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Tectonic stress field of the east coast of Honshu, Japan before the Tohoku earthquake 11.03.2011

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A great Tohoku earthquake with magnitude Mw = 9.0 occurred of the east coast of Honshu, Japan, on 11 March 2011. It generated a large tsunami with wave heights of about 10 m on the Japanese coast and has caused considerable damage in Japan. According to the Japan Meteorological Agency this earthquake is the strongest in the history of the country and one of the ten strongest earthquakes in the history of seismic observation in the world. Stress reconstruction of the Earth's crust before this earthquake was performed on the basis of the method of the cataclastic analysis of earthquake focal mechanism and data on stress relief for Tohoku Earthquake. As a result reconstruction of parameter of the stress state of the Earth's crust and the upper mantle of the east coast of Honshu, Japan allowed to determined, that for this area, on the one hand, there are some extensive areas of stable behavior of stress tensor parameters, on the other hand, there are local areas were this parameters change anomaly fast. Principal axes of deviator compression and stretching oriented orthogonal to the strike of the Japan Trench. Axes of deviator compression have gentle plunge under Honshu Island. The axes of intermediate principal stresses oriented along of the strike of the Japan Trench. According such orientation of principal stresses the type of the stress state is horizontal compression. Analysis of relative effective pressure had shown that before Tohoku earthquake research area was homogeneous within the depths range 0 – 30 km. The focus of this earthquake was located in a local minimum of the relative effective pressure.