NEMO - The NEar real-time MOnitoring system for bright fireballs

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Fireballs are very bright meteors with magnitudes of at least -4. They can spark a lot of public interest. Especially, if they can be seen during daytime over populous areas. Social Media allows us to be informed about almost everything, worldwide, and in all areas of life in real-time. In the age of intensive use of these media, information is freely available seconds after the sighting of a fireball.

This is the basis of the alert system which is part of NEMO, the NEar real-time MOnitoring system, for bright fireballs. It uses Social Media, mainly Twitter, to be informed about a fireball event in near real-time. In addition, the system accesses various data sources to collect further information about the detected fireballs. The sources range from meteor networks, the data from weather satellites or lightning detectors to the infrasound data of the IMS (International Monitoring System) operated by the CTBTO (Comprehensive Nuclear-Test-Ban Treaty Organisation).

Since large meteoroids or asteroids can be detected by these infrasound sensors when they enter the Earth’s atmosphere, this network provides the possibility to detect fireballs worldwide and during day and night. From the infrasound data the energy of the object that caused the fireball can be determined and hence, its size and mass can be calculated. By combining all available information about the fireball from different data sources the amount of scientific knowledge about the event can be maximized.

NEMO was under development for about 2.5 years. Since the beginning of the year the system is in operation at the European Space Agency, as part of its Space Safety Programme. In this presentation we will give an overview about NEMO, its working principle and its relation to the IMS.