

ATMOP

Advanced Thermosphere Modelling for Orbit Prediction

SECURING OUR SATELLITES

Between Earth and space, the thermosphere is home to thousands of satellites and the International Space Station. Here space weather changes rapidly, yet our ability to monitor and predict it lacks precision. The ATMOP project addresses this shortfall, developing a new thermosphere space weather model.

Bigger than any other part of Earth's atmosphere, the thermosphere is a hostile environment that varies rapidly in response to solar and geomagnetic activity. Space weather directly impacts life on the International



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ATMOP works towards the creation of a new thermosphere model, enabling more precise space weather forecasts.

Space Station, which orbits in the middle of the thermosphere some 300 km above us. It also affects the functioning of satellites that may be lost or collide with other space objects. In order to protect these valuable assets, and limit the risk of further space debris, which is caused by colliding satellites, it is paramount to develop better models for space weather 'nowcasting' and forecasting.

The ATMOP project is set to develop such advanced models of the thermosphere, as it brings together scientists who are leading in the world in the areas of semi-empirical thermosphere modelling, and physical modelling of the atmosphere. The aim is to develop a new Drag Temperature Model (DTM), which may ultimately become the successor to existing semi-empirical models, and enable Europe to undertake real-time thermosphere prediction and provide operational services for space weather forecasts.

In this respect, ATMOP contributes to ensuring the security of European space assets from space weather events, thereby also reducing the risk that space weather poses for Earth based networks that are dependent on satellites, such as emergency response services and communication networks.



NOELIA SANCHEZ-ORTIZ
IS PROJECT COORDINATOR

QUESTIONS & ANSWERS

What do you want to achieve with this project?

The main objective of ATMOP is to give Europe a strategic advantage in precise thermosphere modelling and predictive satellite drag computation by developing an advanced semi-empirical thermosphere model and bringing it into a pre-operational state.

Why is this project important for Europe?

Currently Europe lacks of an independent near real time model of the thermosphere to enable precise drag computation and orbit propagation. This project focuses on the development of this European capability to reduce dependence of space operations on the US.

How does your work benefit European citizens?

A large number of activities rely on satellites. Precise air drag computation is mandatory for improved survey and precise tracking of space objects and the initiation of appropriate measures to minimise risks to satellites (track loss, collisions) and ground assets (re-entry).

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LIST OF PARTNERS

- DEIMOS Space S.L.U., Spain
- Centre National de la Recherche Scientifique, France
- Collecte Localisation Satellites, France
- Met Office, United Kingdom
- Centre National d'Etudes Spatiales, France
- University College London, United Kingdom
- Kybertec S.R.O, Czech Republic

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PROJECT INFORMATION

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(ATMOP)

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