

Some fundamental problems of the earth's structure and evolution. Vassiliev Boris. Pacific Oceanological Institute, Vladivostok, Russia

In spite of a great progress in Earth's sciences, the main fundamental problems of the Earth's origin and evolution remain unsolved, mainly that of the Earth's origin. In the middle of the 20th century O.Yu Schmidt advanced an idea of cold origin if the Earth as a result of accretion of dust-gas cloud. This hypothesis replaced the hot hypothesis of Kant-Laplas and received wide acceptance. However, it turned to be not perfect and in recent years some scientists called upon for its revision and return to the hot origin conception. Substantiation of the hot pulsating and expanding Earth with a gaseous (plasmic) core under conditions of supercompression, is, for example, in the work of J. Kuznetsov whose analysis is based on the up-to-date data on laser thermonuclear synthesis with compression of hydrogen up to $30-100 \text{ g/cm}^3$.

The model of the hot Earth, as the most probable one, is accepted by many scientists. At the same time, the number of those who support the theory of cold accretion including heterogeneous one, does not decrease.

The problem of the Earth's volume is most discussable. There are also unsolved fundamental problems such as that of the chemical composition and physical state of the matter of the Earth's core and mantle, and that of evolution of geological processes etc.

Without solving the problems above it is impossible to create a global geotectonic theory, and without such a theory it is impossible to make a scientific prognosis of mineral resources, climatic changes, the world ocean level, seismicity and other geological processes.