



## **A comparison of tomographic P- and S-wave speed models of the broad European and Mediterranean area**

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We collect and compare available three-dimensional seismological models of the earth's upper mantle beneath the broad European and Mediterranean region, to quantify how well they agree. The zone we considered covers the territory from the Mid-Atlantic Ridge to the Urals, and from North Africa to the North Pole, covering an area corresponding to about one-sixth of the earth's surface. Most of the models actually cover the whole globe, but we restrict the analysis to our study sector. Available tomographic P- and S-wave speed models have been computed fitting different data-sets and following a variety of inversion techniques and strategies, and may bear consequences or bias connected to the specific data-set used, or the choice made by the author. An extensive comparative investigation may thus contribute to clarify our knowledge of the deep earth structure beneath continents. The visual, qualitative level of agreement is usually rather good, particularly for the larger-scale features, such as the signatures of the East European and West African Cratons, the Mid-Atlantic Ridge, the Red Sea Rift system, the Alpine-Himalayan belt. These traits can be identified in all models. However, quantitative comparisons do not always show high consistency among models. Model amplitudes vary considerably, and correlation analysis is not always satisfactory. We also test the ability of different models to fit group and/or phase velocity measurements, that were not used for their derivation. The test of compatibility among different models and data-sets is a necessary preliminary step for the creation of a seismological reference earth model.