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GEOPHYSICAL RESEARCH IN DRONNING MAUD LAND, EAST ANTARCTICA - AN UPDATE

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Geological mapping and geophysical data indicate that the geological history of the East Antarctic between Berkner Island in the west and Enderby Land in the east faced several geological events, which are not fully understood. The main information on the sub-ice geology is provided by aerogeophysical investigations. However, these surveys are somehow logistically limited to a region, which is parallel to the coast line. Thus, large parts of the inner Antarctic continent are only sparsely surveyed due to the lack of long range aircrafts, which can operate also in more remote areas. As a consequence geological units, which are identified in the coastal or near coastal mountain ranges, cannot be followed into the interior. Thus, most of the models, which predict the continuation of the geological features from the surrounding continents into the Antarctic craton are still highly speculative.

Recent regional aerogeophysical investigations in the Dronning Maud Land have to some extent confirmed the results of older surveys, but provided also new and more accurate information on the gravity structure and the ice thickness. Sparse seismic information from this region provides a first view on the crustal thickness and the mantle underneath. Within current projects the different geophysical information (onshore and offshore) will be combined with geological information to allow a more detailed insight into the geodynamic history of this region. A combination of seismology (Shear wave splitting) and aeromagnetic results indicate that the pronounced magnetic anomalies in Dronning Maud Land have also some kind of expression in the mantle. In the future such investigations might allow to better describe the different geological provinces from a geophysical point of view, and might allow to define the northern boundary of the Antarctic craton. The aero-geophysical data will be used as a guide in follow-up projects to gather new seismological data in order to constrain crustal and mantle structures beneath the continent.In this contribution the current geophysical knowledge of Dronning Maud Land will be shown and discussed. In this context future projects will be presented.