

## **SIMBA, Measuring the Earth's Radiation (im)Balance**

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The Sun-earth IMBAance (SIMBA) satellite is a 3U CubeSat that will be launched in Q1 2019. The in orbit demonstration mission's objective is to study the feasibility of monitoring with the same instrument both the incoming solar radiation and the earths outgoing radiation. To achieve this, the main payload sensor is an electrical substitution cavity radiometer designed for absolute measurement of total radiation. To study performance of the instrument in orbit, we will switch between pointing towards the earth, deep space and the Sun. To separate the two different kinds of radiation emitted by the Earth, the payload further consists of black and white flat spectral sensors.

Depending on the outcome of the mission, SIMBA and successors will contribute to the monitoring of the Essential Climate Variables of Total Solar Irradiance and the Earth Radiation Budget. As a long term objective, this should lead to the direct measurement of the Earth radiation (im)balance. This long-term objective is very challenging both in terms of instrument design, characterization and temporal and spatial sampling and at the very least requires measurement from a satellite constellation.

In this talk we will first discuss the general design of the SIMBA CubeSat and the payload. Then we will address the challenges met during the construction and testing phase of the satellite. Finally, we will discuss the mission itself.