

Weekly Report – February 2, 2023
Cooperative Institute for Satellite Earth System Studies (CISESS)
NOAA/NESDIS/STAR

Submitted by: Debra Baker & Kate Cooney
Email: drb@umd.edu
Phone: 301-405-5397

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HIGHLIGHTS FOR NESDIS LEADERSHIP

Use-Inspired Science

CISESS Seed Grant Project Develops a Robotic RHG-BRDF Measurement System

During its one-year funding period, this CISESS Seed Grant project expanded the work of the student-oriented CISESS Remote Sensing Laboratory by building equipment for post-launch radiometric validation using *in situ* measurements of reflective solar band calibration. CISESS Scientist Xi Shao, along with Sirish Uprety, Tung-Chang Liu, and Xin Jin, developed a Robotic Hyperspectral Ground Bi-directional Reflectance Distribution Function (RHG-BRDF) measurement system. Once built, they worked with three undergraduate students to perform field hyperspectral measurements of different ground targets. The student also developed python modules for converting measurements to hyperseprtral reflectance, data visualization and analysis.



Figure: Field experiments with the RHG-BRDF system over grass, soil and sand scenes and its calibration with a reflectance reference board.

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The field campaign activities fostered a broader scope of collaboration and engagement between the UMD/CISESS team and the NOAA sensor calibration team. They also contributed to the development of a portable Differential Optical Absorption Spectroscopy (DOAS) in collaboration with the NOAA/STAR National Calibration Center (NCC) laboratory for ground-based atmospheric trace gas and aerosol measurements.

(Xi Shao, CISESS, xshao@umd.edu; Funding: JSTAR, METOP-SG, COSMIC-2)