



Three-dimensional lithosphere-scale density and thermal model of Germany

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With this study we aim to integrate previous results in conjunction with 3D gravity and thermal modelling to derive a three-dimensional structural model which covers the entire surface of Germany. The model is 133 km deep, it extends 1000 km in North-South direction and 643 km in East-West direction. The lithostratigraphic division comprises 24 layers and resolves sedimentary, crustal and lithosphere mantle units. The EIGEN-6C4 gravity field model was used as a reference in the gravity analysis. The 3D conductive thermal field was calculated to analyze the lateral and vertical variations of temperature. We found that the heterogeneous distribution of thermal properties associated with the different lithological units causes significant variations of temperature at the same depth level. Main controlling factors are: blanketing effect of low conductive sediments (Upper Rhine Graben, Molasse Basin, Central European Basin), different radiogenic heat production of upper crustal units (Variscan and Alpine domains) and the depth to the thermal lithosphere-asthenosphere boundary.