



## Mantle flow in the Aegea-Anatolia region imaged by SKS splitting measurements

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The question of the driving engine for the rapid displacement of Anatolia towards the W-SW is still open: push by the Arabian indenter, or pull by the retreat of the Hellenic slab? The hypothesis of a basal drag of Anatolia and Aegea by mantle flow related to slab retreat receives increasing attention. To better constrain mantle flow, we have mapped the azimuthal anisotropy of seismic velocity in a broad area including continental Greece, the Aegean Sea, Western Turkey and Southern Bulgaria. The splitting parameters of the core phases SKS and SKKS have been measured on records of the SIMBAAD temporary experiment and permanent broadband stations. The station coverage is rather dense (60-80 km) and homogeneous in the area [35-42°N; 20-34°E]. In W-Anatolia and the Aegean east of 24°E and north of 38°N, the anisotropy is fairly uniform, with N45 fast-velocity directions and an average time lag of 1s. In continental Greece west of 24°E, the anisotropy is weaker, with time lags smaller than 0.5s in average. In SW-Anatolia, the fast velocity directions are heterogeneous, with time lags of 0.7s in average. The anisotropy parameters measured in NW-Anatolia and N-Aegea (N45 and ~1s) are very consistent with the results of similar studies conducted in North-Central Anatolia (NAF experiment) and in Eastern Anatolia (ETSE experiment). This observation of a very uniform pattern from Eastern Anatolia to the North of the Aegean strengthens the hypothesis of mantle anisotropy being due to mantle flow in the asthenosphere as a consequence of the fast retreat of the Hellenic slab. Deviations from this homogeneous pattern observed in continental Greece, S-Aegean and SW-Anatolia can also be explained by this model, for example with a slab tear beneath SW-Anatolia.

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