



## **Global shear zones, quadrants of extension and mantle superplums**

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Planet Earth is a three-axis rotational spheroid acting as a single natural deformation ellipsoid. Important role in the geoid structure belongs to the global shears zones, which divide geoid into four sectors – two compression quadrants (North and South) and two expansion quadrants – Pacific and African (Indo-Atlantic). Seismic tomography data suggest that this separation can be traced to the entire depth of the active tectonosphere.

The mantle material in the deep zones of the extension quadrants is partially melted due to a decrease of the total lithostatic pressure, and magmatic foci arise in lower mantle: the Pacific and African global superplumes and smaller hot spots of the lower and middle latitudes. The smelting of volatile and low-melting components of the mantle material in the decompression zones of extension quadrants leads to the formation and elevation of fluid flows and “asthenolite jets” and starts thermogravitational and thermochemical convection mechanisms.

The study of planetary systems of shearing, extension and compression is one of the most interesting tasks of global structural geology. The data obtained here indicate the important role of rotation as a factor in the global structure formation at different depth levels of our tirelessly rotating planet.