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Convection or mantle plumes?

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Seismic tomography provides reconstructions of thermal-density structure of the Earth's mantle as deep as the mantle/core boundary (CMB). For the first time, a direct image of dynamic processes, occurring inside the globe, were obtained. Existing plate-tectonic models of modern geodynamics leads to a number of discrepancies. Most important are: - stationary position of mantle plumes at the assumption of the convection process in the Earth's mantle, mantle convection versus data on both its viscosity and the existence of global seismic discontinuities, possibility of horizontal displacements of lithospheric plates above the discontinuous LZV zone which disappears under deep-seated continental "roots", the model of radially growing distance between mid-oceanic ridges and Africa (also Antarctica), the growing separation between hot spots occur in neighbouring plates with time, geophysical data indicative of considerable input of energy and material from the Earth's core into the mantle, uncompensated by any exchange between the lower and upper mantle. New models (multi-layered convection or a plate-tectonic hybrid convection model) intend to explain tomographic image with taking into consideration geochemical data but with misearable results. The nature of mantle convection still remains controversial. The phenomenon of stationarity of hot spots relative to the accepted plate movements of and the absence of evidence indicating deformations of mantle plumes by the convection system are also unclear and controversial. The presented model of the expanding Earth's offers a reasonable solution to these discrepancies and paradoxes. The model of dynamics of the expanding Earth's interior is based on currently available geophysical and geochemical data. Its basic characteristics are: /1/ lithospheric plates are rooted in the Earth's mantle; /2/ no cell convection operates in the mantle; /3/ energy and material are transferred from the core/mantle boundary radially towards the planet surface; /4/ upward-rising of material occurs at various depths and in different

rocks as: megadiapirs (superplumes), primary and secondary mantle plumes, mantle diapirs of various types and other forms of vertical transfer of hot, less viscous and lighter masses of mantle material. Such a model permits to explain the fundamental problems, raised by non-expanding Earth.