3D velocity structure and precise relocation of the seismic activity around the Emeelt fault, Mongolia

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Abstract

The Emeelt area, located very near the capital of Mongolia is the site of an important seismic activity since 2005, in a place where no active faults were known. At that time, the active faults near Ulaanbaatar were weakly known beside the Khustai fault. Since then, 2 new faults have been identified, the Sharkai and Avdar faults that can produce magnitude of about 7. Short surface ruptures have been observed along the N147 Emeelt fault in 2008. The study of the seismicity of the Emeelt area informs us about many new characteristics.
The aim of this study is to constrain the 3D velocity model and precise locations of the seismic events in the Emeelt active zone using TomoDD. With the precise location of the events show the seismic activity of the Emeelt fault located mainly NW from the observed surface rupture in the field.
The Emeelt fault zone includes at least three parallel branches of an active fault oriented N147. Regarding the depth distribution, these seismic activities were concentrate between 5 and 15km. Also the Vp/Vs contrast suggests the presence of fluids that could be located in the area of the seismic activity.

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