

GEOMAGNETIC POLE CHANGES AS AN INDICATOR OF CATASTROPHIC PROCESSES

The high-speed changes of the Earth climate that are registered everywhere are caused by global physical processes. As a rule, periodic power-consuming processes on our planet are connected with the similar ones on other planets of the Solar system. It is natural, that this "climatic globalism" is accompanied by large-scale processes in geological and geophysical environment.

The first place among these processes is taken by the process of geomagnetic pole changes. According to the data of a complex geomagnetic monitoring the counter movement of magnetic poles doubled in 2001-2002, and already in 2004 the total distance of the poles displacement exceeded 60 km for one year, whereas the usual background speed of the poles displacement is only 3-5 cm per year. According to paleomagnetism within the last 500 million years more than 430 pole changes (inversions) of the magnetic field took place on the Earth along well-studied trajectories. Already now, because of the magnetic field inversion, we observe the increase of the functional role of the World Magnetic Anomalies: Canadian, East-Siberian, Sub-Antarctic and Brazilian (negative: with intensity of about 23 000 nano tesla). These anomalies influence thunderstorm processes and regional atmospheric, temperature and humidity conditions.

It is a well-known fact that the inversion of a geomagnetic field results in the change of functioning of all 16 climate-stabilizing factors. As far as the middle of 1990-s new temperature dipoles began to form in the northern hemisphere: a "warm" one at the eastern coast of China and a "cold" one between Scandinavia and Greenland. It is significant, that the territory of Siberia is under the influence of "a warm pole", and Europe is influenced by "a cold pole". Moreover, Siberia is under the magnetic control of the World Eastern-Siberian Magnetic Anomaly. By the influence of this anomaly we explain the phenomenon of the "Maximal thermal oval of Siberia". This "oval" was discovered thanks to numerous satellite temperature measurements of the bottom layer of the atmosphere.

Because of the results of direct measurements of the speed of the magnetic poles displacement and time extrapolation, some scientists believe that inversion of the magnetic field of the Earth can happen by 2050. It should be emphasized that the geomagnetic protection of our planet will decrease with the approach of the inversion. The evidence of the decrease in dipole protection of the Earth is the process of the rise in capture of radiation material from the near space by polar chinks and the

Address: United Institute of Geology, Geophysics and Mineralogy, Koptuyug Str., 3, Novosibirsk, 690090, Russia

E-mail address: dmizol@uiggm.nsc.ru

World Magnetic Anomalies. For example, Brazilian Magnetic Anomaly sometimes increases the "capture" of radiation material in hundreds of times. It results in significant thermodynamic and thunderstorm consequences. It should be said that the average global temperature after the last inversion of the geomagnetic field was 6°C higher than the temperature before the period of pole changes. We observe the decrease in intensity of geomagnetic dipole. It means that airborne radioactivity increases.

According to the forecasts of the rise in temperature, or rather its increase, by 2100 the temperature increase will be 7°C in Siberia. At the same time the temperature increase of 2°C will result in the following figures of the water-level rise:

- due to thermocline (thermal expansion of water) – to 10 cm
- due to thawing of low and middle scale glaciers – to 30 cm
- due to thawing of the Arctic and Antarctic Zone ice (if the temperature rises normally) – to 35 cm
- due to thawing of ice if the temperature rises abnormally high (owing to the Arctic El Nino) – to 60 cm

The sum total will be 130 cm rise of the sea level. Naturally, if the temperature becomes 7°C higher, it will completely mobilize ice resources of the Earth, and the rise of the sea level will exceed 10 m. Of course, if we take into account the increasing anomalies of geodynamic processes, seismic phenomena and volcanic eruptions, a number of territories will have to live under extreme conditions, in which catastrophic processes will be a norm.

At present, instability of meteorological conditions increases and the term "climate" loses its sense. The spatial and temporary variability of weather structures also grows. The pressure of the technosphere on geological-geophysical environment, in its turn, complicates and increases the variety and energy intensity of climate-transforming processes. There is a new kind of catastrophic processes, the energy of which comes from technical and natural sources, they are the so-called techno-natural processes.

Thus, it was determined, that:

- periodic global geomagnetic inversions are characterized by the change of temperature conditions, by global disasters and global warming (within 100-1000 years);
- a sharp decrease in geomagnetic protection of the Earth results in an increase in airborne radioactivity;
- biosphere begins to respond to changes of a magnetic and thermal conditions of the Earth and an accelerating "revision" of species structure takes place (extinction of old species and appearance of new ones).

It is clear, that these unusual circumstances will require unusual approaches and ways of life. The renewal of the morals is necessary within the context of cultural values. The problem of the survival of the mankind becomes a question of vital importance. On the path to high standards of life, we have to save human lives. The present-day tendency is toward variety, ubiquity and power-consuming technologies.