

## **On the History of the Lunar Orbit**

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The data on the gravitational field of the Moon are used to determine a "reference" Point in the evolution curve of the lunar orbit:  $c$  is about  $21.6 R$  at  $t \sim 4$  Ga years ago, where  $c$  is the distance between the centers of the Earth and the Moon and  $R$  is the Earth's radius. The averaged evolution curve  $c(t)$  consists of two straight-line segments with a mean velocity of  $3.68$  cm/yr in the range from  $0.9$  Ga to the present time and  $6.87$  cm/yr in the range from  $\sim 4$  Ga to  $0.9$  Ga. The largest uncertainty is still retained for the time of formation, existence and fragmentation of the first supercontinent Rodinia (about  $1-0.2$ ) Ga, in the zone of joining the straight-line segments that approximate, on the average, the evolution curve of the lunar orbit. The analysis performed leads to the conclusion that a global ocean existed  $4$  Ga at the surface of the Earth. Approximately at that time, a systematic growth of the continental segmentation at the surface of the Earth began. Before the growth of the continental segmentation a displacement of the Moon from the Earth was determined by tidal friction in the Earth's tides. The increase in the surface area of the continental crust and shallow seas  $\sim 4$  Ga led to the domination of friction in ocean tides, which determined the evolution of the lunar orbit during all subsequent epochs.