

SOTERIA

SOLAR-TERrestrial Investigations and Archives

TOWARDS A BETTER SPACE WEATHER FORECAST

In space, like on Earth, we need to adapt to changing weather conditions. Yet our knowledge about space weather is still limited. In order to better protect human beings and human assets in space and on Earth, the project SOTERIA aims at improving our understanding of space weather phenomena.

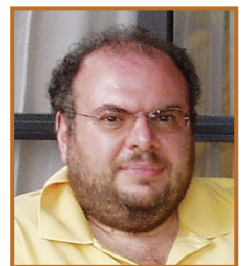
Space weather is the concept of changing environmental conditions in space. It is distinct from the concept of weather within our own atmosphere. Our space weather is a consequence of the behavior of the Sun and the nature of Earth's magnetic field and it can affect the Earth significantly.

Yet we know much less about space weather than we know about weather on Earth. Whilst the International Space Station (ISS), satellites and spacecraft mostly experience calm space weather conditions, at times **solar eruptions and variations in the Earth's magnetic field lead to deteriorating conditions** that represent real risks to astronauts and satellites in space, and may even disturb power supply and telecommunications on Earth.

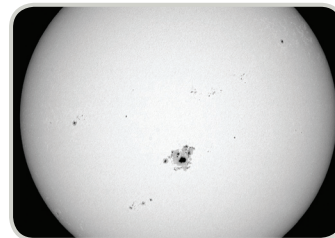
Studying such events in the fields of solar, space and geophysics is increasingly important. Today more than ever before, space assets such as satellites controlling telecommunication and power lines impact our life on Earth. Hence if they are affected by space weather, we feel the impact instantly.

SOTERIA aims at facilitating a more reliable space weather forecast, based on a space monitoring system. Analysing data from more than 20 satellites - some five of which are ESA missions - this project mobilizes more than 50 experts and resources from across Europe. New methods will be explored to analyse data on space weather not only from satellites but also from outposts on the ground.

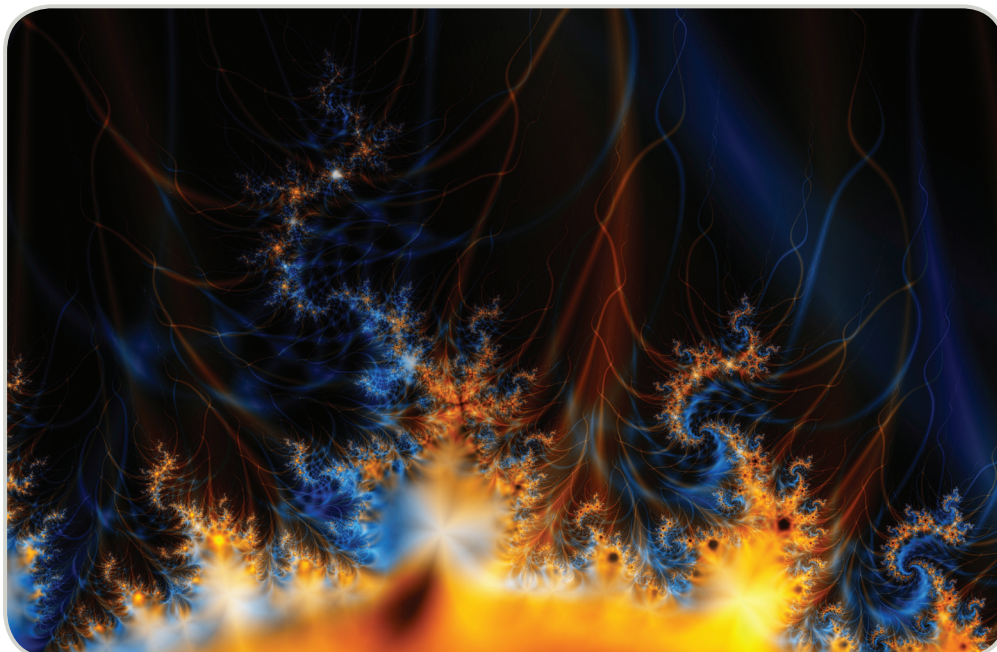
This endeavour will lead to the establishment of **new databases on space weather**, the quality of which go beyond the present state-of-the-art in this field. Moreover, the results springing from SOTERIA will be made available online to the scientific community at large, also **facilitating access to open data from relevant satellite missions**.



GIOVANNI LAPENTA
IS PROJECT COORDINATOR



Source: © SOTERIA



Solar eruptions pose risks to humans and satellites in space.
GeoPappas © Fotolia

QUESTIONS & ANSWERS

What do you want to achieve with this project?

The goal is to provide new and existing data from ground based and spaceborne observations and models crucial for space weather forecasting. The fundamental approach is to make the information from diverse sources readily available to the user in a homogeneous format.

Why is this project important for Europe?

Europe has a key interest in the good design and operation of its space technical and human operations and of its large scale infrastructure (power lines, pipelines). Soteria will produce tools to better understand space weather events that pose a serious and even lethal threat to such activities.

How does your work benefit European citizens?

Soteria will benefit society by providing tools for the European capability of predicting space weather events that have a key adverse impact on space activities, on human health in space and on large scale infrastructures and on the ground (power lines, pipelines).

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LIST OF PARTNERS

- Katholieke Universiteit Leuven, Belgium
- Universität Graz, Austria
- Schweizerisches Forschungsinstitut für Hochgebirgsklima und Medizin (PMOD/WRC), Switzerland
- MTA Konkoly-Thege Miklós Csillagászati Kutatóintézet, Hungary
- Centre national de la recherche scientifique (CNRS), France
- ROYAL OBSERVATORY OF BELGIUM (ROB), BELGIUM
- Observatoire de Paris, France
- Centrum Badań Kosmicznych Polskiej Akademii Nauk (SRC-PAS), Poland
- MTA KFKI Részecske- és Magfizikai Kutatóintézet (MTA-KFKI), Hungary
- Technical University of Denmark (DTU), Denmark
- Oulun Yliopisto (UOULU), Finland
- Georg-August-Universität Göttingen, Stiftung Öffentlichen Rechts (UGOE), Germany
- Sveučiliste u Zagrebu, Croatia
- Noveltis SAS, France
- Lebedev Physical Institute of the Russian Academy of Sciences (LPI), Russia
- Informatique, Electromagnetisme, Electronique, Analyse Numerique (IEEA), France

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PROJECT INFORMATION

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