Unifying Innovations in Forecasting Capabilities Workshop

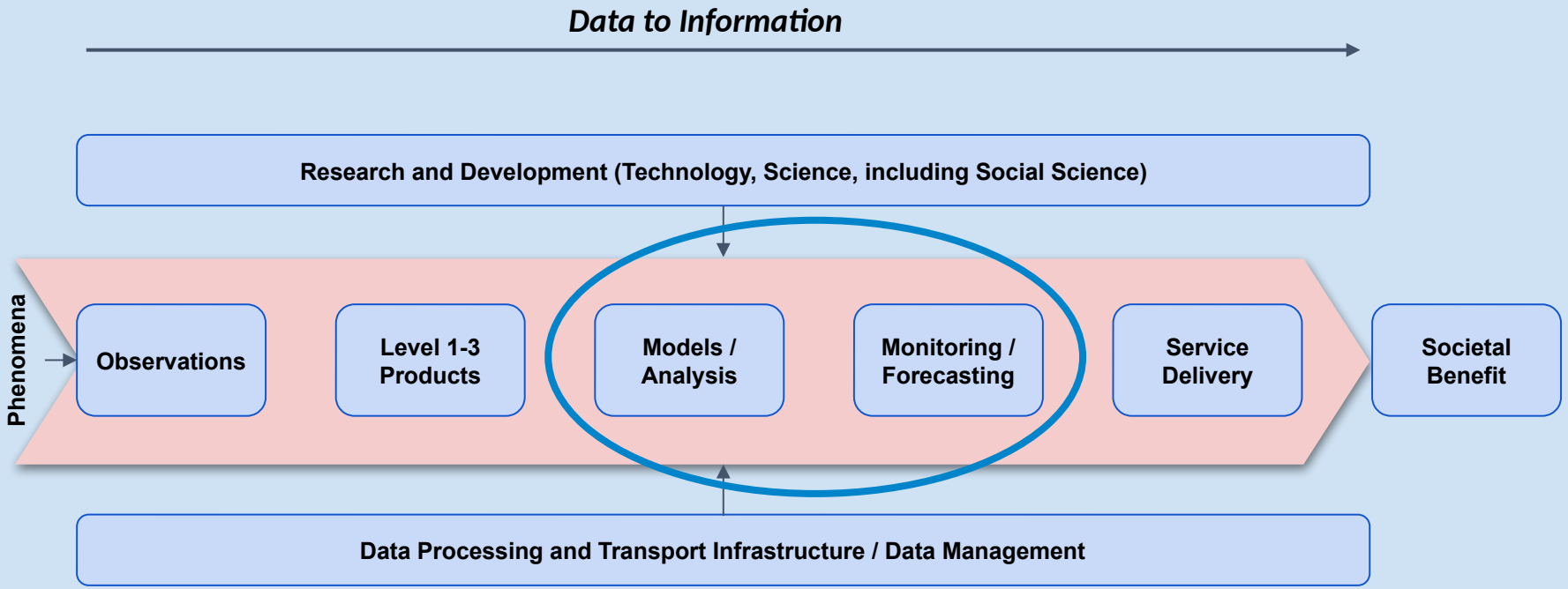
Opening Remarks

Dr. Michael C. Morgan
NOAA Assistant Secretary for Environmental Observation and Prediction

National Oceanic and Atmospheric Administration

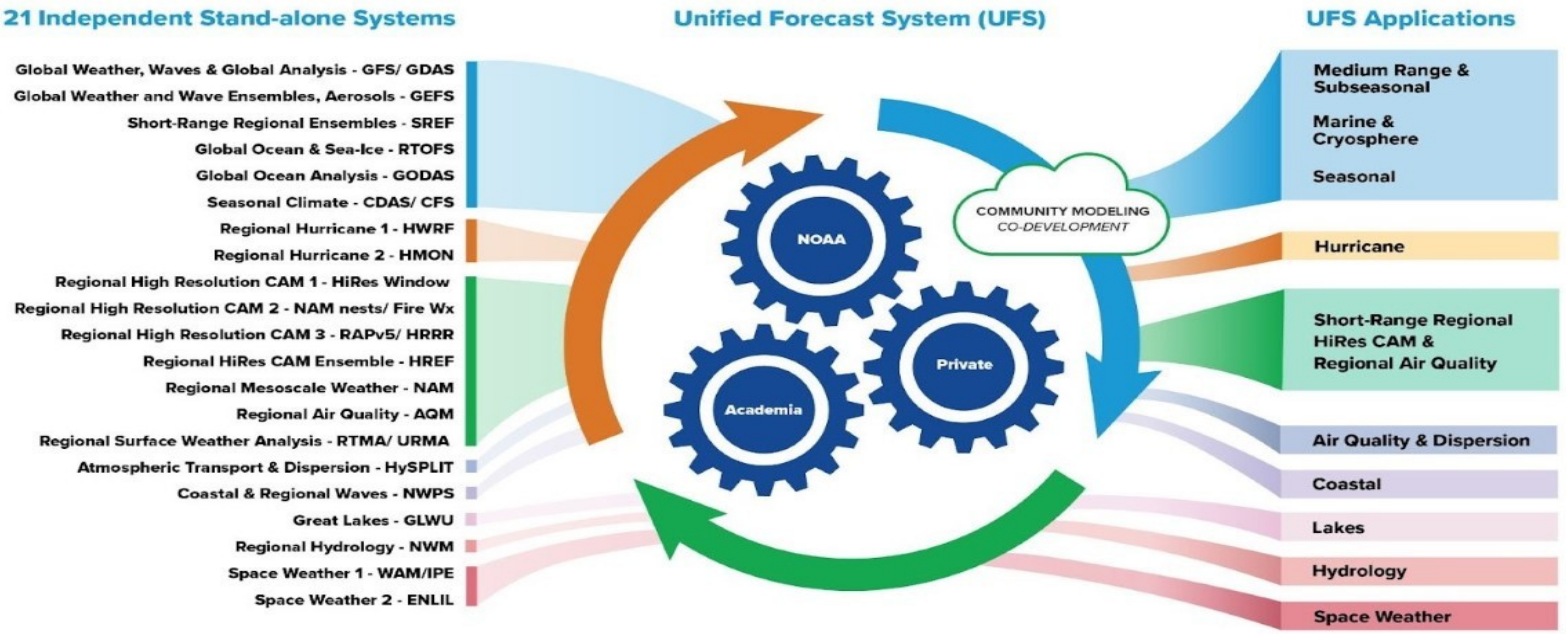
24 July 2023

NOAA Value Chain



Simplifying NOAA's Operational Forecast Suite

Reducing the 21 Stand-alone Operational Forecast Systems into Eight Applications



Vision: *Enable* the most accurate and reliable operational numerical forecast model in the world.

Mission: To be the *catalyst* for community research and modeling system advances that continually inform and accelerate advances in our nation's operational forecast modeling systems.

What EPIC is....

- A virtual community model development environment
- Management of cloud-ready code
- Community access to NOAA observations, data & tools
- Community support & engagement
- Clear research & model transition to operations priorities
- End-to-end testing for Unified Forecast System applications
- Expand to support comprehensive NOAA Earth systems

Community Engagement

UFS UNIFIED FORECAST SYSTEM

Cloud Use

Data Assimilation: JCSDA'S JEDI

- NOAA is transitioning to use the Joint Center for Satellite Data Assimilation Joint Effort for DA Integration (JEDI) system
- JEDI provides a software infrastructure for data assimilation
- JEDI is for scientific exploration and operational forecasting

A multi-agency research center to improve the use of satellite data for analyzing and predicting the weather, the ocean, the climate and the environment.

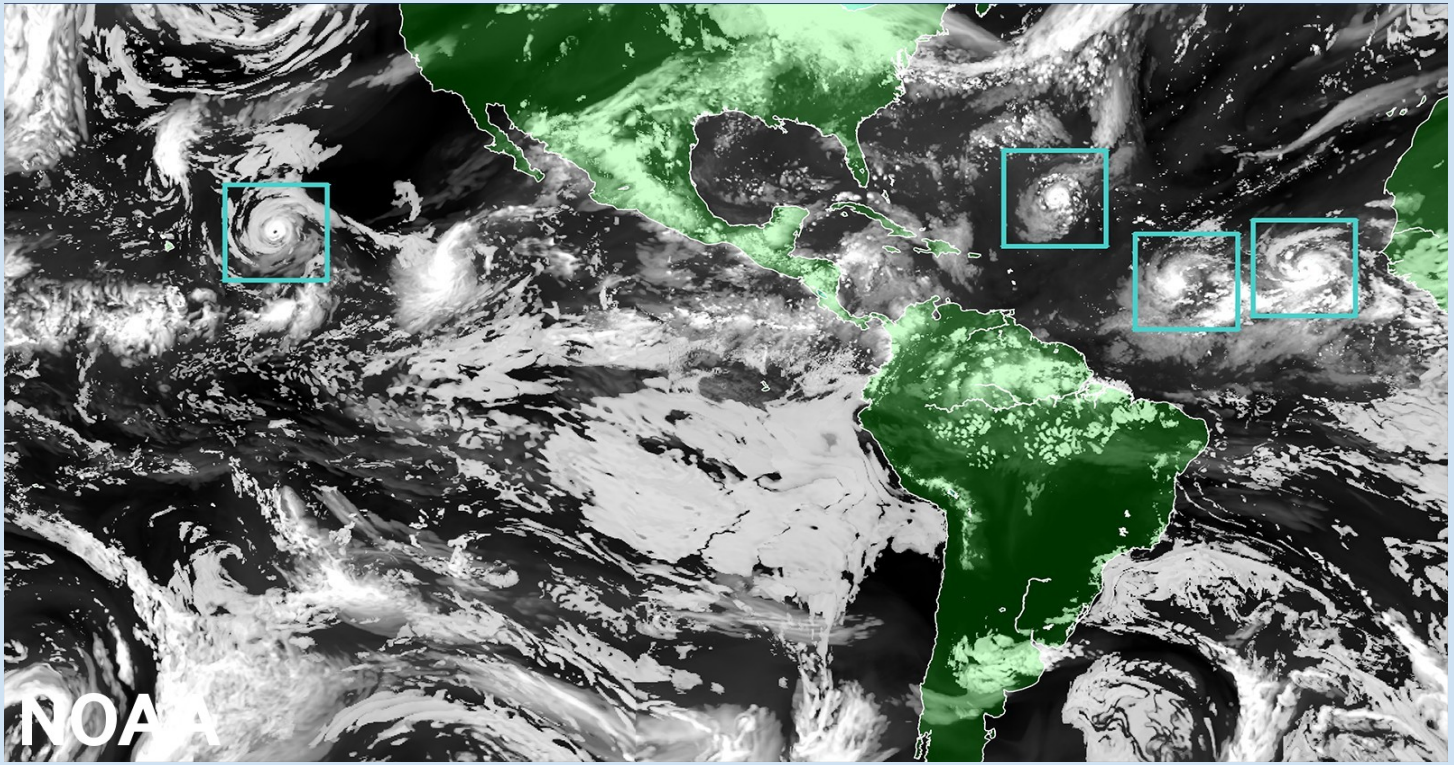
What Does Epic Success Look Like?

1. Facilitate strong collaborations

2. Develop a publicly accessible end-to-end testing and development environment

3. Bring innovations to improve UFS performance

UFS Application HAFS Now Operational



Summary: Improvements for HAFS in Skill Space vs HWRF

Metric	NATL		EPAC	
	HAFS-A	HAFS-B	HAFS-A	HAFS-B
Track Skill	***Mostly improved***	***Improved***	***Improved***	***Improved***
Intensity Skill	Neutral to ***improved***	***Improved***	Neutral to ***improved***	***Mostly improved***
Storm Size Bias	RMW neutral, mixed for 34 kt, ***reduced*** for 50 kt and 64 kt radii	RMW neutral, increased for 34 kt, ***reduced*** for 50 kt and 64 kt radii	***Reduced*** for RMW, 34 kt, 50 kt and 64 kt radii	***Reduced*** for RMW, 34 kt, 50 kt and 64 kt radii
RI Cases	Track errors are ***reduced,*** intensity slightly behind	Track errors are ***reduced***, intensity slightly behind	Track errors are ***reduced***, neutral for intensity	Track errors are ***reduced***, intensity slightly behind
RI Metrics	Slightly behind HWRF	Slightly behind HWRF	***Improved***	***Improved***
P-W relationship	Neutral	Neutral	***Improved***	***Improved***
Waves	Neutral to ***Improved***	N/A	***Improved***	N/A

Negative **Mixed/Neutral** **Positive**

Strategic Directions

- 10-Year NOAA Modeling Strategy (Fall 2023)
- 10-Year NOAA Data Assimilation Strategy (Winter 2023/24)
  - Opportunities to build the workforce . . .
- Journey to the cloud - For data storage and access (e.g. NODD), modeling, AI/ML, HPC computing, and collaboration

THANK YOU