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Identifying Seismic Anisotropy Patterns in the Alps and Apennines with Splitting Intensity and Backazimuthal Dependencies

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The current tectonics of the Alps and Apennines are driven and influenced by current and past subduction systems. Computational advances over the years made it possible to identify remnant and active slabs until great depths and large seismic deployments revealed mostly clockwise rotation SKS splitting measurements. But the effects of layered anisotropy and regional upper mantle flow through possible tears in the slabs remain unknown. A comparison of several seismological methods can be a very efficient tool to separate lithospheric and asthenospheric anisotropy. This study tries to understand if anisotropy patterns change with depth in some regions (e.g., possible subslab mantle flow in the Western Alps) and if tears can be identified with shear wave splitting measurements (e.g., Central Apennines). Furthermore, splitting intensities will be analyzed for backazimuthal dependencies and used to correct velocities in a full-waveform tomography. By mapping and comparing existing and new anisotropy measurements (e.g., SKS, Pn anisotropy, azimuthal anisotropy from surface waves tomography, and splitting intensities) we intend to identify anisotropic depth dependencies.