Weekly Report – July 31, 2026

Cooperative Institute for Satellite Earth System Studies (CISESS)

NOAA/NESDIS/STAR

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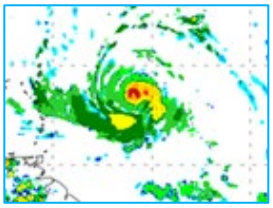
SOCIAL MEDIA AND BLOG POSTS

The CISESS Website is Featuring Articles Based on Our Recent Annual Reports

The CISESS website now has four new articles based on the recent results of some of our most experienced CISESS scientists:

- Xiaoyang Zhang (SDSU) and his team were able to increase the number of fires detected and emissions included in GBBEPx has recently upgraded the NOAA Global Biomass Burning Emissions Product eXtended (GBBEPx) by adding Sentinel-3's mid-morning data.

- Hyelim Yoo (UMD) at NCEI and her NOAA Partner Chris Paver have been able to develop automated archiving software for the major types of ocean data collected by NOAA ships.
- Jifu Yin (UMD) has produced significant upgrades to NOAA Soil Moisture Operational Product System products and has integrated it with the Land Surface Data Assimilation for the Unified Forecast System this year.
- Isaac Moradi (UMD/CUNY/GMU) has tested data assimilation of TROPICS CubeSat radiances into the NOAA operational Hurricane Analysis and Forecast System (HAFS) and found forecast improvements at longer forecast lead times and in complex scenarios.



(Debra Baker, CISESS, drb@umd.edu, Funding: Task I)

Hazy Skies Over Eastern U.S.

The jet stream, meandering deep into the U.S. in mid-July, carried smoke from wildfires burning in western-central Canada and Minnesota to points east, including the mid-Atlantic. In his latest blog post, CISESS Scientist Christopher Smith, the GOES-R Satellite Liaison to the National Weather Service's Weather Prediction Center and Ocean Prediction Center, presents output from a number of visualization tools, illustrating the track taken by this smoke and instances of storms developing as a result of the differential heating created by the smoke.

(Also published on the Satellite Liaison Blog, along with other blog posts of interest by other contributors.)

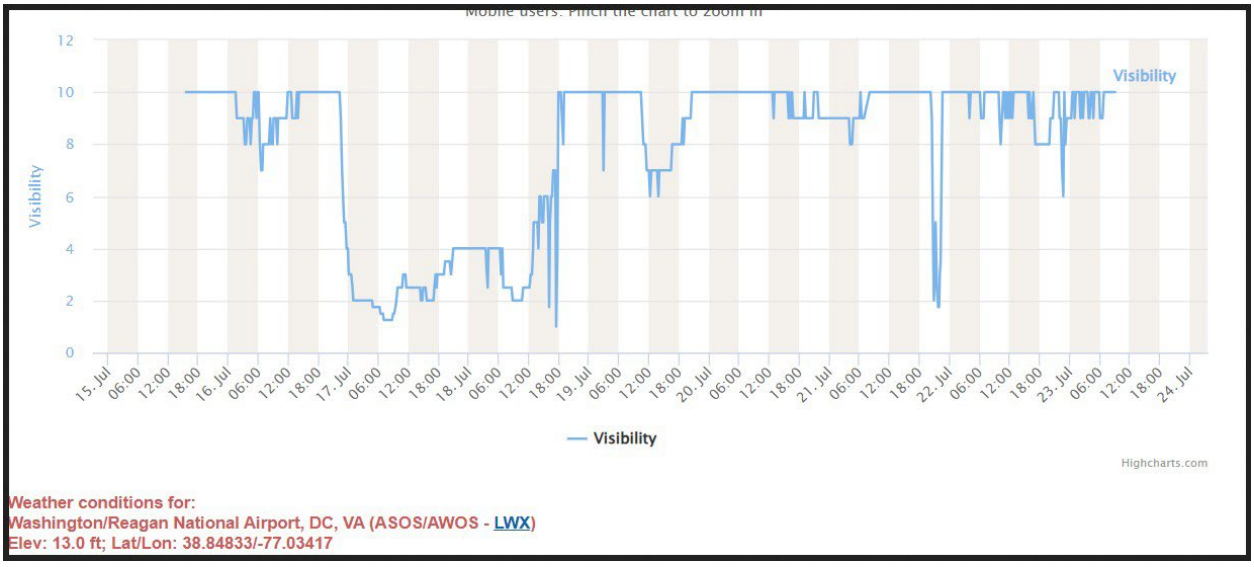


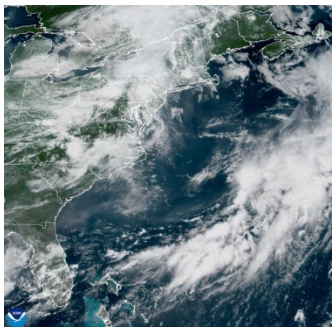
Figure: Visibility graph (unit: miles) from 15 July to 24 July 2026 showing measurements made at Ronald Reagan Washington National Airport. Noticeable is the sudden drop in visibility on 17 July. "Unhealthy" to "Very Unhealthy" air quality alerts were issued during this period of low visibility in the Washington, D.C. metropolitan area.

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

MEDIA INTERACTIONS AND REQUESTS

More on the GOES-East Outage

ESSIC Director and CISESS Executive Director Lars Peter Riishojgaard provided some perspective on the recent GOES-East satellite outage in an interview with the Washington, D.C. metro area's news organization, WTOP. For reasons currently unknown, this satellite, which provides snapshots of various aspects of the atmosphere over the eastern half of the U.S., the Atlantic Ocean, the Caribbean, and parts of South America every ten minutes, went into safe-hold mode on 15 July, going silent. This left weather forecasters in the dark until the satellite returned to operations a day later, highlighting how vital these satellites are for monitoring the atmosphere and making reliable, timely weather forecasts.



(Lars Peter Riishojgaard, CISESS, lriishoj@umd.edu, Funding: Task I & Admin)

PUBLICATIONS

The NDAAC Looking Ahead

Citation: Petropavlovskikh, Irina, Martine De Mazière, Anne M. Thompson, **Jeannette D. Wild**, James W. Hannigan, Henry B. Selkirk, Reem A. Hannun, Wolfgang Steinbrecht, Jean-Christopher Lambert, Roeland Van Malderen, Elizabeth Asher, Raul R. Cordero, Sophie Godin-Beekmann, Daan Hubert, Sergey Khaykin, Karin Kreher, Thierry Leblanc, Emmanuel Mahieu, Eliane Maillard Barras, Glen McConville, Gerald Nedoluha, Ivan Ortega, Alberto Redondas Marrero, Gunther Seckmeyer, Ryan M. Stauffer, Sarah A. Strode, Kim Strong, Takafumi Sugita, Michel Van Roozendael, Voltaire Velazco, Corinne Vigouroux, and Baerbel Vogel, 2026: Overview: The Network for the Detection of Atmospheric Composition Change at 35 years: achievements and future strategy. *Atmos. Chem. Phys.*, **26**, 8637–8675, https://doi.org/10.5194/acp-26-8637-2026.

Summary: The Network for Detection of Atmospheric Composition Change (NDACC) was established in 1991, expanding from the original Network for Detection of Stratospheric Change to include ground-based measurements of atmospheric chemical species and parameters in the troposphere and the mesosphere. De Mazière et al. (2018) provides a history of this global observing system, noting that NDACC must continuously update its capabilities to meet evolving data needs. NDACC achievements since then and steps to take next to ensure continued acquisition and management of high-quality data are the focus of a paper by CISESS Scientist Jeannette Wild (now retired) and colleagues published in the journal *Atmospheric Chemistry and Physics*. Based on their detailed review of current challenges facing this network, they offer a three-pronged strategy for the future: protecting existing stations and data streams; promoting greater usage of NDACC data; and expanding NDACC's coverage geographically and in the species-parameter space.

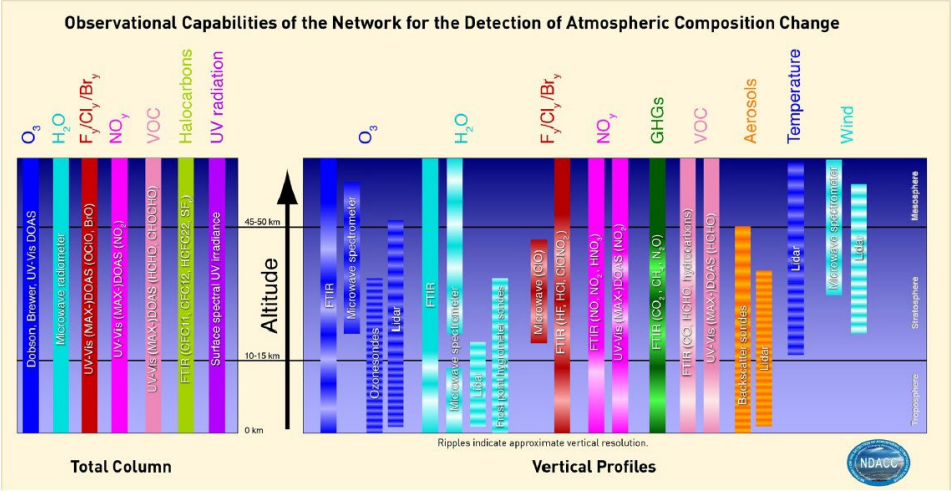


Figure: Chart of NDACC observational capabilities color-coded by observed atmospheric species and parameters with chemical formulas listed at the top. The altitude range of profiles illustrates the approximate vertical resolution associated with each measurement technique (light horizontal stripes on vertical columns). The two horizontal black lines show the approximate levels of the tropopause and the stratopause.

(Jeannette D. Wild, CISESS, retired)

The Impact of Commercial ROs on Hurricane Forecasts

Citation: Miller, William J., Yong Chen, Shu-Peng Ho, and **Xi Shao**, 2026: How does assimilating a large commercial GNSS RO dataset impact HAFS hurricane forecasts? An evaluation in support of the ROMEX experiment. *Atmos. Meas. Tech*., **19**, 4833–4851, https://doi.org/10.5194/amt-19-4833-2026.

Summary: Global Navigation Satellite System radio occultation (RO) data assimilation (DA) improves tropical cyclone (TC) intensity forecasts, but does increasing the number of RO observations in the DA process lead to even more, if any, improvement? That is the question tackled by CISESS Scientists William Miller and Xi Shao, along with NOAA colleagues, in their paper published in the journal *Atmospheric Measurement Techniques*. Their observing system experiment (OSE) study looks into the impact of assimilating the huge amount of commercial data available from the Radio Occultation Modeling Experiment (ROMEX) on 84 Hurricane Analysis and Forecast System – configuration A (HAFS-A) model forecasts of four 2022 Atlantic hurricanes, namely, Earl, Fiona, Ian, and Julia. This amounts to assimilation of ~20,000 more daily global RO profiles in addition to government-owned RO profiles currently operationally assimilated. The National Hurricane Center's Best Track dataset was used to verify HAFS-A TC track and intensity forecasts. Overall, assimilation of ROMEX data yielded (1) a ~5–15% relative skill improvement in minimum central sea-level pressure (P_{min}) absolute intensity forecast errors in short-range forecasts, (2) almost eliminates the ~2–3 hPa P_{min} overintensification bias in medium-to-long range forecasts, and (3) reduces errors in HAFS-A temperature and water vapor in the middle-to-upper troposphere. This overall improvement was most evident for the Hurricane Fiona case, which the authors examine in more detail, gaining more insight into the impact of ROMEX data.

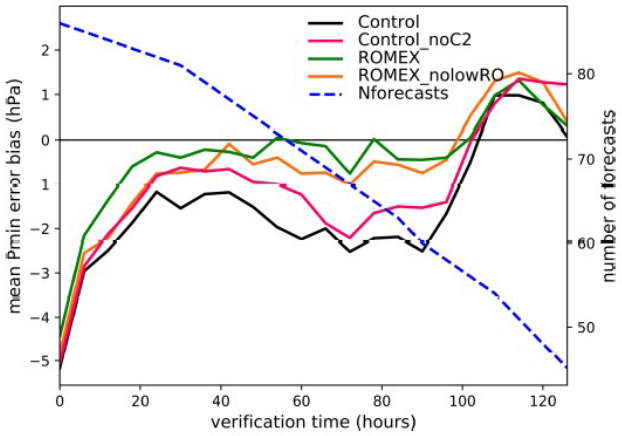


Figure: Forecast time series of TC P_{min} mean bias (hPa) for the Control (black line) and ROMEX (green line) experiments, along with two other experiments (see paper for details). The dashed blue line shows the number of forecasts used for verification.

(William Miller, CISESS, wmiller1@umd.edu, Funding: COSMIC2; Xi Shao, CISESS, xshao@umd.edu, Funding: COSMIC2, JSTAR & STAR)

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