

The crustal velocity structure beneath the mineral concentration areas at the Tibet plateau lateral collision belt

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Based on the “Deep Resource Exploration and Mining” Program of China, a Deep Seismic Sounding (DSS) project has been successfully carried out by the Institute of Geology and Geophysics, Chinese Academy of Science (IGGCAS) during the period November 2016 to January 2017, and it was implemented along a NW-SE trending 410 km-long profile across the Jinding and Beiya ore mineral concentration areas at the northern part of the Tibet plateau lateral collision belt. A total of 469 3D components portable digital seismometers were deployed at 310 points along this profile to acquire active seismic signals detonated by 7 shots of 3000 kg and 10 shots of 500 kg explosive charge. These precious seismic data of high quality were employed to inverse the crustal P-wave velocity structure beneath the profile and a few basic features such as following were obtained:

- 1). There are prominent High-Velocity-Anomalies (HVA) around the Jinding and Beiya ore concentration areas within the upper crust;
- 2). There are obvious HVAs of P-wave velocity 7.2-7.3 km/s within the lower crust beneath the inner parts of the Emeishan Large Igneous Province, and this is probably the evidence for Permian volcanic eruptions and mantle plume mineralization;
- 3). The crust has a thickness of 49-53 km and is composed of three layers, whose bottom parts of the upper crust exhibit a few apparent Low-Velocity-Anomalies (LVA) related to recent mineralization and geodynamics.

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