



GPa Stress and Strength of the Lithosphere

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The arguments for high (\sim GPa) strength and stress levels in the lithosphere will be reviewed. They come from variety of time and length scales, such as continents surviving mantle convection up to Gy time scale, loading of oceanic plate up to 100 My time scale, present day force balance considerations at the crustal scale, outcrop observations of the paleoearthquakes and high pressure micro inclusions in crystals serving as pressure vessels at the grain scale. Stress concentrators, weakening of a part of a load bearing cross-section, reaction overpressure are possible mechanisms for creating of large stress levels and pressure gradients. The geodynamic implications of the high stress levels and strength of the lithosphere are important for the understanding of the mechanisms of the deep earthquakes, conversion of pressure recorded by geobarometry to depth, duration of metamorphic events and deformation phases.