

SEMEP

Search for Electro-Magnetic Earthquake Precursors
combining satellite and ground-based facilities

LISTENING OUT FOR EARTHQUAKES

Earthquakes are notoriously difficult to predict. Yet reliable short-term earthquake forecasts could save thousands of lives. The SEMEP project will investigate the electromagnetic precursors to earthquakes by combining in-situ measurements and space data from satellites.

Throughout the world, thousands of citizens live with the constant risk of being hit by an earthquake. In the EU, Southern-Europe is a highly seismic-region. Previous attempts to develop reliable short term earthquake forecasting based on in-situ measurements. Yet, combining such measurements with space observations from satellites may pave the way for a new methodology enabling such forecasting.

The main concept of the SEMEP project is the investigation of electromagnetic phenomena related to large earthquakes in the global lithosphere-atmosphere-ionosphere coupled system using simultaneous satellite and ground-based observations. The seismo electromagnetic effects are the electric and magnetic perturbations

caused by natural geophysical activity such as earthquakes and volcanic eruptions. The combined analysis of satellite and ground-based datasets, together with theoretical modelling enables SEMAP to investigate the occurrence and propagation of electromagnetic phenomena observed as precursors to earthquakes.

The project brings partners together from across the world, in particular Europe and Russia, in a joint effort aimed at cross-validating existing methodologies using and processing both Russian and European Earth Observation data.

Whilst the risk of failure is high in the controversial domain of attempted earthquake prediction, in case the SEMAP approach is valid, its results would constitute a major breakthrough with enormous consequences and benefits to populations.



SIMON WALKER
IS PROJECT COORDINATOR

QUESTIONS & ANSWERS

What do you want to achieve with this project?

The idea behind the project is to investigate observations of electromagnetic perturbations within the ionosphere and the possible generation as a precursor to earthquake activity. Currently, the occurrence of such a link is unclear. If a link can be solidly established, it may be possible to use such observations as a forecasting tool.

Why is this project important for Europe?

REDDiness responds to the EC call for This project is important to Europe because a reliable method for prediction could help to save lives and mitigate the effects that large earthquakes have on the infrastructure of our modern lifestyle such as occurred in l'Aquila, Italy.

How does your work benefit European citizens?

A reliable forecast methodology would allow mitigation action plans to be put into operation to reduce the impact that earthquakes have on the infrastructure and lives of citizens living in seismically active zones.



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LIST OF PARTNERS

- University of Sheffield, United Kingdom
- Institute of Physics of the Earth RAS, Russia
- Laboratoire de Physique et Chimie de l'Environnement et de l'Espace, France
- Institute of Marine Geology and Geophysics of Far Eastern Branch of RAS, Russia
- Space Research Institute of RAS, Russia

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PROJECT INFORMATION

Search for Electro-Magnetic Earthquake Precursors
combining satellite and ground-based facilities (SEMEP)

Contract no: 262005

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Duration: 24 months

EU Contribution: € 452.515

Estimated total cost: € 728.376

