

CONVIDAM

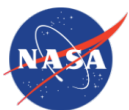
PALESTRA



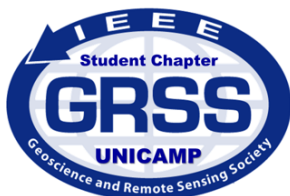
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10 de Abril – 14h
Sala 216, IG - UNICAMP



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ECOSTRESS AND HYTES - TAKING THE TEMPERATURE OF THE EARTH

In 2017 the National Research Council (NRC) in the USA released the results from their second Earth Science Decadal Survey (DS) which includes the Surface Biology and Geology (SBG) mission as their top priority. The SBG mission has many similarities to the HypsIRI mission, one of the missions recommended in previous DS. The HypsIRI mission included a VSWIR imaging spectrometer and TIR scanner together with an onboard data processing/downlink system referred to as the Intelligent Payload Module (IPM). Both instruments will provide global observations over the land surface and surrounding shallow waters. Over the deeper oceans the data will be resampled to 1 km spatial resolution.

As part of the engineering and science risk reduction for the TIR instrument NASA supported the development of two instruments the Prototype HypsIRI Thermal Infrared Radiometer (PHyTIR) and the Hyperspectral Thermal Emission Spectrometer (HyTES). PHyTIR was a spaceflight ready engineering prototype for the TIR with 7 spectral bands in the thermal infrared between 8 and 12 μm and one band in the mid infrared at 4 μm . PHyTIR had a large 51-degree field of view to meet the revisit requirement of the TIR. HyTES was the first NASA airborne hyperspectral thermal infrared spectrometer with a spatial resolution up to 1.5 m based on flying height and 256 spectral bands between 7.5-12 μm . In 2014 PHyTIR was selected for deployment to the International Space Station (ISS) as part of the ECOSystem Spaceborne Thermal Radiometer Experiment on the Space Station (ECOSTRESS) mission. ECOSTRESS will use 6 of the 8 available bands from PHyTIR. It will have a spatial resolution of $\leq 69 \times \leq 38 \text{ m}$ and a revisit of 4 days for most of the contiguous United States. It will provide the most detailed temperature images available from Space. ECOSTRESS was completed in 2018 and delivered to the ISS on June 29 th 2018.

This presentation will describe the ECOSTRESS mission and opportunities for utilizing the data as well as the latest results from the airborne HyTES mission including methane mapping.

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