



## About the Influence of the initial Atmosphere on the Earth's Temperature Distribution during it's Accumulation

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We suggested a new model for accumulation of planets of the Earth's group [1], which is based on the contemporary results of geochemical analyses, which allow to obtain the concentrations of short living radioactive isotopes of  $^{26}\text{Al}$  in the matter of the pre planet cloud [2]. With use of that data new estimations of temperature distribution into the growing planetary pre planetary bodies into the Earth's nebular zone had been obtained. For the further Earth's temperature evolution, as it had been showed by the results of numerical modeling, the main role belongs to the temperature distribution in the forming Earth's core and the existence of a dense and transparent atmosphere. The shadow influence of the initial atmosphere had been researched in the paper [3]. We shall give the main consideration to these problems in that paper. It had been shown in [1], that on the earliest accumulation stage the heat release by the decay of  $^{26}\text{Al}$  it is sufficient for forming a central melted area and solid relatively thin mainly silicate upper envelope in the pre planetary body, with dimensions, larger than (50-100) km. The impact velocities on that stage are yet not large, therefore by the bodies impact with these or near dimensions liquid and mainly iron their parts merge, but the masses of the pre planetary bodies are not sufficient to gravitational keeping of silicate parts of the cold solid envelope. On that stage they remain into the nebular zone of the proto planet and the mechanism of matter differentiation for the future core and mantle reservoirs realizes. The process takes place yet in small bodies and is in time to finish during less than 10 million years. The next forming of the core and mantle structure continues according to all known estimations about 100 million years. Because of the merging of inner liquid parts of impacting bodies occur due to inelastic impact, the main part of potential energy transforms into heat. That continues up to that time when the iron core mass increases to the main part of the contemporary mass. The silicate particles of different dimensions remain in the proto planet cloud and in the initial atmosphere, reducing it's transparency and release of the heat radiation. On the finishing stage of the core growing the mass of the pre planetary body is sufficient for keeping of the rising part of the silicate envelope of falling bodies. The matter of the growing planet enriches more and more with a touch of silicates. The impact process of accumulated bodies gradually converts to the mechanism of elastic impact, by which only a small part of kinetic energy transforms into the merging by the pre planet body heat. The atmosphere losses the silicate particles and it's transparency exceeds. It is forming either a non melted mantle, or a mantle with a rising melted layer. That results show that the existence of a dense, nontransparent atmosphere leads to temperature growing in the inner areas of the planet during it's accumulation process.

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