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## **Submitted to JA08 - Probing the Earth's Lithosphere and Its Dynamics Using Geophysical Modeling (IAGA, IASPEI, IAVCEI, IAG)- poster presentation**

### **Recent magnetic views of the Antarctic lithosphere**

Magnetic anomaly investigations are a key tool to help unveil subglacial geology, crustal architecture and the tectonic and geodynamic evolution of the Antarctic continent. Here, we present the second generation Antarctic magnetic anomaly compilation ADMAP 2.0 (Golynsky et al., 2018), that now includes a staggering 3.5 million line-km of aeromagnetic and marine magnetic data, more than double the amount of data available in the first generation effort. All the magnetic data were corrected for the International Geomagnetic Reference Field, diurnal effects, high-frequency errors and leveled, gridded, and stitched together.

The new magnetic anomaly dataset provides tantalising new views into the structure and evolution of the Antarctic Peninsula and the West Antarctic Rift System within West Antarctica, and Dronning Maud Land, the Gamburtsev Subglacial Mountains, the Prince Charles Mountains, Princess Elizabeth Land, and Wilkes Land in East Antarctica, as well as key insights into oceanic gateways.

Our magnetic anomaly compilation is helping unify disparate regional geologic and geophysical studies by providing larger-scale perspectives into the major tectonic and magmatic processes that affected Antarctica from Precambrian to Cenozoic times, including e.g. the processes of subduction and magmatic arc development, orogenesis, accretion, cratonisation and continental rifting, as well as continental margin and oceanic basin evolution. The international Antarctic geomagnetic community remains very active in the wake of ADMAP 2.0, and we will showcase some of their key ongoing study areas, such as the South Pole and Recovery frontiers, the Ross Ice Shelf, Dronning Maud Land and Princess Elizabeth Land.