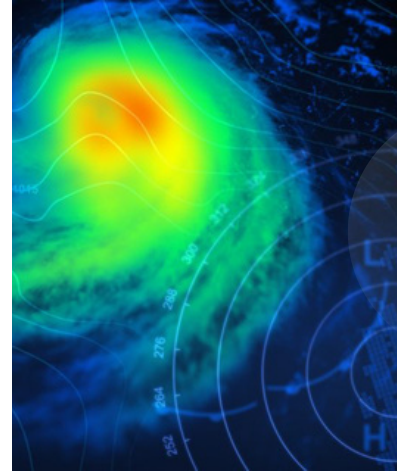


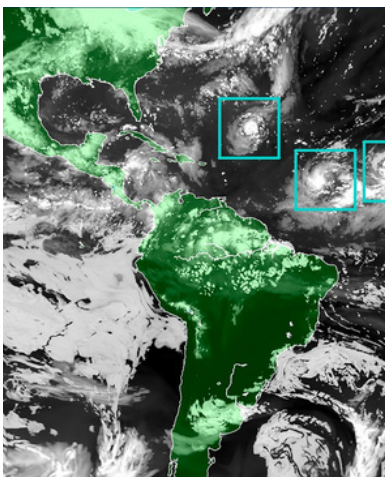
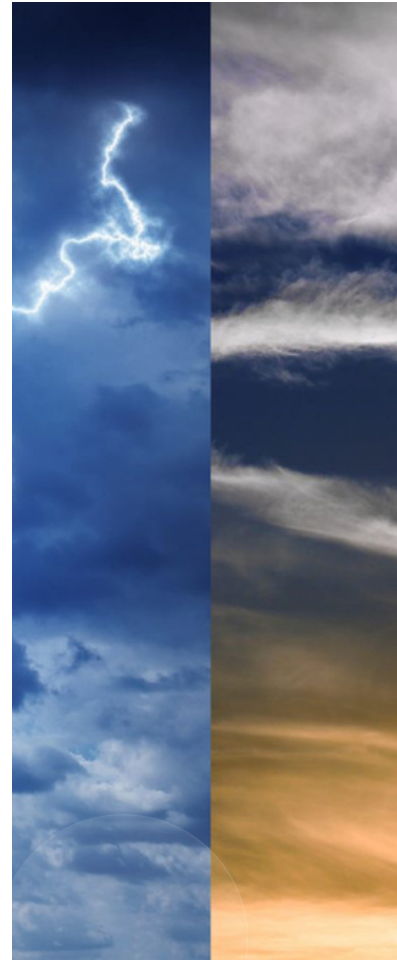


A UFS Collaboration  
Powered by **EPIC**



# Newsletter

October 2023



# ISSUE 01



A UFS Collaboration  
Powered by **EPIC**



Issue 01, October 2023



## Our Vision

With this UFS newsletter, the UFS Communications & Outreach (C&O) Team and the Earth Prediction Innovation Center's (EPIC) Community Engagement (ECE) Team are partnering to broadcast UFS achievements, highlight your success stories, and empower future innovations.

In addition to this Newsletter, the joint team plans to combine the web presence of the UFS and EPIC, leading to a one-stop-shop for all things "UFS".

We are grateful for your continued support and contributions to the UFS community. With your help, we will continue to expand and advance weather research and forecasting, propelled by the success of the UFS.

***– NOAA Modeling Team Chair (Dorothy Koch) and Vice-Chair (Brian Gross) and UFS-SC Chairs (Neil Jacobs and Hendrik Tolman)***

## Upcoming Events

**AGU Fall Meeting**

**December 11 – 15, 2023**

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**AMS Annual Meeting**

**January 28 – February 1, 2024**



**New Partnerships Formed**

**Powering Forecasts, Empowering People**

# OUR MISSION



## Unified Forecast System

While we cannot control the weather, we can understand how to better predict it. That's where the Unified Forecast System (UFS) comes in. It is a community where scientists and engineers come together to produce cutting-edge Earth system models and enhance the weather forecast guidance used by NOAA. The UFS Earth system models offer applications that span local to global scales and sub-hourly to seasonal predictions.

[Explore the UFS portal](#)



## EPIC

NOAA's EPIC program fuels the work being done by the UFS by nurturing a collaborative weather community. EPIC offers a model-development environment, management of cloud-ready code, community engagement and user support, a clear pipeline for research and model transition to operations, end-to-end testing for UFS applications, and expanded support for NOAA's Earth system models.

[EPIC's impact](#)



## **Unifying Innovations in Forecasting Capabilities Workshop**

This summer, EPIC and the UFS hosted a five-day Unifying Innovations in Forecasting Capabilities Workshop focused on innovation and community. The goal was to engage the weather community in an effort to accelerate contributions to the UFS. Two hundred people attended in-person, and hundreds more virtually. Attendees presented their research, learned about updates to the UFS, and shared their challenges, successes and thoughts on where the future will take us. Thanks to all who took part and made the event a success!

[Explore the talks here](#)



## **Open Science, Greater Innovation**

In recognition of the Year of Open Science, federal agencies are coming together to drive the uptake of open and equitable science and spark change. NOAA and EPIC were highlighted on the U.S. government's open-science portal for their collaborative work on the UFS, the first time a NOAA project has been featured. EPIC is working to drive inclusion in community modeling and fold in historically underserved groups.

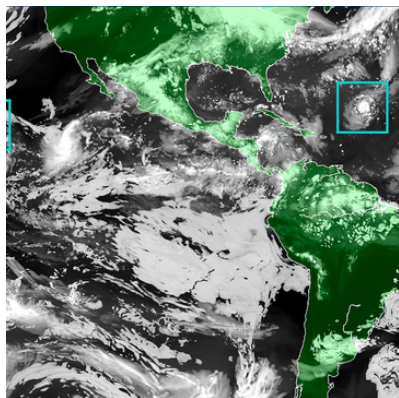
[Read more](#)



## **National Science Foundation Encourages Use of Unified Forecast System**

The U.S. National Science Foundation (NSF) put out a call to the science community to encourage wider uptake and exploration of newer Earth modeling systems, including the UFS. The call was part of NSF's [Physical and Dynamic Meteorology program](#), which supports research on atmospheric physics and dynamics at sub-synoptic scales, including processes relevant to and impacted by climate change.

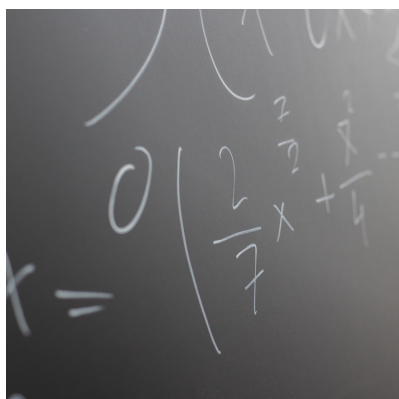
[NSF call for model tools and support](#)



## A New Hurricane Prediction System

Recent hurricane seasons have witnessed a notable increase in the number of tropical storms and hurricanes in the Atlantic basin, underscoring the need for accurate hurricane forecasting. NOAA's new operational hurricane prediction system — the [Hurricane Analysis and Forecast System \(HAFS\)](#), developed as part of the [UFS Research-to-Operations Project](#) — produces operational analysis and forecasts out to seven days. [HAFS](#) provides guidance on hurricane track and intensity, storm size, genesis, storm surge, rainfall, and tornadoes associated with hurricanes.

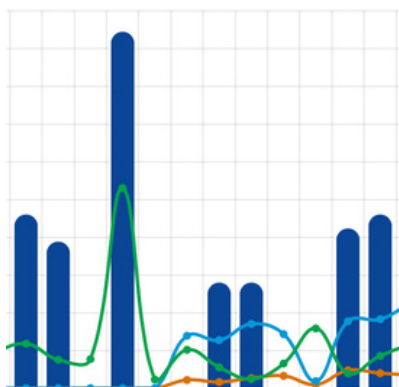
[UFS HAFS code repository](#)



## The Common Community Physics Package as a Teaching Tool

The Common Community Physics Package (CCPP) is being integrated into UFS models and applications. At the [Developmental Testbed Center](#), Professor Cristiana Stan of George Mason University [talks about](#) the promise of using the CCPP single-column model (SCM) as a teaching tool. Graduate students can dive into the complexity of an Earth system model using the CCPP SCM's library of physics suites and pre-processed forcing data.

[UFS CCPP code repository](#)



## An EPIC Community

EPIC works to drive innovation through connection, and engaging with the broad modeling community is key to its mission. Take a look at EPIC's new metrics dashboard that tracks some of the ways in which EPIC collaborates and engages with partners and users.

[EPIC metrics and insights](#)

## Thank you, Arun!

We wish a fond farewell to one of the UFS' greatest advocates and contributors: Dr. Arun Chawla! Since the start of the UFS, Arun has provided invaluable leadership towards the development of infrastructure in service of community modeling based on solid software standards. He led the development of a cross-cutting infrastructure framework in support of the UFS. Arun has been a vital collaborator with the EPIC Program by providing information for completing a comprehensive assessment of the UFS developments in the last few years, as well as guidelines for transitioning current UFS development tasks to EPIC, both critical components for the EPIC contract. Arun was the chief of the Engineering and Implementation Branch at the Environmental Modeling Center (EMC), [National Centers for Environmental Prediction \(NCEP\)](#), NOAA's National Weather Service (NWS). His collaboration with EPIC ensured that the innovations brought into the UFS through EPIC successfully transitioned to NOAA operational weather forecasting systems.



Arun has moved on to a new career opportunity at Tomorrow.io. We wish him the best of luck and thank him for his significant support and outstanding contributions to EPIC and the UFS.



## Next-Generation Scientists Take Flight

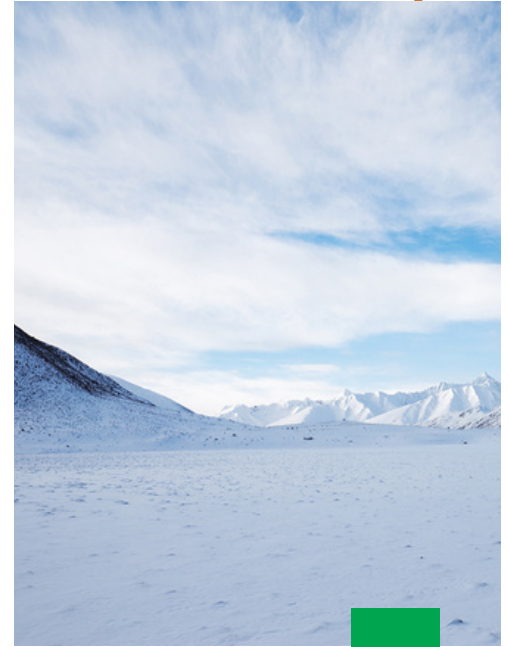
NOAA's Weather Program Office (WPO) and UCAR's Cooperative Programs for the Advancement of Earth System Science are proud to introduce three new fellows in the WPO Innovation for Next Generation Scientists ([WINGS](#)) program. All are Ph.D. students studying important weather and climate topics: the impact of wind on dust emissions, monsoon onset and impacts, and satellite bias-correction methods for numerical weather prediction. The WINGS program helps NOAA foster next-generation scientists focused on improving weather research and forecasting.

[Learn more about the fellows](#)

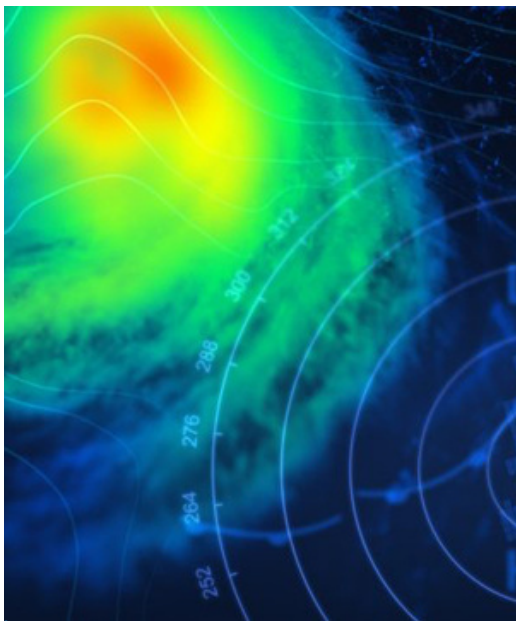
## UFS Land Data Assimilation System

EPIC and the UFS recently released the UFS Land Data Assimilation (DA) System v1.1.0. This offers an update to the inaugural public release of March 2023, setting the stage for significant new capabilities in the Land DA System. The new release charts a path to unifying the Noah-MP land-surface model code with the UFS Weather Model under a continuous-release paradigm, where updates are added at consistent intervals to improve the code and add capabilities.

[UFS Land Data Assimilation System code repository](#)

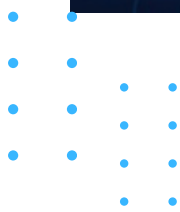


## UFS Short-Range Weather Application



The UFS includes multiple applications that support different forecast time periods and regions. The Short-Range Weather Application targets predictions of atmospheric behavior over a limited spatial domain and on timescales from minutes to several days. The development branch of the application is continually evolving as the system undergoes open development. The latest release (v2.1.0) represents a snapshot of this continuously evolving system. It is highly portable and runs on a wide variety of platforms, including Ubuntu Linux and MacOS.

[UFS Short-Range Weather Application code repository](#)



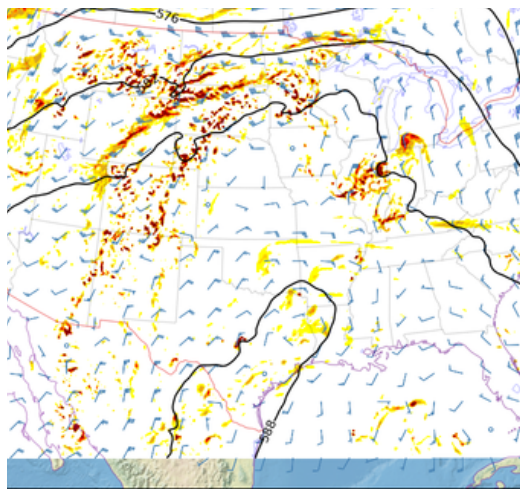
## UFS Weather Model

The [UFS Weather Model](#) can be used for short- and medium-range research and operational forecasts, run as an atmosphere-only model or as an atmospheric model coupled to components such as a wave or ocean model. Version 3.0 was recently released to support the UFS Short-Range Weather App and production hafs.v1 to support HAFS operational production.

[UFS Weather Model code repository](#)



## Unified Post Processor



The Unified Post Processor (UPP) generates useful products from raw model output. Developed at ([NCEP](#)), it is used operationally for several models maintained by NCEP. It is also used in the UFS, including the Rapid Refresh Forecast System, Hurricane Analysis and Forecast System (HAFS), Medium-Range Weather (MRW) Application, and Short-Range Weather (SRW) Application. [Learn more here.](#)

[UPP code repository](#)

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# UPCOMING EVENTS



## **AGU Fall Meeting – Wide. Open. Science. December 11-15, 2023**

EPIC and UFS will take part in the American Geophysical Union (AGU) Fall Meeting this December in San Francisco, CA and online. AGU is one of the most influential events for Earth and space sciences with an expected audience of over 25,000 people from more than 100 countries. Registration is now open. [More Information](#)



## **AMS Annual Meeting – Living in a Changing Environment January 28-February 1, 2024**

EPIC will host a hands-on course on Saturday, January 27, 2024 at the 104th American Meteorological Society Annual Meeting. This event offers a chance to share ideas and experiences on developing Earth system models for use in operational forecasting. The Annual Meeting (28 January-1 February in Baltimore, MD and online) also welcomes abstracts on how community models can serve as educational resources in the classroom. [Learn More.](#)

## **Get Involved**

Join our community! Whether you're a seasoned academic, interested student, or complete new developer, EPIC has something for you.

[Sign up for the UFS mailing list](#)



## **Stay Connected**

We'd love to connect — it's at the heart of what we do. Send us questions at:

[support.epic@noaa.gov](mailto:support.epic@noaa.gov)

or stay in touch via our [feedback page](#).

