



S03.14 - From old cauldrons to young quaternary calderas context, processes, and economic potentials for geothermal energy and ore resources

Structure of the Los Humeros geothermal field, Mexico, using seismic noise tomography

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One of the major high enthalpy geothermal fields in México ($T > 350\text{ }^{\circ}\text{C}$) is installed into the caldera of Los Humeros, which has been intensively studied in the last decades to develop the actual power plant. Nowadays the power plant consists of almost about 45 wells (between producers and injectors), where only 21 are exploited allowing a net electric power of about 40 MW. However, until now the deeper part of the calderic systems is unknown as well as the heat source feeding the shallow geothermal reservoir making difficult to understand the inefficiency of some wells and to plan new extension of the power plant. In this work we present the results of a noise cross correlation tomography performed using 45 seismic stations installed in the framework of the Mexican-European project GEMEX. Data processing of the first months of data allowed for the reconstruction of Green's functions for most of the stations pairs, and thanks to NDCP, a newly code developed to fairly estimate group velocity dispersion curves, we were able to build tomograms of the Los Humeros caldera for periods ranging from 1 to 7s. The tomograms with larger period are expected to image the heat sources feeding the geothermal reservoir allowing a better plan for the future activities of this important geothermal field.

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