

## A feasibility study for geomagnetic measurements using the High Altitude Long range aircraft (HALO)

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SCHACHTSCHNEIDER, Reyko<sup>1\*</sup> ; GEBLER, Alban<sup>1</sup> ; LESUR, Vincent<sup>1</sup>  
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<sup>1</sup>Helmholtz-Centre Potsdam - GFZ German Research Centre for Geosciences

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In June 2012 the High Altitude Long range aircraft (HALO), originally acquired for atmospheric studies by the German Ministry for Research and Education, was used for a geophysical study. On board the aircraft were gravity, GNSS reflectometry and geomagnetic instruments. The geomagnetic instrumentation consisted of two identical acquisition chains, each containing an Overhauser and a fluxgate magnetometer. They were mounted below each wing in under-wing canisters. For the first time, we were able to collect geomagnetic measurements with such a high and fast flying vehicle, covering a very large area in a short time period. The study was conducted during four flight days over the Italian peninsula. Due to the mounting of the instruments very close to the aircraft body, the measurements are strongly contaminated by the aircraft signal. Furthermore, the sensitivity of some of the scientific instruments on board HALO prevented large variations of the plane's pitch and roll angles during the calibration flight and thus a proper calibration of the vector magnetometers and the full determination of the aircraft signal. Nevertheless, we were able to obtain the long-wavelength part of the geomagnetic field in the study area and showed that geomagnetic measurements with HALO are possible and promising.

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