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# Seismic anisotropy of the mantle lithosphere beneath the Swedish National Seismological Network (SNSN)

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Body-wave analysis - shear-wave splitting and P-travel time residuals - detect anisotropic structure of the upper mantle beneath the Swedish part of Fennoscandia. Geographic variations of both the splitting measurements and the P-residual spheres map regions of different fabrics of the mantle lithosphere. The fabric of individual mantle domains is internally consistent, usually with sudden changes at their boundaries. Distinct back-azimuth dependence of SKS splitting excludes single layer anisotropy models with horizontal symmetry axes for the whole region. Based upon joint inversion of body-wave anisotropic parameters we instead propose 3D self-consistent anisotropic models of well-defined mantle lithosphere domains with differently oriented fabrics approximated by hexagonal aggregates with plunging symmetry axes. The domain-like structure of the Precambrian mantle lithosphere, most probably retaining fossil fabric since the domains' origin, supports the idea of the existence of an early form of plate tectonics during formation of continental cratons already in the Archean. Similarly to different geochemical and geological constraints, the 3D anisotropy modelling and mapping of fabrics of the lithosphere domains contribute to tracking plate tectonics regimes back in time.