

GeoMAP update Feb 2016



SCAR Open Science Conference

Firstly a reminder, the Scientific Committee for Antarctic Research's Biannual Open Science Conference will be held between 22-26 August in Kuala Lumpur this year and there is a call for abstracts out at the moment (<http://www.scar2016.com/abstract-submission-guideline.php>). Abstracts need to be in by the **14th of February**.

GeoMAP MEETING - 21 August 2016

A Geological Mapping Update of Antarctica (GeoMap) action group meeting will be held the evening before the SCAR OSC conference, at 17:00 on 21 August, University of Malaya in the IPS Building Seminar B room. The group is facilitating an integrated programme to promote the capture of existing geological map data, update its spatial reliability, improve representation of glacial sequences and geomorphology, and enable data delivery via web-feature services. This will be the second main meeting of this group. We will provide an overview of progress, hold a discussion of key issues and approaches, and plans for the next stage. All welcome! Contact: Simon Cox (s.cox@gns.cri.nz)

SCAR SESSION "S20. Observing and mapping the Antarctic continent"

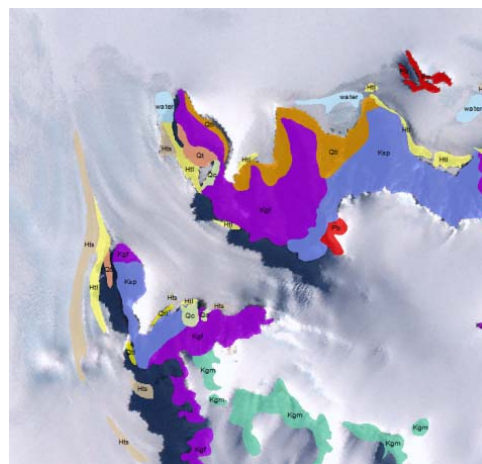
As part of the SCAR OSC, there will be a symposium '*S20. Observing and mapping the Antarctic continent*'. The session is aimed to encourage contributions from researchers involved in polar data acquisition, management and sharing, and from those who depend on these large scale datasets and have an interest in guiding their future development. Details can be found on <http://www.scar2016.com/symposia-session.php>. This would be a great opportunity to showcase some progress, findings or issues.

GeoMAPPING REPORT

The Challenge To build a modern geological dataset that classifies and describes the bedrock and surficial geology of Antarctica's rock exposures – or in other words classify and describe over 72,000 distinct polygons covering 51,000 km² ! (but luckily its <0.5% of the continent).

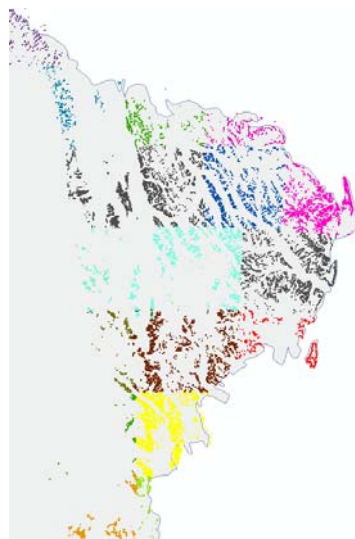
Some Progress

Marie Byrd Land: A team led by Christine Siddoway Smith from Colorado College have converted their geological mapping and shapefile datasets of western Marie Byrd Land (wMBL) geology into GeoSciML format. During a 4 week visit to GNS Science in New Zealand, Sam Elkind reshaped and relocated polygons in the GIS against LIMA datasets, classified the geology, checked against hires satellite imagery. Together Christine and Sam developed data attributes for the bedrock geology. Belinda Smith Lyttle and Simon Cox (GNS Science) helped capture some of the glacial geology and areas of seasonal ice/water. The result is a complete GIS dataset (985 polygons, 250km²) and geological legend that covers wMBL! 24 maps used as source information have been included in a bibliographic dataset. Colorado College attention is now directed towards eastern MBL.



Northern Victoria Land: In comparison with many regions in Antarctica, Northern Victoria Land (NVL) has been relatively well mapped by the GIGAMAP project (1:250,000 scale), but the information has remained as a series of (beautiful) hard-copy map sheets. While passing through New Zealand in December, Giovanni Caponni and Laura Crispini (PNRA) visited GNS Science in Dunedin to get progress underway to capture NVL mapping for GeoMAP. By translating all the mapping classifications and geological legends into data attributes for GeoSciML, and helping build a composite geological legend, they enabled Simon Cox to easily translate the hard-copy maps and classify digital polygons.

The dataset of 8000 polygons (4530km²) presently covers all the areas of the published GIGAMAPs and an earlier US mapsheet (Stump 1989). Each rock classification is linked to its published source reference so that it is easy to find the original hard-copy dataset (colours in the adjacent figure represent different source maps – dark grey are yet to be completed areas, where older 1:500,000 mapping will be used), but with a series of GeoSciML attributes. A notable feature of North Victoria Land is the relatively few areas of exposed moraine or glacial geology to map compared with MBL and SVL.



South Victoria Land: The geological map sheet published in 2012 by GNS Science, has now been converted into GeoSciML. It may need some simplification to make it consistent with some of the other data available. Coverage 7300 km² with 1900 polygons.

Antarctic Peninsula: Prior to his departure for Antarctica, Alex Burton-Johnson (BAS) classified the LIMA dataset then derived a set of rock polygons for the entire continent by automated outcrop delineation. This generated a massive 137,114 polygons (!) on the Peninsula alone which he classified against the earlier BAS geological mapping units using a first-order classification. A fantastic effort resulting in a dataset that has a tendency to slow your computer down! Some simplification and rationalisation may now be needed.

Dronning Maud Land: The Norwegian Polar Institute (S. Elvevold and T. Abu-Alam) is compiling existing geological maps from Dronning Maud Land into a new seamless, digital GIS database. A total of approximately 80 hard-copy, source maps have been scanned, georeferenced and digitized, (without modification) in ArcMap. The original maps all have their own way of presenting the geology; they are at different scale, contain different level of details and geological knowledge, and they have different standards and norms for classification. A major task of the compilation project is thus geological harmonization of existing map data, and building a new uniform and descriptive legend for the area. The new overview map of Dronning Maud Land is compiled at the scale 1:250 000 and will be presented in 13 map sheets. The GIS database and the map sheets will be available online early 2017.

Others: Chris Carson (Geoscience Australia) reports they may soon be in a position to put some more effort into the datasets they have created.

In conclusion: Perhaps 20% of the continent's rock outcrops have now been classified with some form of digital representation of geology, much of it converted into GeoSciML format, during the first 9 months of 'Action'. A fantastic start, but perhaps including some of the more easily completed regions where surficial geology is relatively straightforward. There are still many issues to decide with regard to precision of polygons and final data format, let alone how to present and share these data.

Where to from here

There will be a GeoMAP meeting at the SCAR conference (see above). As a first priority we need to clarify and finalise an agreed data structure and finalise issues around which base datasets we will work to in the first instance and the degree to which their locational position can/should be corrected. In the meantime we are also looking for others to attribute and collect data. Students provide a win-win way this can be achieved where they learn from working with GIS datasets, and the Antarctic community will benefit from their work. GNS Science is still able to provide some tuition and support, and can potentially host visits to work on datasets. Anyone interested in capturing their geological and geomorphological data, or historic data from a particular region, can contact Simon Cox (s.cox@gns.cri.nz)