



The Post-Glacial landscape evolution of the North German Basin: morphology, neotectonics and crustal deformation and georisks

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The recent evolution of the North German Basin (NGB), which is presently a low-seismic area, was partly affected by glacial loading and unloading of the ice masses. Major stresses acting within the NGB are induced by the North-Atlantic ridge push, the ongoing Alpine collision and the post-glacial rebound of Fennoscandia. Present-day horizontal stresses within the NGB are directed generally NW-SE, but fan and bend north of 52°N towards NNE. Major basement faults are directed NW-SE, minor faults NE-SW and NNE-SSW, and are clearly detectable in geomorphological and satellite lineaments. Furthermore the drainage pattern and the distribution of lakes in northern Germany follow exactly block boundaries and, hence mark zones of present-day subsidence. The understanding of the post-glacial morphology and reactivation of faults requires a view into the crust and the upper mantle below the NGB, which are very heterogeneous. The re-adjustment of the individual fault blocks during post-glacial relaxation of the lithosphere leads to differential, crust-dependent uplift and, probably, to the formation of Urstrom valleys. The Urstrom valleys and terminal moraines in northern Germany parallel apparently the major tectonic lineaments and lithospheric “block” boundaries. The lithospheric memory is expressed in the post-glacial landscape evolution of the North German Basin. We present several scenarios according to present-day subsidence/uplift rates and sea level changes in a series of georisk maps.