



Causes and consequences of the critical periods in the Earth history

D. Khristoforova

Kazan State University, Kazan, Russia (daria.khr@mail.ru)

Geochronological scale of high resolution based on the multidisciplinary criteria (biological, geological, climatic, physical, chemical and so on) is a subject of current geophysics researches. Although viewpoints differ on timing, certain thresholds of earth evolution have global behavior; this is now fairly well known. This report represents an attempt to synthesize into a single picture the important events in nature, particularly in the biosphere, on the one hand and in the Galaxy, on the other hand. Processes that take place when the Solar system passes through the spiral arms and associated with the presence of galactic shocks can be responsible for the abrupt changes of the temperature, pressure and composition of the Earth's atmosphere. Galactic shocks are the narrow region of high gas compression along the inner edge of spiral wave. They were predicted as a result of researches of galactic gas flow in the field of spiral density wave. Shock wave leads to the interstellar dust compression and the increase of its concentration should be observed in a front region. This extraterrestrial cause for the change of physical and chemical conditions on the Earth had profound effects on the biologic extinction and explosions. My hypothesis is that the spiral structure of the Galaxy may be responsible for the existence of critical periods in the evolution of our planet and may be playing a key role in explaining the large-scale catastrophes.