

Master's Thesis Project: Light phenomena in near space

Airglow:

Airglow is a thin shimmer of light which exists at the boundary between the earth atmosphere and space. Though not as sexy as its more famous cousin aurora borealis (northern lights), airglow is ever present around the earth and can readily be seen from space.



Figure 1: Airglow seen from the international space station.

By observing airglow and how it interacts with its surroundings, we can gain valuable knowledge about the chemistry and dynamics of the upper atmosphere. This in turn can help us better understand the interaction between earth and space weather, and how this interaction effects and is effected by climate change.

Your job:

We are currently looking for students interested in helping us in our quest for better understanding of the upper atmosphere. Our main focus is using satellite data to retrieve information about the upper atmosphere, and in particular using information from the Swedish satellite Odin.

This project will mainly involve extracting information from the optical imager on Odin, called IRIS. Coupling this data to a simple photochemical model, information can then be extracted about the physical properties in the airglow layer. The goal is the to compare this extracted data with results from other satellites and models to validate the results.

A new satellite?

In 2019 Sweden will launch a new satellite, called MATS, dedicated to studying the near space environment with airglow as one of its major targets to measure. Its main instrument is designed and build by industry here in Gothenburg, and integration and testing will be ongoing during the spring of 2019.

Thus, as a student in this project you will gain insight in the cutting-edge of Swedish satellite science, and the tools and knowledge generated in this Thesis project will be directly applicable and valuable to the future of space Sweden.

Requirements

Relevant student background: Physics, Chemistry, Environmental sciences.

The project requires basic programming skills and a broad interest in atmospheric science is beneficial.

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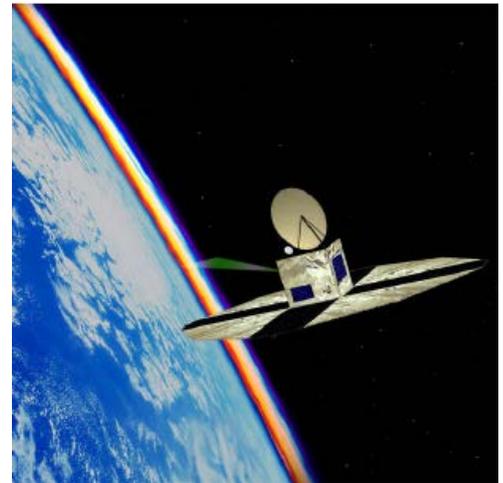


Figure 2: The Odin satellite