

Gravity measurements 2015

Gravity measurements have been accomplished on board survey vessel DENEK in the time 20 to 30 April 2015 in the area Adlergrund/Rønnebank. These measurements are an integral part of the development of a common geoid model of the Baltic Sea in the framework of FAMOS activity 2. The results will in addition be used for the improvement of the German Combined Quasi Geoid (currently GCG2011)

The coverage of available gravity data in the Baltic Sea is not fully satisfactory. Especially in areas where gravity data is sparse or where the data of different data sets do not overlap, additional measurements are necessary. Fig. 1. shows the distribution of gravity data around the islands of Rügen and Bornholm. A reliable and accurate determination of the Geoid in that area can't be guaranteed.

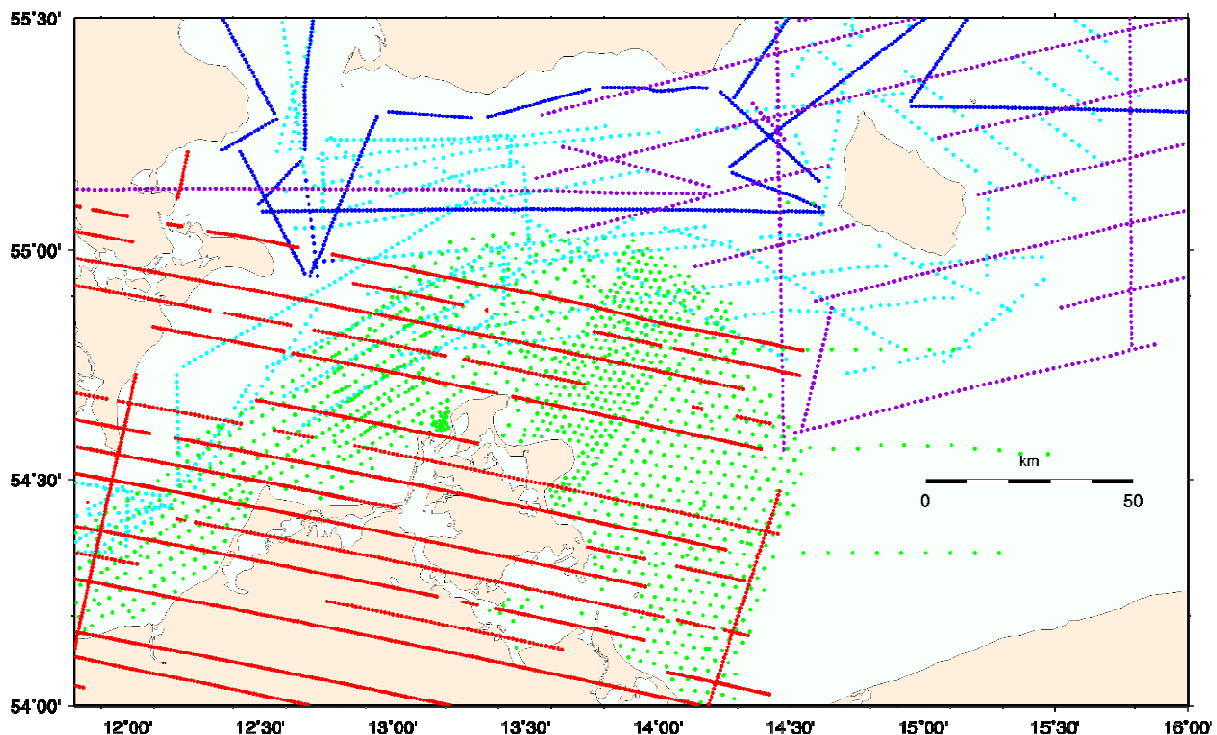


Fig. 1: Distribution of gravity data between Rügen and Bornholm in Danish, Swedish and German waters

The measurement campaign accomplished this year was designed to overcome these shortfalls in the area and to reach an accuracy of around 1 mGal.

The campaign was conducted by the Bundesamt für Kartographie und Geodäsie (BKG), Leipzig with the support of the Geoforschungszentrum (GFZ) Potsdam. The latter institute also provided the gravity meter (Chekan).



Fig. 2: Gravity meter (Chekan) installed on board DENEb

The 2015 gravimetric survey took place in the area between the islands of Rügen and Bornholm, cf. fig. 3, with an overlap to the data already existing. Two events are worth mentioning:

- At the beginning, some data gaps are registered due to some electromagnetic compatibility problems. They could be detected and solved during the second day.
- Heavy weather conditions led to an interruption of the measurements at the third day.

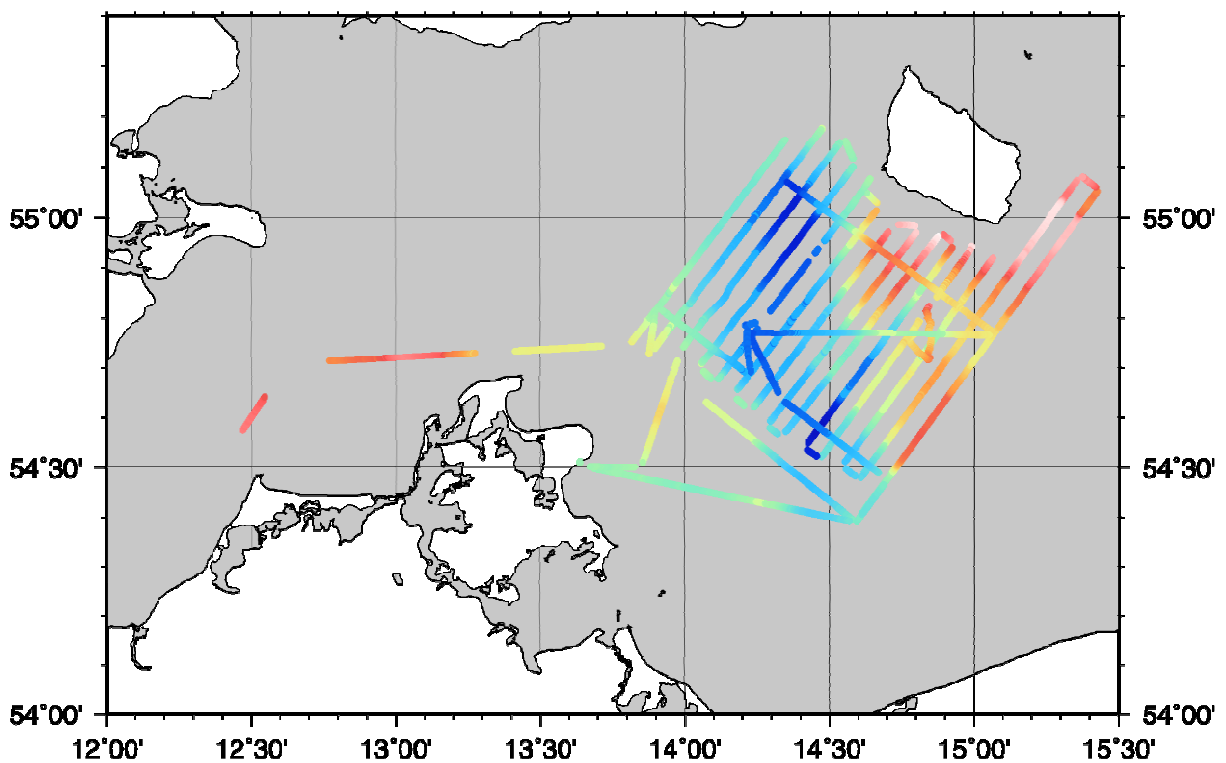


Fig. 3: Track of the 2015 survey

Preliminary analyses show good accuracy of the data in the order of a few mGal. The data will be available to the FAMOS project. This cruise reconfirms that it is necessary to do dedicated gravity surveys with reliable instruments and a well trained crew. The tracks have to be planned especially to suit the needs of the gravity survey.

The gravity measurements contribute to a common geoid model of the Baltic Sea of high accuracy leading to better survey results as well as to a better navigation in this region. It will hopefully contribute as well to a common European geoid model of high accuracy. Such a high accuracy is only possible with actual and accurate gravity data and requires the involvement of all BSHC MS.

The Commission is invited to

- take note of the report;
 - ask MS to consider the engagement in the improvement of the geoid model in the Baltic
 - take further action as seen appropriate.
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