

**MEZCAL project – Geoelectrical characterization of the Mexican subduction zone by an amphibious Magnetotelluric array.**

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Mexico shows a high seismic activity and most part of the earthquakes are associated with the subduction of the Cocos plate below the North American plate. In 2017, a Mw 8.2 earthquake occurred in the Tehuantepec seismic GAP, which was considered as an intraslab normal-faulting event. The proposed reasons for why the earthquake occurred are that it was due to slab pull below a strongly coupled interface or that it was due to slab bending along a reactivated, possibly fluid-filled, and poorly coupled subducted outer rise fault. This is the motivation why we are developing the MEZCAL project (Magnetotelluric Experiment in Zapotecan and Chiapas Ancient Lands), which main goal is to conduct an amphibious magnetotelluric study to derive a resistivity model of subduction zone. In 2022 and 2023, a total of 35 long-period land MT soundings were acquired, using LEMI-424 systems that were provided by PASSCAL instrument center. The MT Time Series were robust processed to estimate the transfer functions and a 3D inversion scheme was applied using ModEM. The Transfer Functions suggest the possible presence of electrical anisotropy. The three-dimensional land resistivity model shows conductors that might be related to the presence of fluids, located at the areas where seismic events occur. Regarding the marine MT dataset, this will be collected in October, of this year, using Scripps instruments and the vessel of the National Autonomous University of Mexico. We present the results of feasibility studies to illustrate the importance of having both datasets (i.e., marine and land datasets).