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A new high resolution total magnetic intensity data set of the Laacher See Volcano in the East-Eifel volcanic field, Germany

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The Laacher See Volcano (LSV) is part of the Quaternary East-Eifel volcanic field (EVF) located in the western part of Germany, where at least 103 eruptive centers have been identified. The Laacher See volcano explosively erupted about 6.3 km^3 of phonolitic magma during a dominantly phreato-plinian eruption at about 12,900 BP.
Despite numerous previous studies the eruptive history of LSV is not fully unveiled. For a better understanding of the eruptive history of LSV several geophysical methods, including magnetic, gravimetric and bathymetric surveys have been applied on and around Laacher See Volcano. Here we focus on the magnetic and bathymetric data. The presented high resolution magnetic data covering an area of about 25 km^2 (20,000 sample points) and were collected using ground based proton magnetometers (GEM Systems GSM-19TGW, Geometrics G856) during several field campaigns. In addition, a magnetic survey on the lake was done using a non-magnetic boat as platform. The bathymetric survey was conducted on profiles (total length of 235 km) using an echo sounder GARMIN GPSMap 421. Depth data were computed to a bathymetric model on a 10 m spaced regular grid.
A joint interpretation of magnetic, morphologic and bathymetric data allows us to search for common patterns which can be associated with typical volcanic features. From our data at least one new eruptive center and lava flow could be identified. Furthermore, the new data suggest that previously identified lava flows have not been accurately located.