

Special Issue on  
**Challenges and Perspectives of Space Situational Awareness**

# CALL FOR PAPERS

Current telescopic surveys provide a continuous monitoring system of Earth's environment and have achieved completeness in the detection of bodies hundreds of meters in size or larger. Despite this, smaller bodies are also being discovered, but they remain elusive except when they are detected at a close approach to our planet. The Near-Earth population of bodies is largely comprised of objects sized tens of meters in diameter, and are the main source of impact hazards. The European Space Agency Space Situational Awareness (SSA) Programme specifically mentions the need to develop capabilities to track objects in orbit that could disrupt satellites or impact ground-based infrastructure. Hence, there is a necessity to intensify the study of the encounters with such bodies, not only in space but also in the bolide phase, to gain insight on their dynamics and test the new space, airborne and ground-based detection techniques.

Tunguska and Chelyabinsk events, separated by a century, should be considered rather frequent cosmic reminders of the destructive capacity of asteroids and comets. The Earth's orbit is crossed by thousands of rocky objects every year, and a casual encounter with a 20-m asteroid such as Chelyabinsk occurs at least once in a century. In fact, the most common hazardous impacts of asteroids with our planet are in the size range of one meter to a few tens of meters. Depending on the entry geometry, and the body's physical properties, a significant part of the kinetic energy can propagate towards the ground in the form of shock waves and may subsequently produce coupled seismic waves, or even excavation of craters. Fortunately, the atmosphere of our planet acts as a shield from bodies in the aforementioned size range, but it is important to emphasize how observations and theoretical studies on the bolide phase can be useful to quantify the nature and importance of such type of hazard on humans and infrastructure.

This Special Issue aims to collate original research and review articles with a focus on research initiatives with the goal of advancing in these research topics. We particularly welcome submissions on mastering current understanding of processes associated with atmospheric entry, as well as review articles discussing the current state of the art in this field.

Potential topics include but are not limited to the following:

- ▶ Theory and observations on fireball entries
- ▶ Asteroid close encounters consequences on artificial satellites
- ▶ Fireball networks studies and implications for meteorite-dropping bolides
- ▶ Detection of bolides from space: trajectory reconstruction comparison with ground-based data
- ▶ Break-up models of asteroids and comets in Earth's atmosphere
- ▶ Bolides as a geohazard on Earth's surface: shock waves and excavation of craters
- ▶ Infrasound and seismic observations of fireballs

Authors can submit their manuscripts through the Manuscript Tracking System at <https://review.hindawi.com/submit?specialIssue=233480>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

**Lead Guest Editor**

Maria Gritsevich, Finnish Geospatial Research Institute (FGI), Helsinki, Finland  
*maria.gritsevich@nls.fi*

**Guest Editors**

Michael Küppers, European Space Astronomy Centre, Madrid, Spain  
*michael.kueppers@sciops.esa.int*

Elizabeth Silber, Western University, London, Canada  
*esilber@uwo.ca*

Juraj Tóth, Comenius University in Bratislava, Bratislava, Slovakia  
*juraj.toth@fmph.uniba.sk*

Josep M. Trigo-Rodríguez, Institute of Space Sciences (CSIC-IEEC), Barcelona, Spain  
*trigo@ice.cat*

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