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SubMachine: Web-based tools for exploring seismic tomography models

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SubMachine is a collection of web-based tools for the interactive visualisation, analysis and quantitative comparison of global-scale data sets of the earth's interior. SubMachine focuses on making regional and global scale seismic tomography models easily accessible to the wider solid earth community, in order to facilitate their further, collaborative exploration. Over 30 tomography models can be visualised and explored – individually, side-by-side, or through statistical and averaging tools. SubMachine also serves various non-tomographic data sets, e.g., plate reconstruction models, normal mode observations, global crustal structure, shear wave splitting, as well as geoid, marine gravity, vertical gravity gradients, and global topography in adjustable degrees of spherical harmonic resolution.

We discuss SubMachine's architecture, main functionalities and data sets, such as the visualisation and analysis of seismic tomography models, visualisation of various static and time dependent observations and models that are pertinent to the interpretation of mantle structure, and the generation of vote maps (Shephard et al. [2017]) by combining several tomography models.

Reference

Shephard, G. E., K. J. Matthews, K. Hosseini, and M. Domeier (2017), On the consistency of seismically imaged lower mantle slabs. Scientific Reports, 7, Article number: 10976.