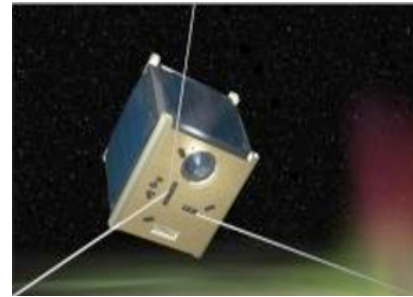


Title: An Image Processing Environment
for the SwissCube Satellite



Supervisors: Prof. Dr. André Csillaghy
Ruedi Müller

Partner institution: Swiss Space Center

Overview : The science mission of the SwissCube satellite is to observe airglow emissions in the upper atmosphere. A model of these airglow emissions has been developed at the Microsystems for Space Technologies Laboratory at EPFL to demonstrate the feasibility of using airglow as a basis for a low cost earth sensor (ES). The observations of the SwissCube satellite will bring further information to this model and allow confirming the feasibility of this ES concept.

Goals: The current airglow model simulates emissions as seen from a geosynchronous orbit (GEO). As the SwissCube satellite will be in a low earth orbit (LEO), an adaptation of the model is required. The students will program an intuitive model interface that allows simple data analysis, and the comparison between measurements and modelled airglow data. This program will be used for the interpretation and analysis of the SwissCube science data once the satellite has been launched.

Tasks: Concept and realization of a data analysis environment for the SwissCube data. This includes import tools of the model data, visualization tools, and interactive tools to manipulate the data and export the results. The supporting environment (Java, Groovy, IDL) needs to be determined, the necessary algorithms, etc. This project will be built in an agile manner, which means we will start with a very basic environment and successively add functionality in small but frequent iterations. You will take advantage of our strong experience in building such systems, notably for the spacecraft Herschel (ESA) and RHESSI (NASA).

Technology : Data analysis, visualization

**Fachliche
Schwerpunkte:** Interactive languages, image recognition algorithms

Links : www.i4Ds.ch
<http://swisscube.epfl.ch/>

Projekttyp: Semester Projektarbeit P6 [Bachelor Thesis]

Teamgrösse: 1 Studierende 1-2 Studierende 2 Studierende