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Teleseismic shear wave splitting observations across Scandinavia: signatures of multi-layered and laterally varying anisotropy

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We present systematic shear wave splitting results (more than 3000 SKS, SKKS and PKS phases) for around 250 stations that are part of the international ScanArray initiative. Besides the temporary deployments with recording periods of two to four years, data of long-running permanent stations (partly > 10 years) is available for Norway, Sweden and Finland. Especially the latter ones allow us to study shear wave splitting with a good backazimuthal coverage. The corresponding shear wave splitting parameters (fast direction and delay time) in some regions laterally vary from station to station and phase arrivals from South American events often offer clear null observations (that means the phase was not split). Additionally, for southern Norway we observe delay times of up to 2 s and a rotation of the fast axis direction from nearly E-W to NW-SE. Potentially this observation is associated with large scale tectonic deformation in this area in the past. For stations with good backazimuthal data coverage we present typical one- and two-layer models which will give us a first-order overview about possible (more complex) anisotropy models. Finally this study will help to interpret the observations in the context of the present geological and tectonic structures across Scandinavia.