Project: **964**
Project title: **Ocean signals in Earth's magnetic field (OceanMag II)**
Project lead: **Jan Saynisch**
Report period: **2019-01-01 to 2019-12-31**

2019 was the first year of the second funding phase of the DFG Dynamic Earth SPP. We had to hire a new PhD for this phase which left after 3 month due to medical reasons. After a struggled to find a suitable replacement we are now some month beyond our schedule. Therefore, we probably will not use all the granted node-hours till the end of December.

Nonetheless we were able to contribute to the field of oceanic magnetic fields. We were able to establish minimum modelling requirements for the oceans circulation EM signals (Sachl et al., 2019). Furthermore, we could build on our previous studies and design a neural network approach that can estimate the total ocean heat content from M2 tidal estimates from magnetometer satellite data (Irrgang et al., 2019). Lastly, we were able to install (on Mistal) the capabilities to extract tidal magnetic signals from Swarm and CHAMP data our elf. The approach uses an ensemble Kalman filter.