**ADMAP Report to SCAR GSSG**

**Period 2013 – 2014**

**1. Year 2013**

**1.1 Publication of a Special Issue in Tectonophysics**

The ADMAP Expert Group concreted the publication of a special issue in the Tectonophysics Scientifi Journal, volume 585. Its title is "**RECENT ADVANCES IN ANTARCTIC GEOMAGNETISM AND LITHOSPHERIC STUDIES**”, and was edited by Fausto Ferraccioli, Ralph von Frese, and Marta Ghidella.

The issue presents 16 papers to update the Antarctic geoscience community on ADMAP's investigations of the core, external, and crustal magnetic fields of the Antarctic region south of 60oS.  These papers also include studies of the region's rock magnetic properties, and summarize the numerous marine, airborne, and satellite magnetic surveys that will be compiled into a new digital Antarctic magnetic anomaly map for enhanced crustal studies.
It was published on February 11, 2013

<http://www.sciencedirect.com/science/journal/00401951/585>

**1.2 Initiation of the second-generation magnetic anomaly map for the Antarctic region south of 60° S, ADMAP-2.**

As a result of the ADMAP Expert Group meeting at SCAR’2012 in Portland, Oregon, funding was secured from the Korean Polar Research Institute (KORPI), In-Cheon, Republic of Korea, to help modernize the database and compile an improved magnetic anomaly map of the Antarctic. The three-year project will incorporate more than 3 million line-km of new airborne and marine magnetic survey data, as well as enhanced satellite magnetic gradient observations from the Swarm mission.

The ADMAP steering committee met over 30 Jul. - 1 Aug. 2013 at the Korean Polar Research Institute (KOPRI). The meeting resulted in (A) milestones for completing the project, (B) an overview of the new magnetic survey data for ADMAP-2, and (C) enhanced formats for digitally archiving airborne and marine survey data and metadata.

**2. Year 2014**

**1.1 ADMAP-2 splinter meeting at EGU**

The ADMAP-2 project splinter meeting was held at EGU 2014 in Vienna on Thu 1 May 2014, convened by Fausto Ferraccioli and Detlef Damaske.

Representatives from the UK, Germany, Italy, Australia, Korea & France attended -and the World Magnetic Anomaly Project team was also represented.

The main points raised were:

1. According to the original plan of the steering committee developed at KOPRI in August 2013 a preliminary ADMAP-2 magnetic anomaly compilation should be presented as early as the ISAES meeting in 2015 and the IUGG meeting in 2015. A closer to “definitive” product & associated MS (e.g. for GRL) could be presented at AGU 2015.

 These milestones were recognised both by the convenors and attendees of the splinter meeting as being ambitious, as the volume of new data is large compared to ADMAP-1, and the latter project took more than 5 years to complete.

 The level of progress and hence the feasibility of the steering committee initial aspirations should be critically reviewed at the SCAR Meeting in Aug. 2014 (NZ- Auckland).

1. Continuation strategies: a) maintain original data level?, b) upward continue to common regional level, or c) drape over Bedmap2 (potentially preferred option?). Potentially all three products could be delivered?
2. How often should the database be updated? Versions could potentially be implemented e.g ADMAP-2.0, 2.1-but would e.g. yearly updates make sense? Depends e.g. on how often the ADMAP Working Group can access new magnetic datasets and whether a data manager can be maintained to do this; the advantage is that errors could be fixed and feedback from the users could also lead to improved versions (including feedback from users outside the main geomagnetic community)
3. The recommendation was that contact with the World Magnetic Anomaly Project should be maintained & a rep. informed and invited to the main ADMAP-2 Working Group meetings

Fausto gave an overview of ADMAP-2 on behalf of Sasha Golynsky who could not attend (see Refs 1-2).
Other short presentations on new datasets and regional magnetic compilations followed:

Matthias Mieth presented a new AWI-data compilation over Dronning Maud Land (Refs. 3-4);

Alan Aitken presented the recent ICECAP data compilation over Wilkes Land (Ref. 5)

Detlef Damaske presented the GANOVEX10 High resolution Mesa Range aeromagnetic survey over northern Victoria Land (Ref. 6)

Tom Jordan presented a recent UK AFI mag. survey over Institute and Moeller ice streams & a High res. Adelaide Island mag survey (Refs 7-8). He also showed the ongoing development of a new BAS aerogeophysical data release portal (from which ADMAP-2 WG and others will be able to access all the BAS mag survey data holdings including both raw and processed line data).

**1.2 Recent ADMAP-2 publications (referred to during the Splinter Meeting presentations)**

1. Ferraccioli, F., von Frese R. and Ghidella M., 2013. Recent advances in Antarctic Geomagnetism and Lithosphere Studies. *Tectonophysics*, 585 (Guest Editors Special Issue).
2. Golynsky, R. Bell, D. Blankenship, D. Damaske, F. Ferraccioli, C. Finn, D. Golynsky, S. Ivanov, W. Jokat, V. Masolov, S. Riedel, R. von Frese, D. Young, ADMAP Working Group, 2013. Air and shipborne magnetic surveys of the Antarctic into the 21st century. *Tectonophysics*, 585, 3-12, 10.1016/j.tecto.2012.02.01
3. Mieth, M. and Jokat W, 2014. New aeromagnetic views of the geological fabric of southern Dronning Maud Land and Coats Land, East Antarctica. *Gondwana Research* 25, 358-367.
4. Mieth, M, Jacobs, J., Ruppel A., Damaske D., Läufer A., Jokat, W., 2014. New detailed aeromagnetic and geological data of eastern Dronning Maud Land: implications for refining the tectonic and structural framework of Sør Rondane, East Antarctica. *Precambrian Research* 245, 174-185.
5. Aitken A.R.A., Young D.A, Ferraccioli F., Betts P.G., Greenbaum J.S., Richter T.G., Roberts J.L., Blankenship D.D, and Siegert M.J., 2014. The subglacial geology of Wilkes Land, East Antarctica. *Geophysical Research Letters* 41, 2390–2400, doi:10.1002/2014GL059405.
6. Damaske D., Schreckenberger B., and Goldmann F., 2014. A High Resolution Aeromagnetic Survey over the Mesa Range, northern Victoria Land, Antarctica. *Polarfoshung*, in review.
7. Jordan, T.A., Ferraccioli F., Ross N., Corr H.F.J., Leat P.T, Bingham R.G., Rippin D.M., le Brocq A., Siegert M.J., 2013. Inland extent of the Weddell Sea Rift imaged by new aerogeophysical data. Tectonophysics, 585, 137-160, 10.1016/j.tecto.2012.09.010.
8. Jordan, T.A., Neale, R.F., Leat, P.T., Vaughan, A.P.M., Flowerdew, M.J., Riley, T.R., Whitehouse, M.J., Ferraccioli, F., 2014. Structure and evolution of Cenozoic arc magmatism on the Antarctic Peninsula: A high resolution aeromagnetic perspective. Geophysical Journal International, in review.

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