Advanced Thermosphere Modelling for Orbit Prediction

Fact Sheet

Project Information

ATMOP
Grant agreement ID: 261948
Project website

Status
Closed project

Start date
End date
1 January 2011
31 December 2013

Funded under
FP7-SPACE

Overall budget
Ș 2 217 243,16

EU contribution
Ș 1 563 980,36

Coordinated by
DEIMOS SPACE SOCIEDAD LIMITADA UNIPERSONAL

Spain

This project is featured in...

RESEARCH*EU MAGAZINE
Water of life: desertification, access to clean water

Objective
The ATMOP research project aims at building a new thermosphere model with the potential to spawn an operational version. It will enable precise air drag computation which is mandatory for improved survey and precise tracking of space objects in Low Earth Orbit and the initiation of appropriate measures to minimise risks to satellites (track loss, collisions) and ground assets (re-entry zone).

The state of the thermosphere can vary rapidly and significantly in response to solar and geomagnetic activity (space weather), i.e., accurate orbit prediction requires accurate space-time nowcast and forecast of the thermosphere. Despite the presence in Europe of one of the three groups that have the capability to develop and maintain an operational semi-empirical thermosphere model (CNES/CNRS, the other two are in the US), and of one of the world leading teams in the field of physical modelling of the atmosphere (UCL), Europe has currently neither a near-real-time thermosphere prediction model nor operational services to provide regular thermosphere nowcast and forecast.

The ATMOP project is designed to fill this gap through: Defining and assessing new proxies to describe the external forcing of the thermosphere; Developing an advanced semi-empirical Drag Temperature Model (DTM) that meets the requirements for operational orbit computations; Improving physical modelling of the thermosphere to assist the development of the advanced DTM and of a global physical model with data assimilation capabilities which may ultimately become the successor to semi-empirical models; and Developing schemes for near-real-time assimilation of thermospheric and ionospheric data into an advanced predictive DTM and into the physical Coupled Middle Atmosphere-Thermosphere (CMAT2) model. ATMOP therefore contributes to ensuring the security of space assets from space weather events (SPA.2010.2.3-01) and the development of the European capability to reduce dependence of space operations on the US.

**Field of science**

/natural sciences/physical sciences/astronomy/planetary science/satellites
/social sciences/sociology/governance/public services

**Programme(s)**

**Topic(s)**

**Call for proposal**

FP7-SPACE-2010-1
Funding Scheme

CP - Collaborative project (generic)

Coordinator

DEIMOS SPACE SOCIEDAD LIMITADA UNIPERSONAL

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Ronda De Poniente, Edificio Fiteni Vi, 2, 2º 19
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Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

EU contribution
€ 294 144,66

Website
Contact the organisation

Administrative Contact
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Participants (7)

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS

France

EU contribution
€ 470 821,01

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Activity type
Research Organisations

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Contact the organisation

Administrative Contact
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COLLECTE LOCALISATION SATELLITES

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EU contribution
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Activity type
Higher or Secondary Education Establishments
Website Contact the organisation
Administrative Contact
Greta Borg-Carbott (Ms.)
<table>
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<td>KYBERTEC S.R.O.</td>
<td>Czechia</td>
<td>€ 38 809,55</td>
<td>Tovarni 1112, 537 01 Chrudim Iv</td>
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<td>KONINKLIJKE STERRENWACHT VAN BELGIE</td>
<td>Belgium</td>
<td>€ 11 294,03</td>
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Administrative Contact

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