

Variations of the Earth's magnetic field during fall of the Tunguska and Chelyabinsk bolides: analogies and differences

*Ravil Rakhmatulin¹

1. Institute of Solar-Terrestrial Physics, SB RAS

A superbolide with an estimated mass of 13,000 tonnes exploded at an altitude of 22 km over the city of Chelyabinsk (Russia) at 03 hours 20 min. 33 sec. UTC on February 15, 2013. It is now known as the Chelyabinsk meteorite. Over the past 100 years after the fall of the Tunguska meteorite on June 30, 1908, this event was an entry of the second largest object from outer space into the Earth's atmosphere. In the literature describing the occurrence of magnetic effects during the fall and explosion of the Tunguska meteorite in the magnetosphere and atmosphere of the Earth on June 30, 1908, some researchers mentioned a change in variations in the Earth's magnetic field 80 minutes before the explosion itself [Kuchеров, 2008]. Similar features of the magnetic field components observed by the Irkutsk Magnetic Observatory are identified by the comparative analysis of the magnetic field variations during the falls of the Tunguska and Chelyabinsk space bodies through the magnetosphere.

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References

Kuchеров V.I. About the explosion of the Tunguska cosmic body in the Earth's atmosphere // Bulletin of Moscow State University, 2008, No. 4, p. 32-47

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