Welcome!

Key Elements for Model Development

- Unified Forecast System (UFS)
 - A community-based, coupled, comprehensive Earth modeling system
 - UFS numerical applications span local to global domains and predictive time scales from subhourly analyses to seasonal predictions
 - Designed to support the Weather Enterprise and to be the source system for NOAA's operational numerical weather prediction applications.
 - Evidence-based decision making using agreed-to targets and metrics
- Strategic Implementation Plan (SIP)
 - Combines implementation activities with near-term strategic action
 - Led by NWS/NCEP/EMC with NOAA and external partners
- Earth Prediction Innovation Center (EPIC)
 - Accelerate R2O2R via an end-to-end community capability
 - Drive R&D with operational priorities based on community input
 - Establish the UFS as the modeling system of choice for the NWP R&D community (crowdsource model development) AND serve as the source of future operational models based on the community's Unified Forecast System

Evolve!

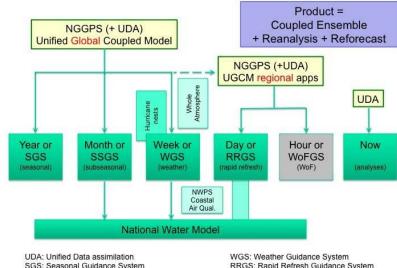
Climate Forecast Regional Waves Nearshore Ecosystem WaveWatch III Waters Hurricane System (CFS) EWE SURGE: Sea-ice ٨ GFDL F5. MOM4 GLDAS/ SLOSH HWRF Noah Land, Sea Ice **Regional Bays** Ocean (RTOFS) .Great Lakes (POM ADCIRC HYCOM *N Gulf of Mexico NWPS: (FVCOM) **Global Forecast** WWIII (SELFE) System (GFS) NAM/NAM-nests hesapeake (ROMS +Tampa (ROM5) Global Spectra Delaware (ROMS) Joah Land mo Noah land model Dispersion **Global Ensemble Forecast** HYSDIP System (GEFS) Short-Range Ensemble Forecast 26 members 21 GFS Members Air Quality NRF-ARW & NMMB Chaso 13 members each North American Ensemble **Rapid Refresh** Forecast System **High Res Windows** WRF ARW **GEFS**, Canadian Global Model North American Regional National NEMS Aerosol Global High-Res RR (HRRR) Space Land Surface Data **Climate Data** Water Component (NGAC) Weather WRF ARW Assimilation System Assimil. Syst. Model GFS & GOCART ENLIL

Production Suite ca. August 2016

Courtesy Bill Lapenta

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

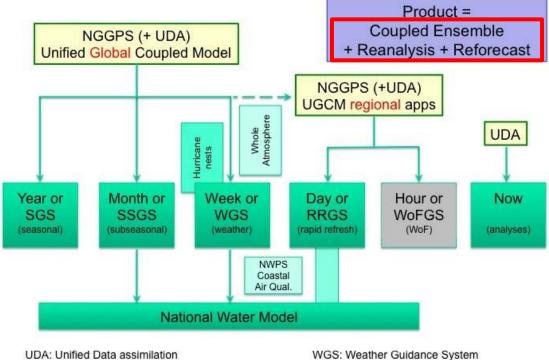
... we will move to a product based system that covers all present elements of the productions suite in a more systematic and efficient way



SGS: Seasonal Guidance System SSGS: SubseasonalGuidance System

RRGS: Rapid Refresh Guidance System WoFGS: WoF Guidance System

Ensembles are a common characteristic of UFS applications



UDA: Unified Data assimilation SGS: Seasonal Guidance System SSGS: SubseasonalGuidance System WGS: Weather Guidance System RRGS: Rapid Refresh Guidance System WoFGS; WoF Guidance System

Hot Topics

- Defining R2O. There is a <u>document</u> in the UFS milieu that describes the transition of research to operations (R2O) within the context of the Unified Forecast System (UFS). There are other activities (e.g., the JCSDA, EPIC, JTTI, the NCAR-NOAA MoA) that are striving for the same thing. All of these activities must coalesce into a common paradigm of R2O that ends with innovations effectively implemented into Operations.
- Building the Community. There needs to be a common understanding of roles and responsibilities among all of the development efforts, including how EPIC will help (rather than replace) these development efforts.
- Ensuring operational orientation of SIP/EPIC activities.
- Balancing the rate of innovation with the rate of implementation.
- Evidence-based decisions on removing elements from the NCEP Production Suite as part of Suite Simplification.
- Balancing collaboration with competition.
- Leveraging the Cloud to ameliorate the lack of HPC capacity for community development.