

# HESPE

## High Energy Solar Physics Data in Europe

### UNCOVERING SECRETS OF THE SUN

Solar eruptions can have direct repercussions on our planet. HESPE takes on this challenge, allowing for a better understanding of the sources of high energy particles escaping from the Sun to Earth.

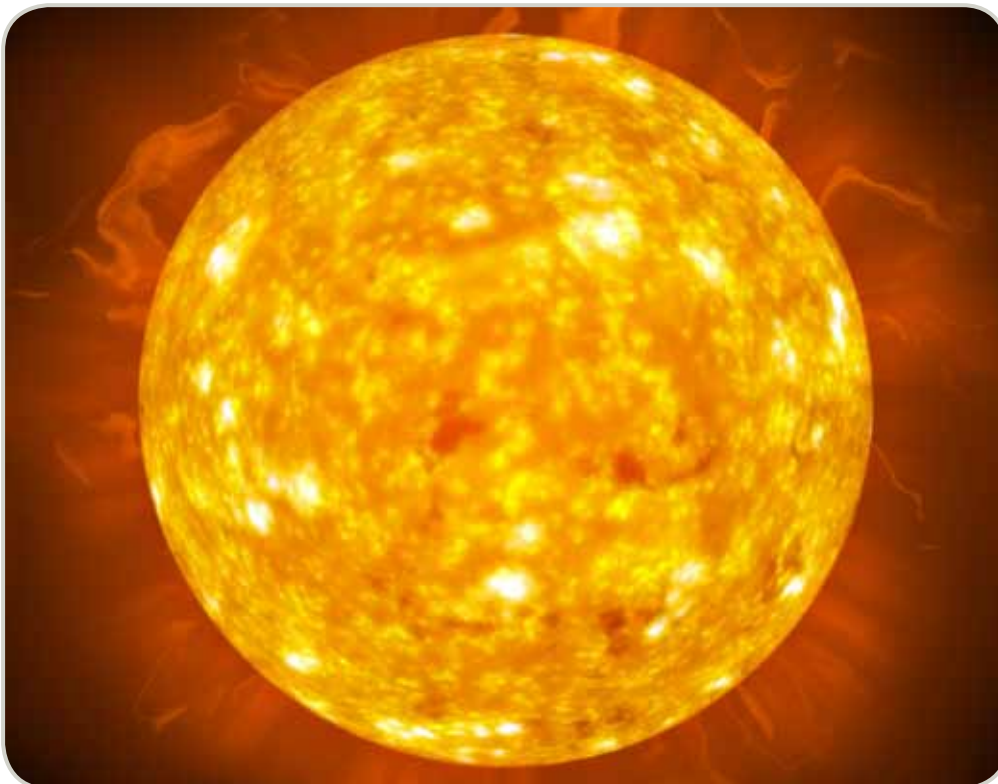
On 28 October 2003, the Earth experienced one of the most dramatic effects of solar eruptive events for many years. Following an intense flare, a halo coronal mass ejection was directed straight towards the Earth, with a velocity of 8 million km/hour. 19 hours after the explosion, strong geomagnetically induced currents caused blackouts of the power distribution grid; the accuracy of satellite navigation systems was degraded; airliners scheduled for trans-polar flights were rerouted to lower latitudes. This one event brought home the reality that modern technology-based societies are becoming increasingly vulnerable to this type of natural threat. And it clearly demonstrated that understanding the physics of these most powerful events is a necessary pre-

requisite to predict their occurrence and their potentially damaging effects in space and on the Earth.

It has been recognized since the early days of the space program that high-energy observations play a crucial role in understanding the basic mechanisms of solar eruptions. Unfortunately, the peculiar nature of this radiation makes it so difficult to extract useful information from it that nonconventional observational techniques together with complex data analysis procedures must be adopted. The rationale of this project is to formulate and implement computational methods for solar high-energy data analysis, and to utilize sophisticated Information and Communication Technology (ICT) tools for providing algorithms and science-ready products to the solar physics community.



**MICHELE PIANA**  
IS PROJECT COORDINATOR



Fiery Glowing Sun © TheSupe87 - Fotolia.com

**HESPE aims to mainstream the exploitation of high energy solar physics data in Europe.**

### QUESTIONS & ANSWERS

#### What do you want to achieve with this project?

HESPE aims at becoming a home for state-of-the-art high energy solar data and science-ready products that will help to initiate original, challenging solar, helio and space science. To achieve this goal, HESPE will utilize theoretical, computational and technological tools.

#### Why is this project important for Europe?

HESPE will put the potential of high-energy solar data at disposal of the European solar, helio and space weather scientists and will guarantee a stable and long term positioning of Europe in the sustainable exploitation of such data products.

#### How does your work benefit European citizens?

HESPE will allow a better understanding of the sources of high energy particles escaping from the Sun to Earth. This will help to forecast geomagnetic storms associated to solar eruptions and eventually to reduce their effects on our technology-based society.

# HESPE

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## LIST OF PARTNERS

- Universita di Genova, Italy
- Fachhochschule Nortwestschweiz, Switzerland
- University of Glasgow, United Kingdom
- Centre national de la recherche scientifique (CNRS), France
- Universitaet Graz, Austria
- University of California at Berkeley, USA

## COORDINATOR

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## PROJECT INFORMATION

High Energy Solar Physics Data in Europe (HESPE)

Starting date: 01/12/2010

Duration: 36 months

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