

# Fireball on 6 July 2002 over the Mediterranean Sea is a fragment of the comet's nucleus

Klim Churyumov, Vitaly G. Kruchinenko, Tetyana Churyumova and  
Alyona Mozgova

Astronomical Observatory of Kyiv Shevchenko National University  
email: klimchur@ukr.net

**Abstract.** Today has been known for a considerable number of cases, the explosion of large meteoroids in Earth's atmosphere. This is confirmed by the data of registrations of fireballs by devices and the results of measurements in the atmosphere of bright light flashes by photodiodes Corporation "Sandia Laboratories", which were installed on geostationary satellites of the United States, and also by data of measurements of acoustic-gravitational waves from the thermal explosions of meteoroids [ReVelle D.O. Historical detection of atmospheric impacts by large bolides using acoustic-gravity waves, Near-Earth Objects, Ed. Remo J. Annals of the New York Academy of Sciences 882, 284-302, 1997]. The work [Brown P., Spalding R.E., ReVelle D.O. *et al.* The flux of small near-Earth objects colliding with the Earth, *Nature* 420, 314-316, 2002.] shows the results of processing the observations of flashes of large meteoroids in Earth's atmosphere, obtained with the help of geostationary satellites of the United States. Over 8.5 years (from February 1994 to September 2002) 300 such events were registered. On July 6, 2002 r over the Mediterranean Sea a bright fireball was registered. The energy of the meteoroid explosion that caused the phenomenon of the car, was 26 kilotons of TNT [Brown *et al.*, 2002]. We believe that this energy refers to the height of the full bracking of the meteoroid. At a speed of 20.3 km /s adopted by the authors, body mass at this height is  $5 \times 10^8$  g, and when entering the Earth's atmosphere, it was about  $7 \times 10^8$  g. Based on the obtained values of the mass, we conclude that the exploded meteoroid, causing a phenomenon of the fireball was a fragment of the comet nucleus. In processing the density of the body were taken  $1 \text{ g/cm}^3$  and the initial velocity ( $\sim 30$  km/s).

---