

**Weekly Report – August 02, 2024**  
Cooperative Institute for Satellite Earth System Studies (CISESS)  
NOAA/NESDIS/STAR

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Date of Submission: 02 August 2024

### TRAVEL AND MEETING REPORTS

#### Villegas Bravo Presents at the AmeriGEO Conference in Ecuador

CISESS Scientist Javier Villegas Bravo gave an invited virtual talk in Spanish at the AmeriGEO conference in Ecuador on 18 July 2024. The talk was part of a workshop with over 100 participants about diagnosing wildfire hazards. The presentation showed how hydrophobic burn scars in mountainous terrain can induce debris flows and flash flooding in typical rain events and how to analyze those burn scars using geostationary and polar-orbiting satellites, including GOES, JPSS, and Sentinel-1 Synthetic Aperture Radar (SAR). The presentation also highlighted where forecasters can find the freely available data on the web in near real time to help forecast debris flow events in their countries. Lastly, the presentation showed how to generate specific false-color composites and new research on how to generate interferometric SAR images to see burn scars through smoke, clouds, and during the night at a very high spatial resolution.

**Radares de Apertura Sintética (SAR)**

- Técnica de teledetección por radar activo
- Combina interferométricamente imágenes de radar de apertura sintética (SAR) para inferir cambios en la distancia de la línea de visión entre el satélite y la tierra.
- Esto nos proporciona imágenes a escala fina de la deformación de la superficie.

10 km

1 km

λ/2 (2.83 cm)

ground surface

subsided ground surface

19

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Zebker (2000)

CISESS

Figure. Sample slide from Villegas Bravo's talk at the AmeriGEO Conference.

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*(Javier Villegas Bravo, CISESS, vllgsbr2@umd.edu; Funding: GOES-R PGRR)*

## **TRAINING AND EDUCATION**

### **CISESS Interns Carry Out a Field Experiment on Atmospheric Polarization**

Aimed at undergraduates and high school seniors, CISESS offers paid summer internships with CISESS scientists as mentors to work on NOAA projects. CISESS Scientist Xi Shao is one such mentor, introducing two interns, David Liu and Rosalyn Fang, to the subject of polarization from atmospheric scattering. This phenomenon plays a significant role in air quality studies, providing insights into the properties and variation of atmospheric particles. Its application leads to improved air quality monitoring for better understanding of aerosol impacts. Through collaboration between the NOAA Center for Satellite Applications and Research and CISESS, a ground-based robotic hyperspectral atmospheric polarization measurement system was developed. Liu works on the project "Building a robotic hyperspectral sensor for measurement of the polarization property of atmospheric scattering", and Fang works on the project "Characterization of the polarization property of atmospheric scattering with hyperspectral sensor measurements". They recently participated in a field experiment carried out on 15 July 2024 near the building housing CISESS. This is an example of the kind of hands-on research experience that CISESS has become known for through its highly successful and popular intern program.



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*Figure. David Liu and Rosalyn Fang connect an optical fiber cable to an Ocean Insight Spectrometer while setting up a robotic hyperspectral sensor for measurements of the polarization property of atmospheric scattering, 15 July 2024. Image credit: Xi Shao (CISESS)*

*(Xi Shao, CISESS, xshao@umd.edu; Funding: COSMIC2, DACS, JSTAR, CISESS Seed Grant)*

## SOCIAL MEDIA AND BLOG POSTS

### Bali Updates the Wiki About SITSat Missions

In a Wiki article, CISESS Scientist Manik Bali introduces the Global Space-based Intercalibration System (GSICS) and delves into the possibilities of using future SI-Traceable satellite (SITSat) data to pursue the goals of GSICS, namely, to ensure consistent accuracy among space-based observations worldwide for climate monitoring, weather forecasting, and environmental applications. The link to the article is

<http://gsics.atmos.umd.edu/bin/view/Development/Sitsat>.



*Figure. Planned SITSat missions: NASA’s Climate Absolute Radiance and Refractivity Observatory (CLARREO), the European Space Agency’s Traceable Radiometry Underpinning Terrestrial- and Helio-Studies (TRUTHS), and the China Meteorological Administration’s LIBRA.*

*(Manik Bali, CISESS, [manik.bali@noaa.gov](mailto:manik.bali@noaa.gov); Funding: JPSS PGRR)*

*(Maureen Cribb, CISESS, [mcribb@umd.edu](mailto:mcribb@umd.edu), Funding: CISESS Task I)*