



## **Full waveform tomography of the South Atlantic upper mantle**

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We developed a full waveform tomography of the upper mantle beneath the South Atlantic region using an adjoint method. This required 5000 wavefield simulations and a total of 750 thousand CPU-hours. The 3D seismic structure thus retrieved can help us answering various key questions concerning the geodynamic evolution of the region: (1) How and to which extent does the South Atlantic plume system feed the asthenosphere in the oceanic basin and adjacent regions? (2) What are the current thermal states of the lithosphere below the Walvis Ridge and the Etendeka and Paraná continental flood basalts? (3) Is the asthenosphere thin or thick? (4) What is the characteristic planform of asthenospheric flow? (5) Is the prominent topographic gradient across the South Atlantic region from Africa to South America explicable solely in terms of lower mantle structure, or do we also find a systematic gradient in upper mantle heterogeneity across the ocean basin?

Full waveform tomography allows us to exploit information from seismograms in a very efficient way. Our approach is thus well suited for regions with comparatively low data coverage such as the South Atlantic.