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SOVA – THE CZECH SMALL SATELLITE MISSION TO ENHANCE CLIMATE MODEL PRECISION

Abstract

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SOVA – the Czech small satellite mission to enhance climate model precision

Abstract

The SOVA scientific mission is a successful answer of a consortium led by OHB Czechspace to the so called “Ambitious Project” call of Czech Republic with a goal to enhance Czech scientific excellence and to tune up Czech expertise in the realization and operation of satellite missions. The scientific goal of the Czech SOVA (Satellite Observation of waVes in the Atmosphere) mission is to investigate processes in the middle and upper atmosphere (60 km – 300 km), which are still not sufficiently understood. The global dynamics there is driven by atmospheric waves. These waves are generated in the lower atmosphere and transport energy and momentum upwards, where they break and dissipate, influencing the wind fields and, thus, the global circulation. The SOVA mission will measure temperatures and zonal winds globally in this altitude range and thus to provide unprecedented data for better understanding of these waves. Improved understanding of these waves will lead to:

- more precise climate models crucially needed to act against the global climate change and to
- improved knowledge of electric signals propagation deterioration in the ionosphere, such as GNSS.

The 100 kg satellite mission will make use of the following main elements:

- Spatial Heterodyne Spectrometer (SHS) - a unique instrument that has already been brought up to TRL 4 within an ESA Technology Readiness Program. The SHS has high light sensitivity and spectral resolution at a small form factor. The high light sensitivity is required to measure the faint airglow emission of the atmosphere precisely enough to derive winds and temperatures.

- A space proven spacecraft platform
- Czech Republic ground station facilities

With the core Czech science and industry team as well as international partners, we are currently at phase A-B1. The paper will present the Czech targets, the mission science and the technical status in detail.