

Workshop on Building an Interannual to Decadal (2 to 30year) Prediction / Projection Capability for Decision Support

NWS perspective

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Big Picture

x NWS interest in longer time scales

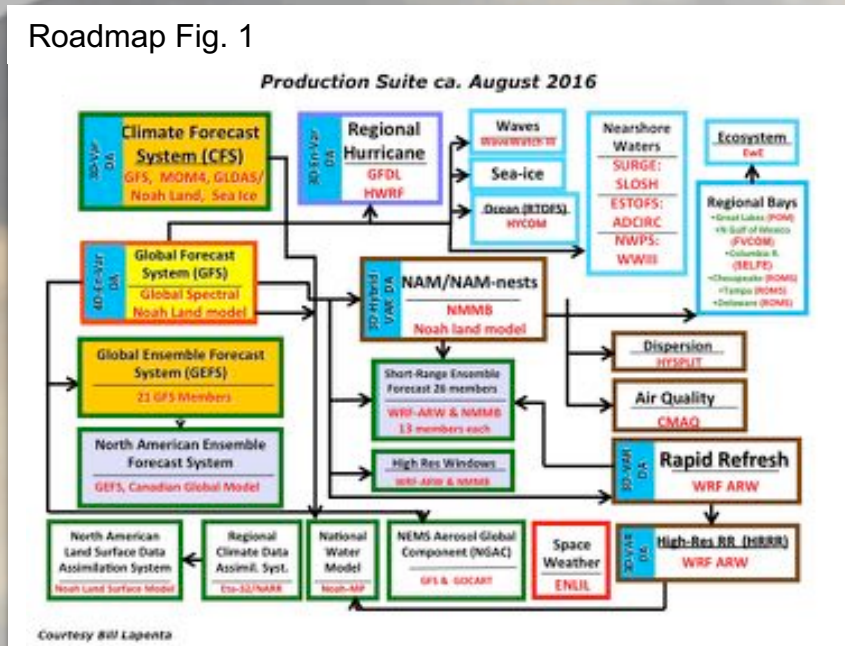
- Seasonal to Subseasonal
 - CPC mandate to provide products (precip., temp.)
 - EMC to provide GEFS up to 35 day forecast @ 00Z
 - SubX project (MME with external partners)
- Seasonal
 - CPC seasonal outlook
 - EMC CFS model 9 month projection
- Responsibilities of NWS up to 2 year outlook

CPC : Climate Prediction Center
EMC : Environmental Modeling Center
GEFS : Global Ensemble Forecast System
CFS : Climate Forecast System



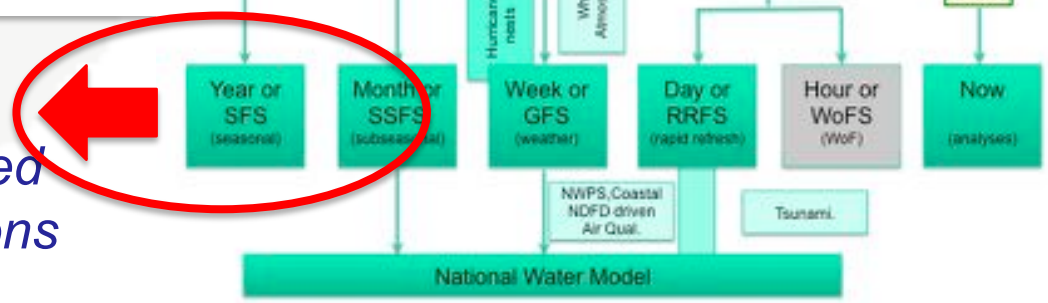
NOAA Production Suite

Roadmap Fig. 1



... we will move to a product based system that covers all present elements of the productions suite in a more systematic and efficient way

Starting from the quilt of models and products created by the implementing solutions rather than addressing requirements



UDA: Unified Data assimilation
SFS: Seasonal Forecast System
SSFS: Subseasonal Forecast System

GFS: Weather Forecast System
RRFS: Rapid Refresh Forecast System
WoFS: Warn on Forecast System

Roadmap Fig. 2



NOAA big picture

x Unified Forecast System (UFS)

- Using community model for operations (and research)
- <https://ufscommunity.org/>
- GFSv15 implementation first tangible instantiation

x Dedicated funding

- Leveraging existing efforts at NCAR and NOAA
- Dedicated Hurricane Supplemental Funding

x Earth Prediction Innovation Center (EPIC)

- Virtual center made possible by the recent reauthorization of the Weather and Research Forecasting Innovation Act of 2017



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NOAA and NCAR partner on new, state-of-the-art U.S. modeling framework

Agreement paves way for U.S. to accelerate use of weather, climate model improvements

Weather | weather forecasting climate

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February 7, 2019 —

From press release

x “The Earth Prediction Innovation Center, UFS, and the joint NOAA/NCAR agreement are critical elements that will position the U.S. to regain its standing as a leader on the international earth-system modeling stage. The improved modeling capability will improve our life-saving watches and warnings”

Neil Jacobs, NOAA assistant secretary of commerce for environmental observation and prediction.

x “By combining NCAR’s community modeling expertise with NOAA’s excellence in real-time operational forecasting, this agreement will accelerate our ability to predict weather and climate in ways that are vital for protecting life and property”

Antonio Busalacchi, president of the University Corporation for Atmospheric Research

MoA areas of infrastructure

- 1) **NEMS / CMEPS** unification for inter-component coupling
- 2) **CCPP / CPF** unification for intra-component coupling
- 3) **CIME – CROW** unification for common workflow development
- 4) Unified testing to assure code is robust and performs as expected
- 5) Unified model validation through **MET** development and expansion to application for fully coupled systems
- 6) **Github** based repositories for all infrastructure
- 7) Modeling support; leveraging, creating if necessary, or adapting support capabilities at e.g. **NCAR** and **DTC**

To MME or not to MME

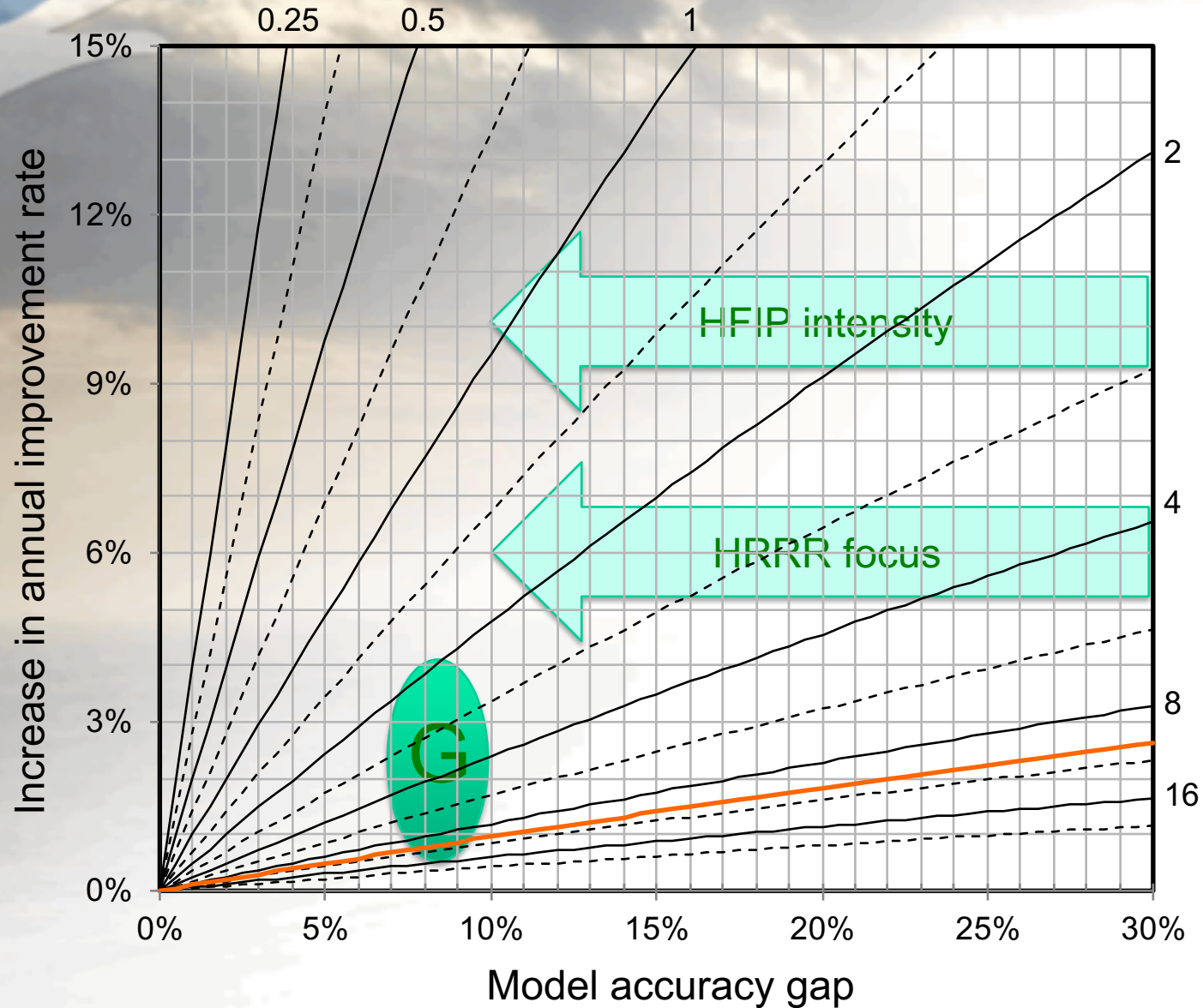
x Multi Model Ensemble (MME)

- Generally better skills
- Slower development of components

x NWS Strategy

- Based on objective evidence for GEFS and GFS
- UFS in-house, no in-house supported MME
- MME of opportunity only, leveraging partners
- SubX MME has shelf life
 - As originally planned / advertised
- Single ensemble for S2S and out ???
 - Weather scale, more members, slower cadence

Lines for constant "catch up year"





Thank You!