



## **High position of the Siberian Platform as a result of mantle underplating**

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A new model accounting for the origin of the anomalously high elevation of the Siberian platform (SP) is presented. It is shown that the traditional interpretation of these topographic anomalies as a result of neotectonic movements disagrees with available data on the geological history and structure of the SP. Instead we suggest a concept of the mantle plume that supplied a large volume of molten material in the lithosphere, which lead to massive basalt eruptions. This concept perfectly corresponds to the new results of the gravity modelling based on the available gravity, seismic and petrological data. These results indicate that density structure of the lithosphere under the SP is extremely inhomogeneous. The overall amplitude of the mantle gravity anomalies within Eastern Siberia exceeds 200 mGal, which is well above possible determination uncertainties. We can draw the conclusion that the density anomalies inferred in the subcrustal layer are related to variations in the upper mantle composition. In this case, the low-density zone in NW Eastern Siberia can be considered as a direct consequence of mantle plume activity that took place 251 Myr ago. It is noteworthy that this zone in the upper mantle corresponds to the zone of the maximum thickness of trap formations. Therefore, the formation of the present SP topography was controlled by thickening of the crust due to underplating caused by the development of a giant mantle plume at 251 Ma.