Weekly Report – March 29, 2024

Cooperative Institute for Satellite Earth System Studies (CISESS)

NOAA/NESDIS/STAR

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TRAVEL AND MEETING REPORTS

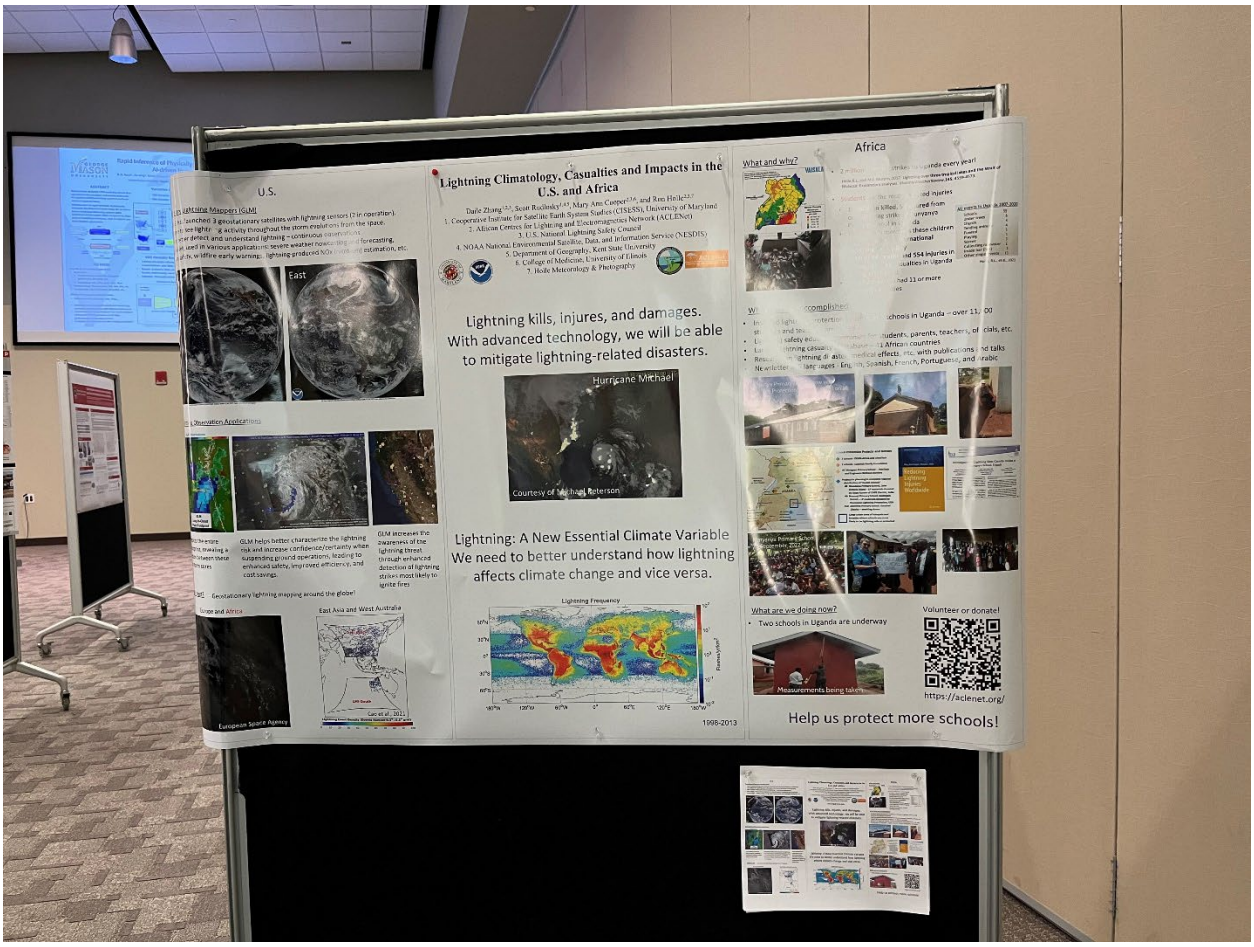
CISESS Scientist Fangfang Yu Helped Organize the Annual GSICS Meeting

Fangfang Yu, the radiometric calibration lead in the UMD/CISESS ABI Cal/Val research team, attended the 2024 Global Space-based Inter-Calibration System (GSICS) annual meeting and the GSICS Executive Panel (EP) meeting, which were hosted by EUMETSAT in Darmstadt, Germany, from 11-15 March 2024. NOAA is a core operational space agency member in the GSICS community. As the chair of the GSICS Research Working Group (GRWG), Fangfang led the preparation and organization of this annual meeting, delivered the GRWG annual report, and chaired the plenary session on Agency Reports in the meeting. During this annual meeting, she also presented two talks, one in the Visible and Near-InfraRed (VNIR) breakout session titled "Summary of Alternative Applications of Lunar Images from LCWS4", and the other one in the Infrared (IR) breakout session titled "GOES ABI IR Midnight Calibration Variations Detected by GEO-GEO". She also briefed the GSICS EP members on the GRWG activities in the EP meeting, which was held right after the annual meeting on 15 March 2024. After that, Fangfang successfully completed her three-year term of the GRWG chair.

***Figure**: Photo of attendees of 2024 GSICS annual meeting hosted by EUMETSAT in Darmstadt, Germany, from 11-15 March 2024.*

On 16 March 2024, Fangfang attended the side-meeting on ABI and FCI calibration collaboration, which she helped to organize with the NOAA GOES ABI and EUMETSAT MTG FCI Cal/Val scientists. Vladimir Kondratovich, the UMD/CISESS ABI INR lead also remotely attended the side-meeting and participated in the discussion. This side-meeting helped create better understanding of data quality for the instruments operated by two different agencies. *(Fangfang Yu, CISESS, fangfang.yu@noaa.gov, Funding: GOES-R PGRR)*

CISESS Scientist Daile Zhang Presented a Poster at the UCAR Africa Initiative Workshop: CISESS scientist Daile Zhang attended and presented a poster at the UCAR Africa Initiative Workshop on March 21-22, 2024 in Boulder, CO. Daile presented a comparison of the lightning climatology, casualties, and impacts in the U.S. and Africa. The workshop was aimed at addressing the following questions: 1) what are the urgent environmental questions/issues in Africa; 2) what are the obstacles when addressing these issues? And what resources/support are needed to overcome these obstacles? A concept paper addressing these questions is expected after the workshop. Her poster is shown in the photo below.



(Daile Zhang, CISESS, dlzhang@umd.edu; Funding: GOES-R AWG, GOES-R PGRR, GEO-XO.)

PUBLICATIONS

Global Hot Spots for Agricultural Flash Droughts
Lovino, Miguel A.; M. Josefina Pierrestegui, Omar V. Müller, Gabriela V. Müller and **Ernesto H. Berbery**, 2024: The prevalent life cycle of agricultural flash droughts. *npj Clim Atmos Sci* **7**, 73, https://doi.org/10.1038/s41612-024-00618-0.
In their recent publication, CISESS Scientist E. Hugo Berbery and his co-authors examine agricultural flash droughts worldwide and reveals their characteristics and life cycle. The study introduces a flash drought indicator based on soil water availability, which can show rapid depletion rates of soil moisture in the root zone and their impact on vegetation health. Their findings reveal that agricultural flash droughts occur more frequently during the critical growth periods of crops and exhibit a similar life cycle regardless of the climatic regime. A precipitation deficit is the primary cause of the rapid soil moisture depletion, but evapotranspiration also plays a significant role. In an energy-limited environment, evapotranspiration increases rapidly before the onset and decreases rapidly during the intensification period as the system becomes

water-limited. After the intensification period, most crops experience water stress, leading to lower yields. Global hot spots for agricultural flash droughts are shown in the figure below.

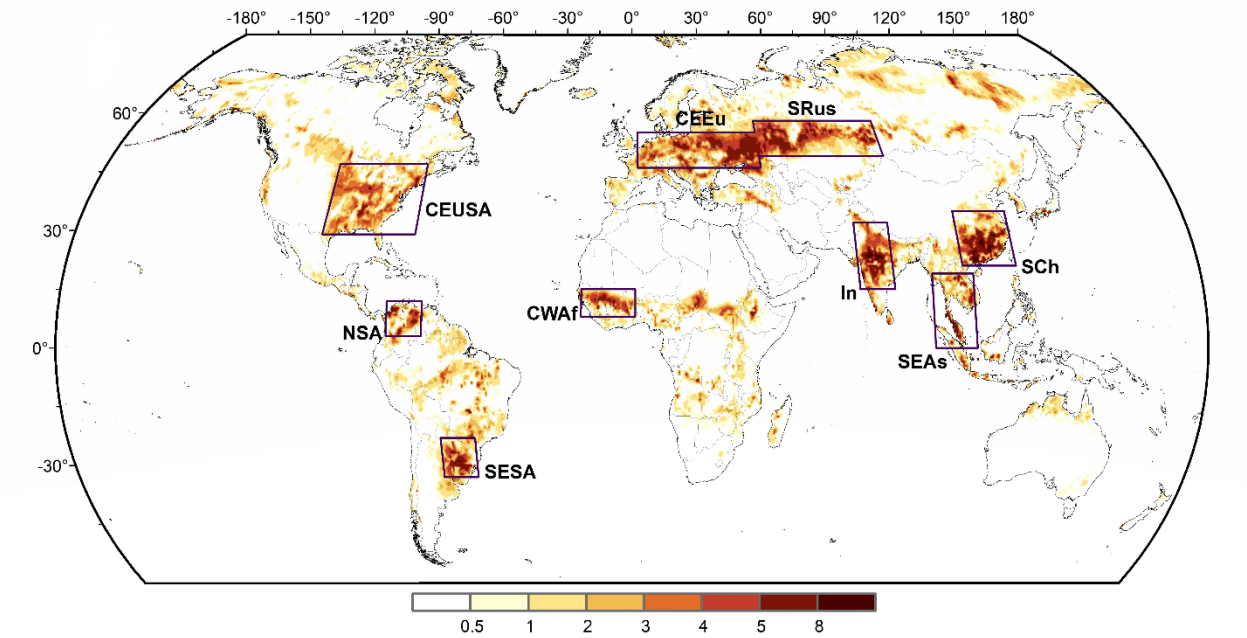


***Figure**: Annual frequency of agricultural flash drought events (number of events per decade) from 1960–2020. Hotspots are highlighted with boxes, including northern South America (NSA), central-eastern United States of America (CEUSA), central-eastern Europe (CEEu) and southern Russia (SRus), southern China (SCh), southeastern South America (SESA), central-western Africa (CWAf), India (In), and southeastern Asia (SEAs). (Hugo Berbery, CISESS, berbery@umd.edu, Funding: Task I)*