



Preliminary mantle convection calculations with consistent viscosity structures for Earth, Mars and Venus

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The details of the internal viscosity structure of the terrestrial planets are essential to model and understand the dynamic evolution to their presently observed state and to explain the observed gravity and topography signals as well as their relation to the sources and distribution of volcanism on these planetary bodies.

In this project, we aim to implement mantle viscosity structures inferred from the observed gravity and topography power spectra for Earth, Mars and Venus into fully dynamic models of 3D spherical mantle convection in order to discuss similarities and differences in the dynamic evolution of these bodies and shed light on the question if other terrestrial planets may feature similar large-scale deep mantle structures as those observed on Earth and how this can be linked to the distribution of volcanism on the planetary surfaces. We will present first steps of the implementation and our preliminary results.