

Weekly Report – October 31, 2025
Cooperative Institute for Satellite Earth System Studies (CISESS)
NOAA/NESDIS/STAR

Submitted by: Maureen Cribb
Email: mcribb@umd.edu
Phone: 301-405-9344

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TRAVEL AND MEETING REPORTS

Drone Flight Training and 3D Scanning at the UMD F3 Facility

On 23 October 2025, CISESS Scientist Guangyang Fang and CISESS interns Ian Way and Samuel Wiggins conducted a drone training and 3D scanning exercise at the [Fearless Flight Facility](#) at the University of Maryland. The goal was to train students in safe drone operation, mission planning, and image acquisition techniques for 3D reconstruction of the University of Maryland campus as part of the [Virtual Proving Ground and Training Center](#). The team practiced pre-flight checks, controlled maneuvers, and overlapping image capture patterns suitable for photogrammetry. The exercise also served as a hands-on introduction to FAA safety principles and flight data management. The collected data will support the development of realistic 3D environments for immersive geoscience and student training modules, advancing innovative visualization tools for Earth science.

Figure: Guangyang Fang with CISESS intern Ian Way (bottom right) conduct a drone flight training session at the Fearless Flight Facility, University of Maryland.



(Guangyang Fang, gfang@umd.edu, CISESS, Funding: GEO & STAR)

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TRAINING AND EDUCATION

Buchhaupt Presents at UMD's Department of Geographical Sciences Seminar Series

On 23 October 2025, CISESS Christopher Buchhaupt gave a talk titled “Advances in Ocean Remote Sensing Utilizing Sentinel-1 Synthetic Aperture Radar Altimetry Data” at UMD's Department of Geographical Sciences. Buchhaupt provided an overview of the observational capabilities of unfocused synthetic aperture radar altimetry for sea-level and sea-state retrievals and discussed how additional waveform parameters influence the estimation of significant wave height and sea surface height in current state-of-the-art processing baselines. He also summarized ongoing developments extending these methods to sea-ice-covered regions, highlighting recent findings and challenges related to signal interpretation over snow-covered sea-ice surfaces.



(Christopher Buchhaupt, CISESS, cbuchhau@umd.edu, Funding: Jason)

SOCIAL MEDIA AND BLOG POSTS

Hurricane Melissa: an Extraordinary Event of Devastating Beauty

Christopher Smith, CISESS Scientist and GOES-R Satellite Liaison for the NWS Weather Prediction Center and Ocean Prediction Center, shares GOES satellite imagery of the evolution of Hurricane Melissa, one of the most intense landfalling Atlantic hurricanes to date, in [Smith's latest blog post](#). The stunning animations and imagery derived from GOES satellite observations reveal features of this hurricane that have made it a historic event, with one of the lowest recorded central pressures, damagingly high sustained winds, dangerous storm surges, and extremely heavy rainfall.

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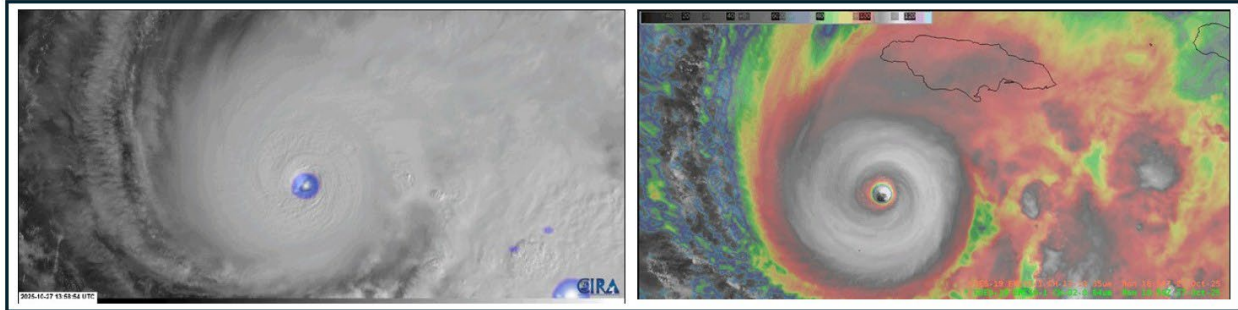


Figure: (Left image) Snapshot (27 October 2025 at ~13:59 UTC) of the Geostationary Lightning Mapper Group Extent Density (blue areas). Of note is the intense lightning activity in the vicinity of the eyewall. (Right image) Snapshot (27 October 2025 at ~18:40 UTC) of “Clean” Longwave Infrared Band 13 imagery on top of visible imagery, showing a large ring of cold cloud-top temperatures rotating around the eye (colder than -40C, with the red color representing temperatures of around -100C).

(Christopher Smith, CISESS, csmith70@umd.edu; Funding: GOES-R PGRR)

OTHER

SEED Grant Mid-Term Report: *Developing High Spatiotemporal Resolution Vegetation Datasets from Multi-Sensor Satellite Observations for Enhanced Ecological and Agricultural Monitoring*

During the first half of 2025, CISESS Scientist Yuan Zhou worked on [integrating multi-sensor satellite data to develop high spatiotemporal resolution vegetation datasets](#). A hybrid integration approach leveraging the temporal frequency of NOAA’s Visible Infrared Imaging Radiometer Suite (VIIRS) with the spatial granularity of the European Space Agency’s Sentinel-2 and USGS’s Landsat observations was implemented. Preliminary results demonstrate clear improvement in spatial fidelity while preserving daily temporal coverage, offering significant advantages in computational efficiency and operational viability. The final phase of the project is currently focused on model finalization, data production, and pilot applications, such as crop type classification, crop health monitoring, and drought impact assessment.

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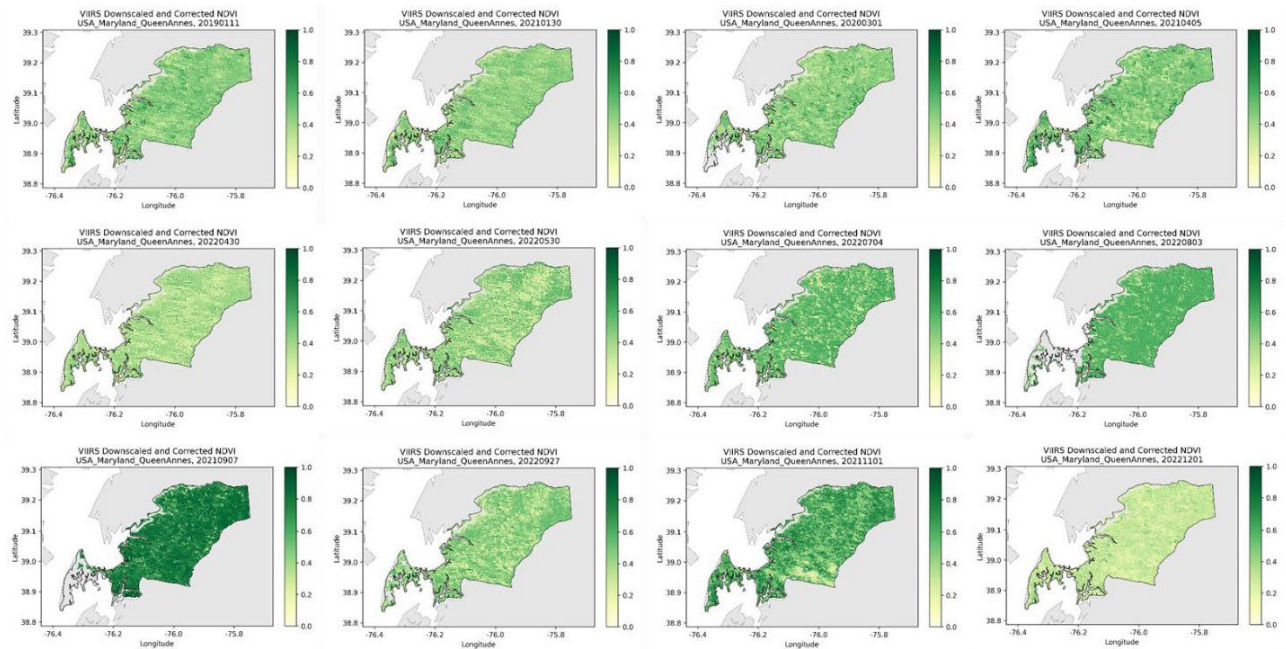


Figure: Examples of 20-m downscaled VIIRS Normalized Difference Vegetation Index time series maps (each map represents a month) for a whole year in Queen Anne's county in Maryland. This dataset has the potential to be a valuable tool for agricultural and environmental management.

(Yuan Zhou, CISESS, yuan.zhou@noaa.gov, Funding: STAR)

(Maureen Cribb, CISESS, mcribb@umd.edu, Funding: CISESS Task I)