Weekly Report

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

Submitted by: Shivon Costin
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Prepared by: CIRA and STAR contributors

Products and Applications

New Products on SLIDER: As part of the Advanced Concepts Enabling Situational and Hazards Awareness via Imagery (ACES-HAI) project at CIRA, we have been developing advanced variations of our flagship *GeoColor* product, including *GeoProxy* (a blend of *GeoColor* with CIRA's ProxyVis to highlight maritime low clouds at night), *GeoDEBRA* (a blend of *GeoColor* with CIRA's DEBRA dust detection algorithm to improve dust detection), and *GeoSST* (a blend of *GeoColor* with NOAA's Advanced Clear Sky Processor for Oceans [ACSPO] sea surface temperature [SST] retrieval product). The newest of these is *GeoFire*: a blend of *GeoColor* with the Fire Temperature RGB. *GeoFire* is now available from GOES-16, GOES-18, and Himawari-9 (Full Disk, CONUS and PACUS sectors). An example of *GeoFire* is shown in the figure below. In addition, hardware upgrades have made it possible to produce the full suite of Advanced *GeoColor* products for the GOES-16/18 Mesoscale sectors for the first time on SLIDER (https://rammb-slider.cira.colostate.edu/). On older hardware, the full suite of Mesoscale products took longer than 30 seconds to generate - not fast enough to handle the temporal refresh of new data arriving. Now, on new hardware, these same products are generated in 14-17 seconds, more than a factor of two reduction in processing time, reducing latency - a key component of the operational use of Mesoscale products. (POC: C. Seaman, N. Tourville, Z. Amundson, A. Tomar and K. Micke, CIRA; curtis.seaman@colostate.edu; natalie.tourville@colostate.edu; zayd.amundson@colostate.edu; aniket.tomar@colostate.edu; kevin.micke@rams.colostate.edu) Funding: GOES-R

Figure: *GOES-18* GeoFire *image of the massive wildfire that resulted in the rapid evacuation of Jasper National Park in Alberta, Canada (20:00 UTC, 23 July 2024).*

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

Awards and Recognition

Travel, Workshops, Conferences, and Meeting Reports

Front Range Tropical Cyclone Workshop: The Summer 2024 Front Range Tropical Cyclone Workshop, organized by C. Slocum and S. Costin, took place on 18 July at the Colorado State University in Fort Collins, CO. This two-decade-old workshop allows researchers an opportunity to share ideas and solicit feedback from others interested in tropical meteorology, specifically tropical cyclones. This summer's workshop brought together nearly fifty researchers from Cooperative Institute for Research in the Atmosphere, Colorado State University, National Center for Atmospheric Research, Cooperative Institute for Research in Environmental Sciences, University of Colorado at Boulder, the Naval Postgraduate School, NOAA Atlantic Oceanographic & Meteorological Laboratory Hurricane Research Division, and University at Albany. Members of the STAR tropical cyclone science team and CIRA tropical cyclone group participated and presented.

(C. Slocum, STAR, Christopher.Slocum@noaa.gov, 970-491-2409; Funding: PDRA; Previously submitted to SOCD)

Presentation at the WMO Webinar on Machine Learning/Artificial Intelligence (ML/AI) in Weather Prediction: M. DeMaria gave an invited presentation on 18 July at the WMO webinar on ML/AI in weather prediction. The presentation described recent results from an evaluation of tropical cyclone track and intensity forecasts from four AI Weather Prediction models that are being run by the CIRA AI group. Results showed that the AI models had track forecasts as good as or better than the most reliable operational dynamical weather prediction models, but had intensity forecasts worse than even the simplest statistical intensity models. The webinar had about 300 attendees, primarily from Region IV, but with some participants from every WMO region. (M. DeMaria, CIRA. Mark.DeMaria@colostate.edu, 970-491-8607; Funding: HFIP/STI).

Training and Education activities

JPSS teletraining this week: On 24 July 2024, J. Torres led a *VIIRS Active Fires* teletraining session; 1 forecaster from NWS WFO - Pueblo, CO, attended the session. (J. Torres, CIRA, Jorel.Torres@colostate.edu), Funding: JPSS.

New Satellite Liaison Blog Post: Bill Line published a blog post titled "July 2024 Wildfire Smoke". The post shares GOES and VIIRS Imagery of wildfire smoke that blanketed the central US in July, and discusses how satellite imagery was used by forecasters. See Figure below. The link to the post can be found here. (POC: B. Line, SMCD/APDB, bill.line@noaa.gov) Funding: PDRA and JSTAR (submitted to SMCD report)

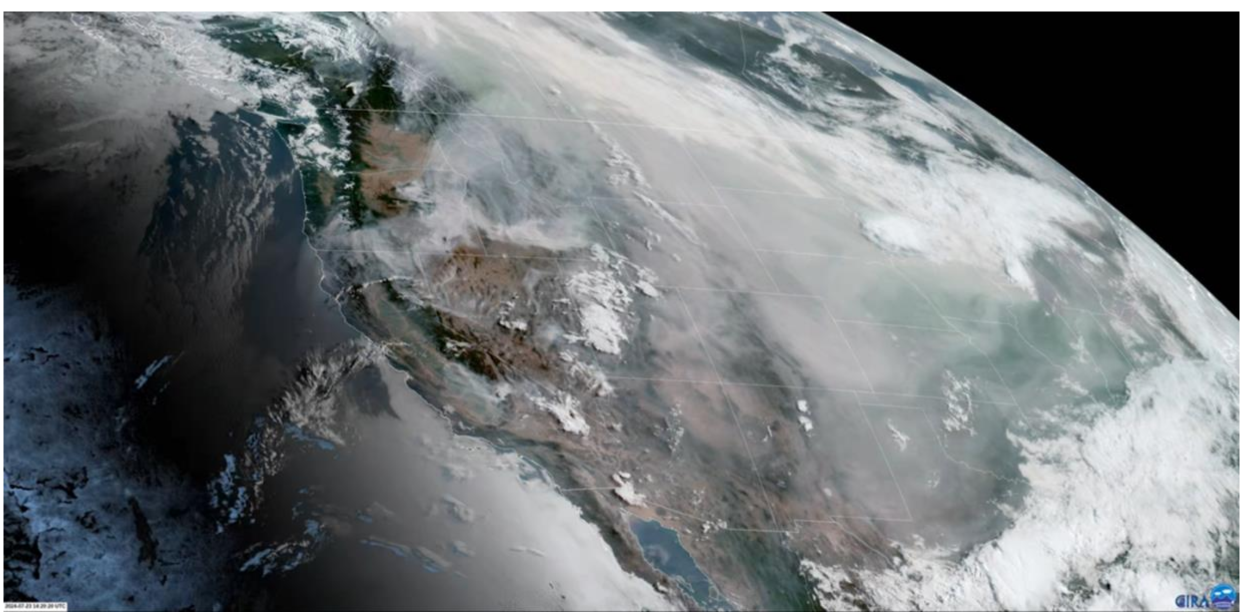


Figure*: GOES-West Geocolor imagery reveals widespread smoke during the morning of July 23. Geocolor imagery was leveraged by forecasters to track the wildfire smoke during the day.*

VISITORS from the Colombian Aerospace Force: CIRA hosted two visitors from the Colombian Aerospace Force on July 23-25. They visited CIRA to learn more about the imagery, products, and models particularly ones that they can use to improve their forecast processes. They met with trainers, developers, and researchers to hear about Red Green Blue Image Composites, Cloud Products and Projects, AI and ML applications, and participated in the daily weather briefings. (B. Connell, Bernie.Connell@colostate.edu, E. Sanders, D. Bikos, J. Torres, M. Rogers, S. Miller, K. Musgrave, M. DeMaria, G. Chirokova, C. Seaman, K. Hilburn, Y-J Noh, J. Forsythe, J. Apke, J. Haynes, K. Haynes, and Z. Amundsun (all CIRA) Funding: GOES-R and JPSS).

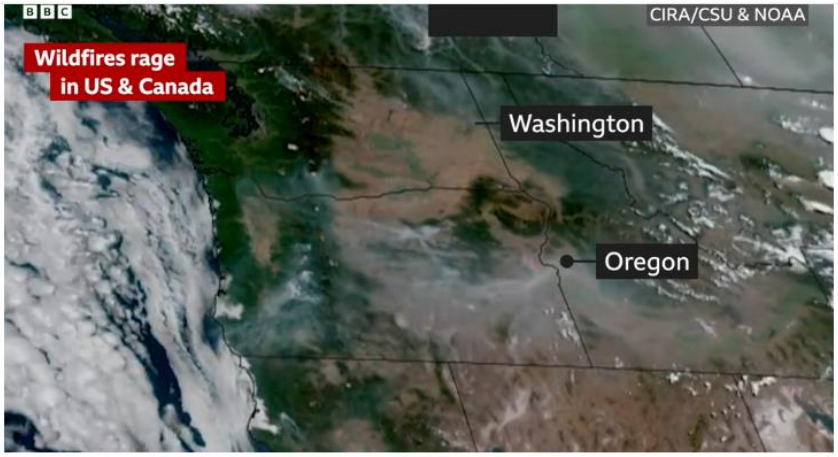
AIWP Training at UIFCW: Jacob Radford and Jebb Stewart were invited to do a training session on running AI weather prediction (AIWP) models at the Unifying Innovations in Forecasting Capabilities Workshop (UIFCW) in Jackson, MS. The training gave a high-level overview on the field of AIWP and then showed participants how to run their own AIWP model on Google Colab. The session was highly successful, with most participants able to produce 1° GraphCast and 0.25° FourCastNetv2 forecasts by the end. The notebook, which is available at https://github.com/NOAA-GSL/ai-notebooks, will continue to be developed and refined to increase accessibility to AIWP models. (POC: J. Radford and J. Stewart, CIRA and NOAA-GSL; Jacob.radford@noaa.gov; jebb.q.stewart@noaa.gov)

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

Other

CIRA Imagery Featured in Jasper Fire Coverage: A devastating wildfire tore through the town of Jasper in Alberta, Canada. Satellite visuals created by the Imagery Production Team made available in CIRA's Satellite Library were used in the media during the coverage. More information and links can be found below. (POC: D. Smith, dakota.smith@colostate.edu K. Erickson, kim.erickson@colostate.edu, J. Reiter, josh.reiter@colostate.edu, CIRA) Funding: GOES-R.

BBC News: "Famous Rockies resort of Jasper on fire as thousands flee Famous Rockies resort of Jasper on fire as thousands flee". https://www.bbc.com/news/articles/cgerpdwxjd9o



Watch: Wildfires are burning across US and Canada

NOAA/NESDIS: “Wildfires Rage in the Pacific Northwest”.
https://www.nesdis.noaa.gov/news/wildfires-rage-the-pacific-northwest

Space.com: “Powerful wildfires devastating Canada captured in satellite imagery”.
https://www.space.com/jasper-wildfire-national-park-satellite-images

The Weather Network: “How does Canada’s 2024 wildfire season so far compare to historic 2023”.
https://www.youtube.com/watch?v=u1xHWSVE0h4&ab_channel=TheWeatherNetwork;
https://www.youtube.com/watch?v=u1xHWSVE0h4&ab_channel=TheWeatherNetwork

The Mirror: “US wildfires visible from space as ferocious fumes of smoke seen coast-to-coast”.
https://www.themirror.com/news/health/wildfires-visible-space-ferocious-fumes-614913