



Multidisciplinary approach to assess thermo-mechanical properties of the Asian lithosphere

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Assessing the thermo-mechanical properties of the lithospheric mantle is a complex business and still poses many problems. Seismic studies indicate large heterogeneities within the mantle lithosphere, but cannot discern between e.g. thermal and compositional effects. Similarly, gravity field analysis can constrain density heterogeneities, but is by its nature unable to distinguish between e.g. stacked density anomalies or lateral density anomalies. A joint analysis of both data types potentially leads to an improved insight in the mantle lithosphere, though the solution to the problem at hand remains non-unique and additional constraints are required.

We have combined a high resolution tomography model with a recent global gravity field model to improve our knowledge of both the compositional and thermal aspects of the mantle lithosphere in the Asian continent. The preliminary results presented here will focus on the four major cratonic areas in Asia: the East European Platform, Siberia, Northeast China and India. These regions represent two distinct types of cratonic lithosphere (deep root and shallow root). Xenolith studies help us to further constrain the trade off between temperature and compositional effects.