

Weekly Report – October 23, 2026
Cooperative Institute for Satellite Earth System Studies (CISESS)
NOAA/NESDIS/STAR

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TRAINING AND EDUCATION

CISESS XR Group Brings Immersive Atmospheric Science and Lightning Safety to the Spooky Mad Science Expo

On 17 October 2026, CISESS Scientists Guangyang Fang and Joseph Patton and CISESS student interns Samuel Wiggins, Ian Way, Abdur-Rahman Shakir, and Abdul Hadi hosted a STEM outreach booth representing UMD/ESSIC/CISESS at the [11th Annual Spooky Mad Science Expo](#). Held at the Patrick Henry Recreation Center in Alexandria, Virginia, the event brought children and families together for hands-on science activities and demonstrations.

The “Virtual Reality & Lightning Science with UMD” booth featured updated Virtual Proving Ground and Training Center and Atmosphere Augmented Reality applications. Developed by the [CISESS Extended Reality \(XR\) group](#), these tools use immersive, interactive environments to make atmospheric science concepts more accessible and engaging. The demonstrations introduced visitors to virtual and augmented reality as complementary approaches to exploring weather and Earth science.

The student interns guided visitors through the applications, helped participants use the equipment, and answered questions about their experiences. Alongside the immersive demonstrations, Patton presented an interactive lightning safety game, engaging children and families in learning practical ways to stay safe during thunderstorms.

This marked the fourth consecutive year that the CISESS XR Group participated in the Spooky Mad Science Expo. Organized by Chrysalis Development Group, the annual event combines Halloween festivities with STEM education, connecting young learners with scientists, engineers, and educators. The team’s continued participation highlights its commitment to bringing atmospheric science research and lightning safety education into the community.

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Figure: The CISESS outreach team at the 11th Annual Spooky Mad Science Expo in Alexandria, VA on 17 October 2026. From left to right: Guangyang Fang, Ian Way, Abdur-Rahman Shakir, Samuel Wiggins, Abdul Hadi, and Joseph Patton.

(Guangyang Fang, CISESS, gfang@umd.edu, Funding: GEO-XO & Seed Grant; Joseph Patton, CISESS, jpatton4@umd.edu, Funding: GEO-XO, GOES-R AWG, GOES-R PGRR & IIJA)

SOCIAL MEDIA AND BLOG POSTS

The Quick Rise and Fall of Hurricane Isaias

From MetOp-B/Advanced Scatterometer and RADARSAT Constellation Mission-3/Synthetic Aperture Radar retrievals showing winds of up to 120 mph to the NESDIS Ensemble Tropical Rainfall Potential product forecasting rainfall amounts of 8-12"+, Hurricane Isaias left its mark on the western Florida Panhandle and southern Alabama. CISESS Scientist Christopher Smith, the GOES-R Satellite Liaison to the National Weather Service's (NWS) Weather Prediction Center (WPC) and Ocean and Tsunami Center (OTC), highlights the rapid intensification on 08 October and subsequent fast extratropical transition on 10 October of Hurricane Isaias in [his latest blog post](#). Of particular use was the ProxyVis product, a specialized multispectral imagery

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product that serves as a proxy for daytime visible satellite imagery at night, enabling nighttime monitoring of the storm's evolution.

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

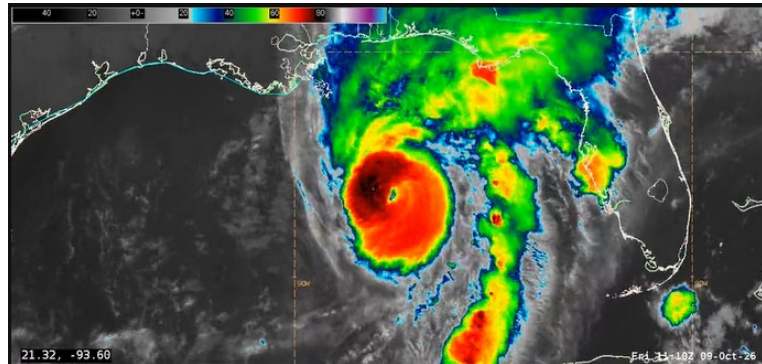


Figure: GOES-East Full Disk infrared imagery from 1110 UTC 09 October 2026.

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

PUBLICATIONS

Two Decades of Global Fire Season Patterns Revealed by Satellites

Citation: Li, Ruixuan, Xiaoyang Zhang, Fangjun Li, Yongchang Ye, Shuai An, and Aihua Zhu, 2026: Global ecoregion-scale variations in wildfire seasonality revealed by daily satellite data. *Fire Ecol.*, **23**, 143, <https://doi.org/10.1186/s42408-026-00541-0>.

Summary: Wildfires over the past couple of decades have increased in frequency and extent around the world, causing extensive ecological harm across diverse regions. Looking into fire seasonality from the satellite point of view can unveil long-term fire regime patterns. This is the focus of a study by CISESS Scientists Ruixuan Li, Xiaoyang Zhang, Fangjun Li, and Yongchang Ye and colleagues who used satellite-derived daily fire radiative power time series from the Global Biomass Burning Emissions Product-Extended dataset covering the period 2001–2022. This product is derived from Terra/Aqua Moderate Resolution Imaging Spectroradiometer active fire observations at a $0.25^\circ \times 0.3125^\circ$ spatial resolution. Their analysis involved 845 terrestrial ecosystems from the RESOLVE Ecoregion 2017 classification database, where they calculated metrics like the timing, duration, and intensity of fires in each ecoregion. They report that over the 22-year period considered, 647 ecoregions experienced at least one fire season in each year and that 20 ecologically diverse regions had two distinct fire seasons per year. Most fire seasons lasted between 30 and 120 days, with noticeable regional differences. Three distinctive shift patterns in fire seasonality were identified: (1) 133 ecoregions had more intense fire seasons without changes in duration of the fire season, (2) 34 ecoregions had less intense fire seasons that lasted longer in duration, and (3) 29 ecoregions had more intense fire seasons that lasted longer in duration, an ecologically consequential pattern. The authors note limitations of their study, mainly resulting from the spatial and temporal detail of the input data, assumptions made in the analysis, and the lack of clear explanations linking changes in fire seasons to their specific causes, all of which the authors will tackle in future work.

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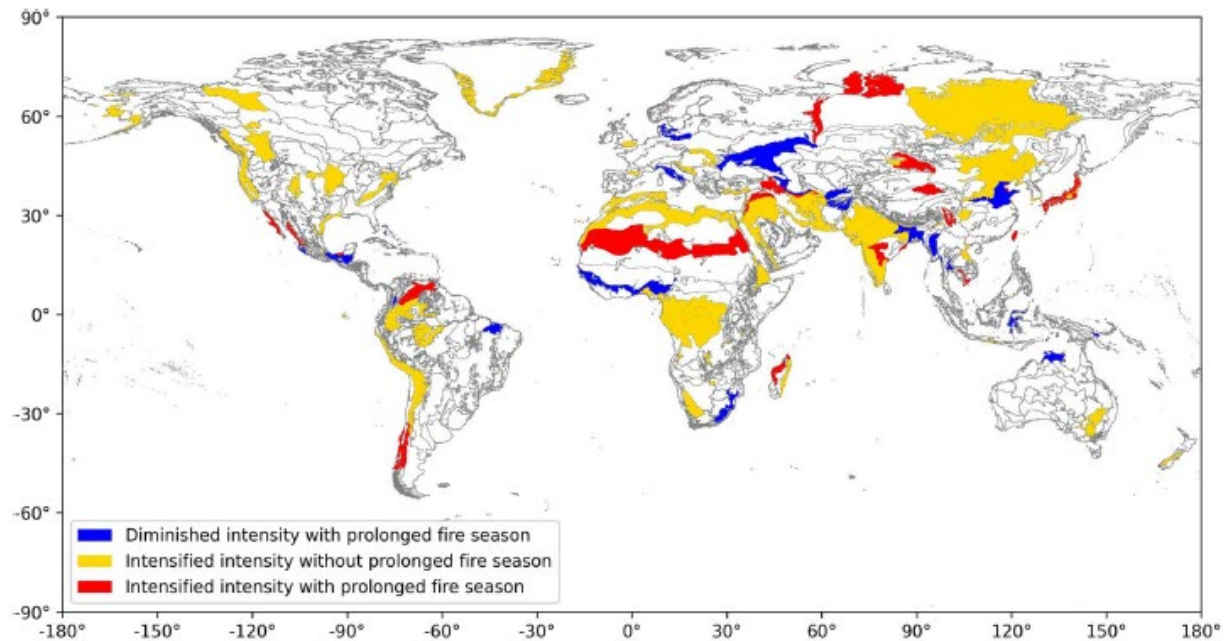


Figure: Three notable shift patterns in fire seasonality for the primary fire season.

(Ruixuan Li, CISESS, ruixuan.li@sdstate.edu, Funding: JPSS PGRR; Xiaoyang Zhang, CISESS, xiaoyang.zhang@sdstate.edu, Funding: JPSS PGRR; Fangjun Li, CISESS, fangjun.li@sdstate.edu, Funding: OCS; Yongchang Ye, CISESS, yongchang.ye@sdstate.edu, Funding: JPSS PGRR)

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