

Weekly Report

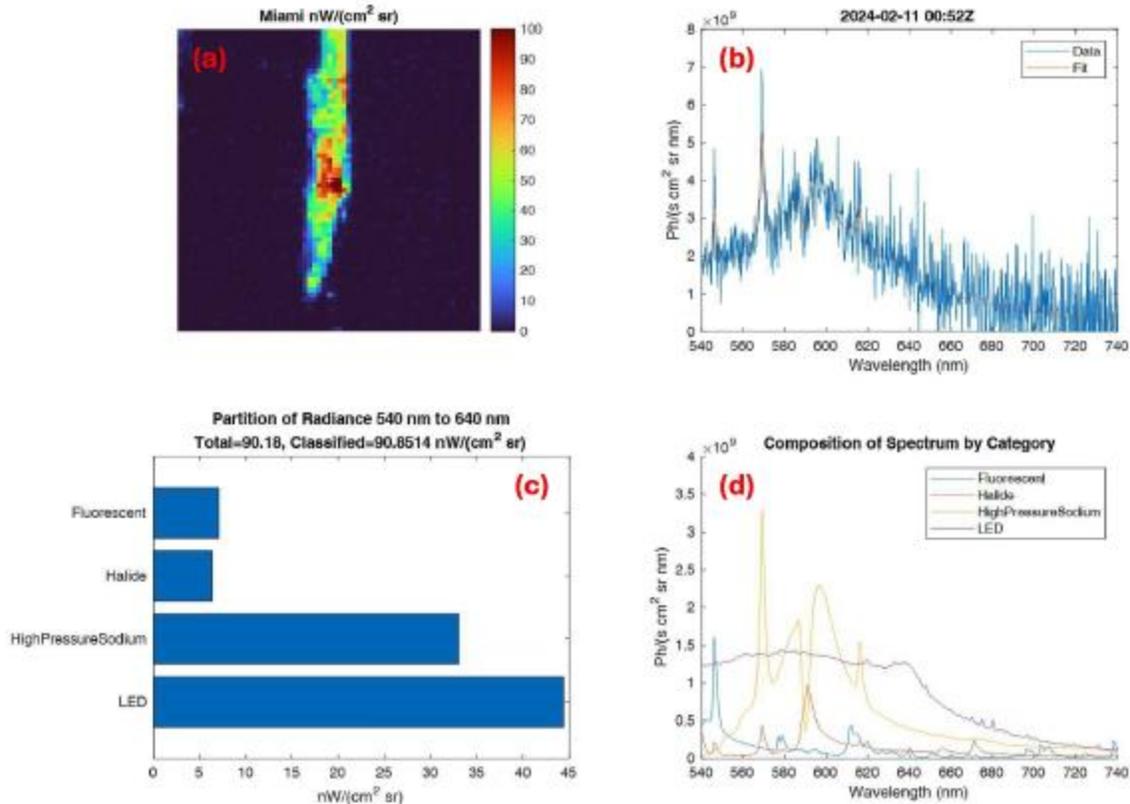
CIRA
STAR/NESDIS
National Oceanic and Atmospheric Administration (NOAA)

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Prepared by: CIRA and STAR contributors

Products and Applications

Publications (Citation: followed by a short Summary: (Why & so what), & detailed summary):

A [publication](#) in *Earth and Space Science* details the unanticipated capability of the National Aeronautics and Space Administration (NASA) Tropospheric Emissions Monitoring of Pollution (TEMPO) instrument to detect and spatially resolve nighttime city lights at hyperspectral resolution in the ultraviolet (293-494 nm) and visible (538-741 nm) spectra. The paper demonstrates detections of artificial lights, moonlight, lightning, aurora, and nightglow, verified against Day/Night Band nighttime imagery. The spectral information provides unique details on the properties of city lights (including different lighting “species” such as Light-Emitting Diodes (LED), high/low-pressure sodium, and metal halide), as well as characteristic emission lines for lightning and other emissions. The measurements also show a limited ability to detect clouds and surface features by way of reflected moonlight. The findings are notable as being the first known demonstration of a low-light detection capability from the geostationary platform. Given longstanding concerns about stray light contamination applicable to operating such a sensor in geostationary orbit, when the Sun or portions of the daylit Earth can serve as overwhelming contamination vis-a-vis the weak scene radiance, these results from TEMPO provide a critical assessment. Specifically, the fact that TEMPO exhibits a capability to detect city lights without any special provisions for stray light mitigation suggests that a future sensor that is indeed tailored to addressing these challenges would perform even better. These findings further motivate the pursuit of an operational capability that could one day (or, night?) provide forecasters with novel Day/Night Band equivalent low-light information at high temporal refresh rate and constant viewing geometry—revolutionizing our characterization and situational awareness of the nocturnal environment as a complement to conventional measurements. (POC: S. Miller, Steven.Miller@colostate.edu; D. Lindsey, Daniel.Lindsey@noaa.gov)

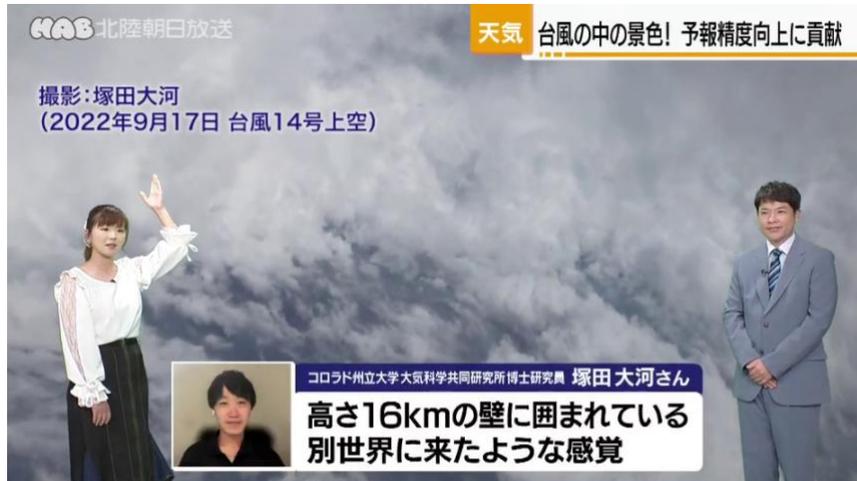


Above: Example of TEMPO imagery of the Miami metropolitan area (a), the TEMPO spectral data (b), pixels radiances broken down into 4 categories of light type (c) based on fitted components of pristine light “species” (d). From Carr et al., 2025.

Awards and Recognition

Media Interactions and Request

Taiga Tsukada did a Zoom interview with HAB (Hokuriku Asahi Broadcasting Co., Ltd.) News in Ishikawa, Japan, in connection with the aircraft observations conducted in Typhoon Neoguri (2025). In the interview, Tsukada shared his experience of joining an eye-penetrating aircraft mission into Category-5 Typhoon Nanmadol (2022). In Japan, research aircraft observations have been conducted about once a year since 2017. These missions have been conducted under the T-PARCII project, led by Nagoya University. However, this year, they are being carried out jointly with JMA/MRI. Starting next year, JMA/MRI will take the lead. In the program, Tsukada spoke about the views seen from aircraft (as described in the attached photo, “it felt like being transported to another world enclosed by a 16-km-high wall”), the U.S.-led tropical cyclone aircraft observations, and his motivation to provide feedback to typhoon research in Japan. (POC: T. Tsukada, taiga.tsukada@colostate.edu)



His comments were featured along with a video of the eye of Typhoon Nanmadol (2022), recorded by Tsukada from inside the aircraft.

Blog Posts and Social Media

Travel, Workshops, Conferences, and Meeting Reports

GINA Director Visits CIRA: On 26 September 2025, Jen Delamere, Director of the Geographic Information Network of Alaska (GINA) visited CIRA for the first time in Fort Collins, CO. After a brief tour of CIRA, an informal meeting was held to discuss current, ongoing and potential future research collaborations between CIRA and GINA. During the meeting, Jen Delamere said that GINA could not fulfill its mission without all of the great research being done at CIRA and other NOAA Cooperative Institutes. (POCs: Curtis Seaman, Yoo-Jeong Noh, Jorel Torres, Steve Miller and Renate Brummer, CIRA; Jen Delamere, GINA; curtis.seaman@colostate.edu; yoo-jeong.noh@colostate.edu; jorel.torres@colostate.edu; steven.miller@colostate.edu; renate.brummer@colostate.edu; jsdelamere@alaska.edu)

Training and Education activities

VISIT - JPSS Blog: J. Torres published a new JPSS blog titled ***Typhoon Ragasa*** that highlights the tropical cyclone that impacted the Philippines and China in late September 2025. The Advected Layer Precipitable Water (ALPW), the VIIRS 11.45um (I-5 Band), and the GOES GeoColor products were showcased throughout the blog. Users can access the blog below.

<https://rammb2.cira.colostate.edu/visit-blog/2025/09/25/typhoon-ragasa/>

(POCs: Jorel Torres, CIRA; jorel.torres@colostate.edu) Funding: JPSS.

New JPSS Quick Guide! The ***VIIRS GeoColor - Quick Guide*** has now been published online for NWS forecasters to access via CIRA VISIT webpage. The development of the guide was a collaboration between CIRA and GINA. Users can access the reference material below.

<https://rammb2.cira.colostate.edu/guides/viirs-geocolor/>

(POCs: Jorel Torres, Curtis Seaman, Steve Miller, Erin Sanders, Bernie Connell, CIRA; Bill Line,

NOAA/NESDIS; Carl Dierking, GINA; jorel.torres@colostate.edu) Funding: JPSS.

Future Meetings and Events (dates, meeting/event, location, staff involved)

Other