



Deep seismic profiling at the Argentinian and Uruguayan continental margin

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The opening of the southern South Atlantic resulted in the development of passive continental margins of the volcanic type. The transition of continental to oceanic crust at this type of margin is characterised by the presence of thickened crust showing elevated seismic velocities. We used coincident multichannel and refraction seismic data from two profiles offshore Argentina and Uruguay to derive the crustal structure.

The wide-angle seismic data was recorded using 8 ocean bottom hydrophones. We identified refracted waves from the crust (Pg-phases) as well as reflected waves from the crust-mantle boundary (PmP-phases). The thickness of the sedimentary cover was estimated from the multichannel seismic data. The application of a joint travel time inversion provided information about the seismic velocities within the crust, as well as about the depth of the crust-mantle boundary. Tomography also allows assessing the resolution and non-uniqueness of the final model.

Offshore Argentina at 44° S the lower crust has two distinct areas where the seismic velocity exceeds 7.0 km/s. Each of these areas has a spatial elongation of 40 to 60 km. At the Uruguayan margin at 35° S the seismic velocities within the lower crust reaches also values of about 7.5 km/s. A comparison of both profiles will give insight into the distribution of magmatic products along the margin.