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# The gravity signature of the Central European Basin System (CEBS)

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The CEBS and its sub-basins, the Norwegian-Danish Basin (NDB), the North German Basin (NGB), and the Polish Trough (PT) developed over a heterogeneous crust along the transition between the East European Craton/Baltic Shield (EEC/BS) and the relative thin Phanerozoic crust in the south. Below the thick sediment fill, the structure of the crust is only known from few seismic data. The constructed large-scale structural model for the entire CEBS provides a sufficient database for 3D gravity analysis, which has been carried out in order to study the gravity signals from the lithosphere of the CEBS. The map of the observed gravity field shows a rather heterogeneous pattern with regard to the various sub-basins. After removing the influence of the sedimentary fill, the basin area appears as continuous gravity high, separated by the Ringkoebing-Fyn High (RFH) into the Northern (NDB) and Southern Permian Basin (NGB+PT). Removal of the Moho topography for a homogeneous crust emphasizes the difference between the old EEC area and the Variscan domain. The basin area appears as an extension of the EEC besides a transition zone between the RFH and the NDB. After the assumed large scale crustal heterogeneities are removed, the Southern Permian Basin (SPB) still provides signals similar to the EEC, while, western Baltica is characterized by a gravity low which is bordered by the RFH and more or less the Sveco-Norwegian Front. After filtering for the long wave components, the structural connection between the EEC and the SPB is further emphasized. The NDB and the western part of Baltica are now characterized by low gravity values. Subtracting the

long wave component provides residual short wave components which correlate well with Triassic Grabens and inversion features, indicating, that these may be deeply rooted. Thus, gravity modelling supports the concept that EEC crust may continue below the CEBS. During the Triassic extension and the Cretaceous inversion the crust and, perhaps, even the mantle may have been locally modified. However, there some remain uncertainties concerning the resolution of the model used. To resolve this, a detailed model was performed along two cross-sections within the deepest Triassic structure of the CEBS, the Glueckstadt Graben (GG). The results of 2D modelling show the presence of a high-density body within the lower crust of the GG.