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## 2D Geothermal model across the Peru-Chile trench and the Andean Cordillera above the Nazca Ridge subduction

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The Nazca Ridge is a wide aseismic ridge subducting beneath the South American margin at latitude about 15°. The buoyancy of the thickened oceanic crust of the Nazca Ridge produces localized flat subduction influencing the geometry and the geological history of the whole area. With the aim of analysing the spatio-temporal evolution of the deformation and uplift/subsidence history of the lithosphere above the Nazca Ridge flat slab, we have started from the study of the geothermal structure of the upper plate. We have built a crustal section with a length of 1000 km that reaches a depth of about 130 km. The section runs from the top of the Nazca Ridge in the west to the Amazonian Basin in the east, progressively crossing the Peru-Chile trench, the East Pisco Basin and the Andean Cordillera. Thereafter we have elaborated a 2D geothermal model based on the crustal section. We have considered the whole lithosphere composed of two main geological units: (i) crystalline basement, (ii) sedimentary cover (including the whole lithostratigraphic succession). For each unit we have assigned the following parameters: thickness, density, heat production and thermal conductivity. Moreover, we have also taken into account the friction coefficient, the convergence rate of the plates, the heat flux of the Moho, and the slip rate of the megathrust. Model parameters have been set up in order to obtain the best simulation of the heat flow contribution due to the large reverse fault responsible for the coastal seismic event of November 12, 1996, with epicentre on the section trace. Using these parameters and applying an analytical methodology we have calculated isotherms and geotherms. The resulting model may provide an important contribution on the investigation of the effects of the Nazca Ridge subduction and the associated flat slab geometry on the tectonic evolution of the area.