



3D Earth: Consistent modelling by integrating seismological and satellite gravity data

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Satellite data are an ideal tool for global modelling due to their spatial and temporal resolution and the ESA STSE “3D Earth” aims at establishing a reference Earth model. For example, the characteristics of satellite gravity gradients allow in combination with seismological models to study the lithosphere in a consistent manner with great detail.

However, in the integration of seismological models and satellite observation towards a consistent image of the crust and upper mantle in 3D certain challenges arise. A question is the consistency in resolution and accuracy of seismological and density models. The spectral content of such models does not necessarily agree and there is a need for establishing common frames to jointly analyse gravity and seismological models.

We will discuss the limitations and sensitivities of different geophysical methods in the context of their imaging capability and in combination for forward and inverse modelling of the Earth’s internal structure. Such analysis will for example help to assess the role and feedback of isostatic (lithospheric) and dynamic (deep Earth) effects in shaping the surface of the Earth.