

Summary. Studies of seismic anisotropy, such as are commonly conducted with SKS waves, have enabled geophysicists to begin to map out the strain-induced fabrics of the upper mantle and to attempt to understand the deformation fields that cause them. However, one impediment towards this agenda is the ambiguity between fabrics that are fossil (e.g. caused by ancient orogenic events) and fabrics that are maintained by present-day deformation (e.g. asthenospheric convection). Northeastern North America is one well-studied area in which two mantle fabrics are demonstrably present at different depths in the upper mantle, with one fabric being ascribed to fossil strain of the lithosphere during an Appalachian delamination event, and the other being ascribed to present-day asthenospheric shear. We propose to study the anisotropic fabric on the northwestern African margin at Morocco, which is conjugate to northeastern North America. The Paleozoic continuity of the now-distinct plates gives us a way of testing the fossil-delamination interpretation of the lithosphere. The different absolute plate velocities of the two continents gives us a way of testing the asthenospheric shear interpretation of the lower layer. Finally, present-day lithospheric delamination is thought to be occurring just north of northernmost Morocco. Studies of its associated fabric will provide a point of comparison for the supposed fossil signal in northeastern North America and, more generally, information about the strain field against which geodynamical models of delamination can be tested.