongoing	Active
10	ADD team to prepare a draft paper about the key development in Antarctic mapping over the last 25 years for circulation and comment.	PTF and AJF	Before 2018 meeting	In progress. Paper presented at Polar18. Needs writing up into draft paper for circulation.
11	Place name coordinate checking. US PGC to develop beta version for place-name position checking for comment.	US PGC	When practical for PGC	Active. Discussed in detail at the 2018 meeting.
12	Include an item about progress with UAVs by SCAGI members in the 2018 SCAGI meeting agenda.	AJF and JYP	For 2018 meeting	Done. Several National Reports included info on UAV projects. AJF to compile into report.
13	Send national place-name committee guidelines and procedures to JYP.	All	As soon as possible	Done before WG meeting August 2017. Any further material welcome by JyP.
14	JYP to: a) organise a meeting at UNGEGN, b) circulate a report to SCAGI members and c) organise follow-up telecom schedule.	JYP	To match UNGEGN timetable.	Done

9.2 Actions from 2018 meeting at Davos, June 2018.

Number	Action	Owner	Due by	Status
1	Add papers and national reports from the meeting to the SCAGI website. Make available through ftp	AJF	As soon as available	Pending progress with SCAR website. FTP site done and listed in

	until SCAR website is functional.			meeting report.
2	Check that NZHA is in liaison with IBCSO	Wendy Shaw	After meeting	Active
3	Amend wording for the Map Catalogue page for the SCAR website	JyP		Done
4	Delegates to check their catalogue entries for completeness and then keep the catalogue up-to-date with any new publications.	All	Ongoing	Active
5	Check status missing names from CGA and resolve.	Carlo Baroni, Jacqueline Muller.		Done
6	Forward French names to CGA	JyP to liaise with Elisa Dupuis	After meeting	Active
7	Include Japanese mapping data in ADD	Peter Fretwell to liaise with NPR.	After meeting	Active
8	Agencies who would like access to the NGA image mosaic for place name checking to liaise with PGC.	All	Ongoing	Active
9	ADD strategy paper.	PTF and AJF to write a short strategy paper.	After meeting	Active. Main points agreed at the meeting.
10	Confirm with COMNAP their plans for updating the Facilities Database.	Brad Herried.	After meeting.	Done – released 8 August.
11	Review web pages	AJF and JyP	2018	Needs progress with SCAR website.
12	Compile report on UAV use for mapping by SCAGI agencies	AJF	After meeting.	Active.
13	Discuss contacting journal editors to reinforce use of CGA names only in science papers.	AJF to discuss with Chandy Nath.	Meeting in Autumn	Active.
14	Organise follow-up meeting of place names WG.	JyP	For meeting in Autumn	Done.