



A high-resolution aeromagnetic survey over the Lanterman Range, northern Victoria Land, Antarctica

Antonia Ruppel (1), Andreas Läufer (1), Laura Crispini (2), Giovanni Capponi (2), and Frank Lisker (3)

(1) Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany, (2) University of Genova, Italy, (3) University of Bremen, Germany

During the GANOVEX XI (German North Victoria Land Expedition) in 2015-16, a high-resolution aeromagnetic survey was carried out over the Lanterman Range in northern Victoria Land (NVL). The helicopter-based survey aimed to resolve the fine structure over the so-called Lanterman Suture Zone, which represents one of the main key areas regarding geodynamic evolution of NVL during the Early Palaeozoic Ross Orogeny. This was achieved by reducing the flight line spacing to 1-2 km with 10 km tie lines and flying in a terrain-following mode. The survey was completed by ground truth magnetic susceptibility readings by using a Kappameter KM-7.

The Ross-aged basement of NVL is subdivided into three tectonometamorphic so-called “terrane”, comprising from W to E the Wilson-, the Bowers- and the Robertson Bay Terrane. They are generally interpreted to have formed by accretion processes at the Palaeo-Pacific active continental margin of East Gondwana in the Cambrian and Ordovician. The survey over the Lanterman Range covered parts of the two western terranes, namely the Wilson and Bowers terranes, which are separated by the Lanterman Fault Zone. This polyphase tectonic discontinuity is characterized by a belt of mafic and ultramafic rocks comprising metabasites with eclogite-facies relicts.

Preliminary results show two distinct and nearly parallel magnetic lineaments in the survey area that will be further interpreted by combined magnetic susceptibility measurements and geological field data. One magnetic lineament correlates well with the known boundary between the Wilson and Bowers terranes, which comprises also a metaconglomerate belt with mafic to ultramafic clasts. The second, further easterly magnetic lineament is so far not supported by outcrops of associated highly magnetic rocks in the field. Similar parallel structures have been observed further to the southeast and seem to be offset by a major sinistral strike-slip fault zone of possibly post-Jurassic age. One tentative interpretation of this extensive, strongly linear, and about 50-60 km long magnetic feature could be that it represents remnants of the subducted Palaeo-Pacific slab underlying the Bowers/Robertson Bay terrane boundary. Future modeling of the data set will help to identify the specific nature and origin of the observed anomalies and their geodynamic significance with regard to Ross-orogenic geodynamics.