Electromagnetic Tomography on the Vrancea Seismo-Active Zone.

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Placed in the Carpathian Arc Bend, Vrancea Zone is bounded by three major tectonic units: East European Platform, Moesian Platform and the Transylvanian Basin, characterized by different lithospheric thicknesses, and, also, different relative motions.

Its strong earthquakes in the depth of 70-180 km determined us to study the whole region by means of the most adequate methods, including the electromagnetic tomography. The tensor impedance decomposition technique was used to derive both the regional 2D geoelectric responses corresponding to the electromagnetic induction parallel and perpendicular to the strike orientation of the subcrustal structure, and the frequency range (0.01 - 0.0001 Hz) for the magnetotelluric (MT) tomography.

The tomographic images reveal that the intermediate depth extent of the seismogenic “volume” is 70-200 km and this is characterized by low conductivity surrounded by high conductivity areas, what may constitute an evidence of a lithosphere slab embeded into the mantle during the subduction process. On this occasion, the change of the orientation of the low conductivity block under Vrancea zone was identified. It varies from NE-SW (on the top) to N-S (on the bottom), what might be assumed, in a preliminary version, as a possible hanging-slab, detached horizontally from the uppermost lithosphere.