

AEM Greenland 1998 (2) - north-eastern J.C. Christensen Land, eastern North Greenland

Description of an airborne combined electromagnetic and magnetic survey in Greenland 1998 (2)

The survey area for AEM Greenland 1998 (2) is located in the north-eastern J.C. Christensen Land, eastern North Greenland, with additional reconnaissance lines in eastern Peary Land, North Greenland. Measurements included acquisition of controlled source electromagnetic data (GEOTEM - time domain EM) and total field magnetic data. The survey (size of 1603 km²) was collected by Geoterrex-Dighem Ltd. and financed by the Government of Greenland. The survey was flown with lines directed along NE45.8° and distance between lines of 400 metres. Orthogonal tie-lines were flown with a line separation of 4000 metres.

The AEM Greenland 1998 project also included a second survey area, Washington Land and Dugaard-Jensen Land, western North Greenland - [click here](#) to see AEM Greenland 1998 (1).

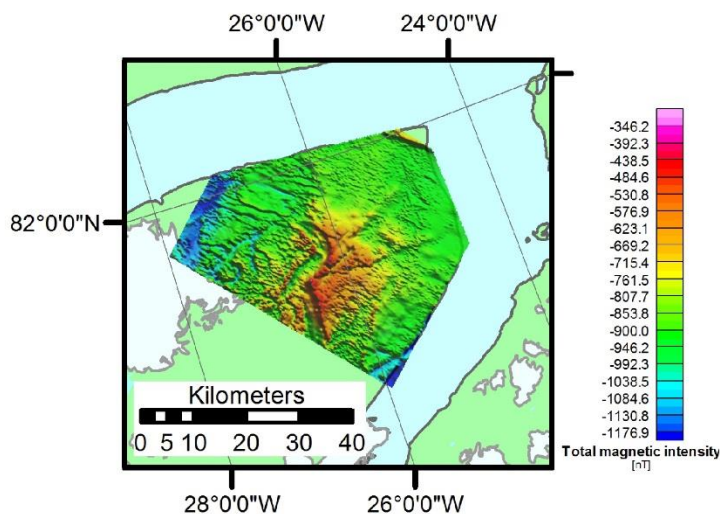
Predominantly sedimentary rocks are exposed in North Greenland. Basin developments are separated by episodes of deformation caused by compressional loading of the crust. Crystalline basement rocks of early Proterozoic and Archean age crop out at the head of Victoria Fjord, but basement rocks have not been located in J.C. Christensen Land. A volcanic unit with widespread occurrence east of Independence Fjord intruded a thick sequence of undeformed Proterozoic sandstones.

Rock outcrops in J.C. Christensen Land are controlled by a number of faults. The strikes of the faults are dominantly north-easterly and west-south-westerly; they are considered to be of importance in relation to the Cu-mineralizations reported at several locations within the area.

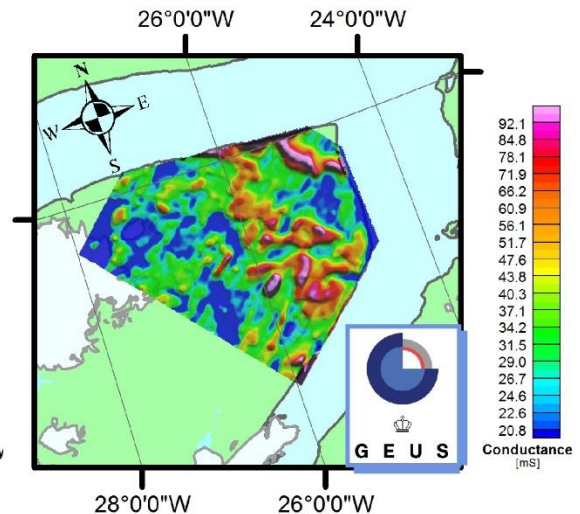
The reconnaissance lines in eastern Peary Land covers the boundary between the Franklinian Basin and the Permian Wandel Sea Basin, which is intersected by a large number of faults.

At Citronen Fjord in Peary Land a significant Pb-Zn mineralization was discovered by Platinova A/S in 1993. The mineralization is located in the Ordovician Amundsen Land Group of the Franklinian Basin and is interpreted to be of sedimentary-exhalative type. The overall base metal resource is estimated at 20 million tons stratiform ore of 7% zinc, including 7 million tons containing 9% zinc and 1% lead. The latest update by Ironbark Zinc Limited in 2017 makes this one of the biggest deposits in the world, and preparations for the opening of a mine is ongoing.

Magnetic - Total Magnetic Intensity



Time-domain EM - Conductance



Total magnetic intensity map (left) and conductance map (right) from the AEM Greenland 1998 (2) survey J.C. Christensen Land (eastern North Greenland). The conductance is determined from the complete waveform of both the x-coil and z-coil of the GEOTEM system.

Data compilations can be directly downloaded from [Greenland Portal](#) by entering "Geophysics – individual surveys" and selecting this survey. To order hardcopies of map sheets, please contact Geus by email bhm@geus.dk.

Selected references:

- Rasmussen, T.M. 1999b: Airborne electromagnetic and magnetic survey of north-eastern J.C. Christensen Land, eastern North Greenland. Geological Survey of Denmark and Greenland Report **1999/11**, 18 p.
- Rasmussen, T.M. & Thorning, L. 1999: Airborne geophysical surveys in Greenland 1998. Geology of Greenland Survey Bulletin **183**, 34-38.