Geophysical Research Abstracts
Vol. 21, EGU2019-2244, 2019
EGU General Assembly 2019

A reference observatory or a global geomagnetic model to improve the reduction of external diurnal variations from deep-sea marine magnetic data?

Camille Gioux, Jean-François Oehler, Didier Rouxel, Sylvain Lucas, and Corinne Salaun
Shom (French Hydrographic Office), Marine Geophysics, Brest cedex 2, France (jean-francois.oehler@shom.fr)

In Shom's methodology, the optimal processing of marine magnetic data requires to take into account measurements from the nearest (in distance and latitude) permanent magnetic observatory to reduce disturbances of the external geomagnetic field. However, when observatories are too far away from survey areas, reference measurements are often unsuitable for the correction of low frequency diurnal and high frequency agitation variations and can even degrade the survey quality. An alternative solution is assessed here and consists in computing external corrections at the mean location of the considered survey from the global geomagnetic model CM5 (Sabaka et al., 2015).
Comparisons between magnetic measurements collected at 7 permanent observatories provided through Intermagnet (Love and Chuillat, 2013) and the CM5 model estimated at the same location and altitude show that CM5 relatively well restores low frequency diurnal variations of the external magnetic field in the mid and low latitudes with a precision of about 5 +/- 5 nT. High frequency agitation variations are conversely poorly modelled according to the hourly temporal resolution of CM5. Whether CM5 is theoretically adequate to reduce local diurnal disturbances in marine data, tests on 15 surveys extracted from Shom's geophysical database lead us to the conclusion that the gain against the classical procedure using reference data from observatories is only significant for reduced spreads in latitude and distances greater than 3000 km.