



National Centers for Environmental Prediction:

**N
C
E
P**

6'th Ensembles Users Workshop

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NOAA Operational Numerical Guidance Supports the Agency Mission



- **Numerical Weather Prediction at NOAA**
 - **Required for agency to meet service-based metrics**
- **National Weather Service GPRA* Metrics**
(* Government Performance & Results Act)
 - **Hurricane Track and Intensity**
 - **Winter Storm Warning**
 - **Precipitation Threat**
 - **Flood Warning**
 - **Marine Wind Speed and Wave Height**

Lead Time and Accuracy!

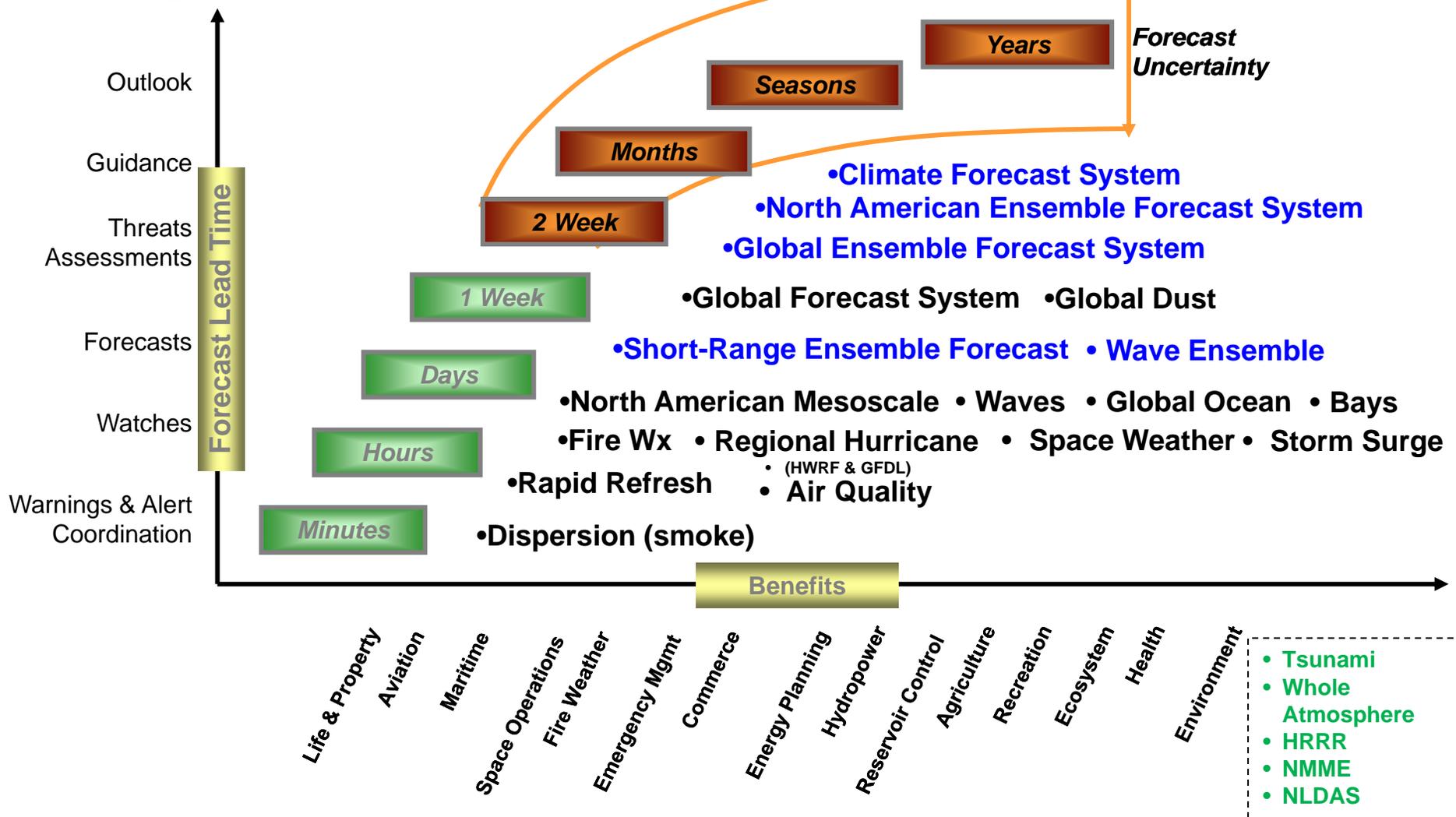
- **Operational numerical guidance:**
 - **Foundational tools used by government, public and private industry to improve public safety, quality of life and make business decisions that drive U.S. economic growth**



Seamless Suite of Operational Numerical Guidance Systems

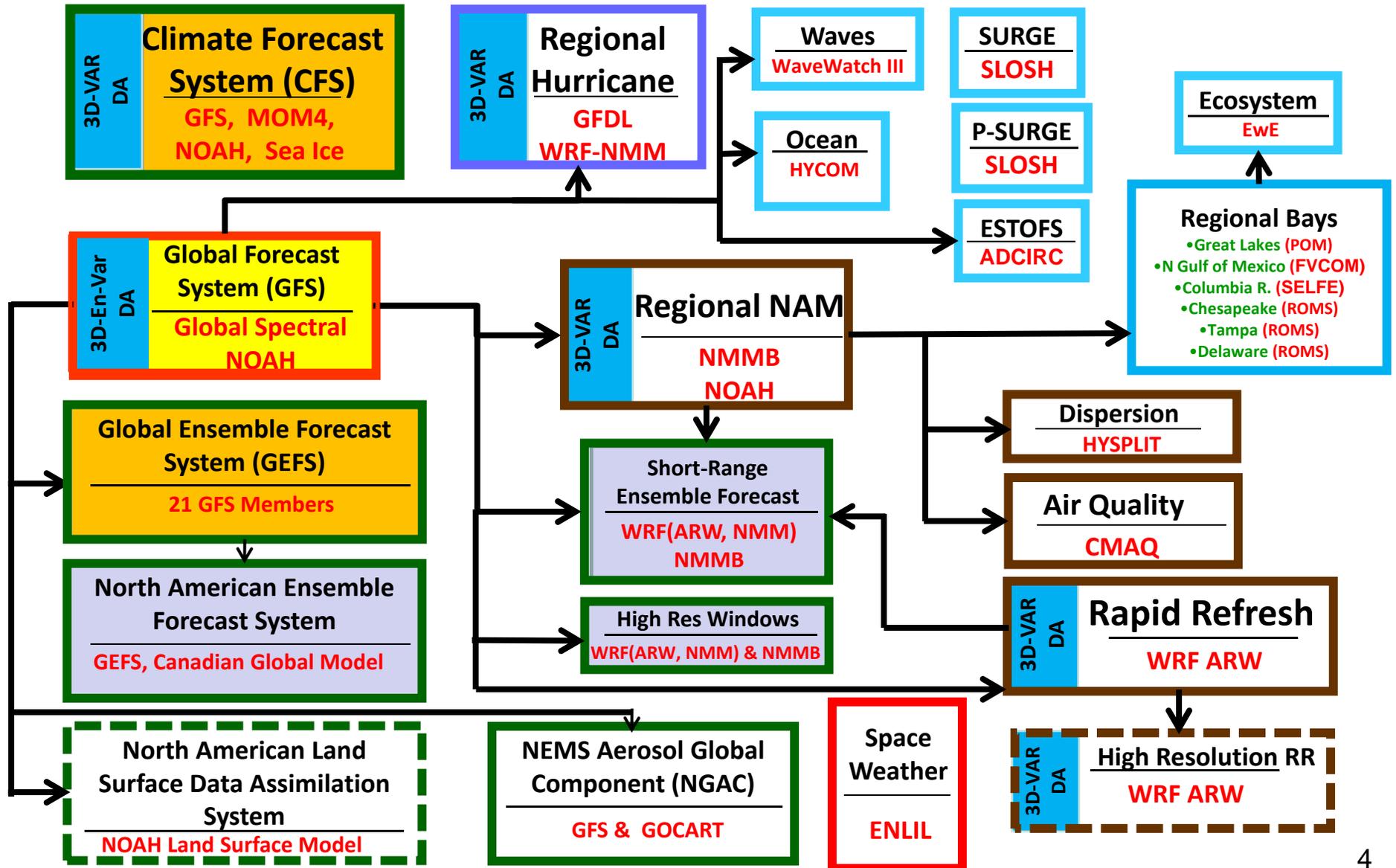


Spanning Weather and Climate





NOAA's Operational Numerical Guidance Suite (Jan 2014)





The NOAA Operational Modeling Strategy...High Level Perspective



- Moving away from the “model of the day”
- Continue to pursue multi-model approach to ensembles
 - Don't forget: ensemble system only as good as the modeling system it is built from
- Priorities for deterministic development are clear:
 1. Data assimilation (methodology and observations)
 2. Resolution—horizontal and vertical
 3. Model physics
 - Clouds, microphysics, radiation, land, ocean, ice, aerosols....includes coupling
 4. Dynamic core
- Must consider advanced HPC technologies but don't forget about the science
- Regional systems shift to convection permitting applications



Things That Keep Me Up at Night...



- How will the productions suite evolve as the resolution of the global systems increase?
 - GFS capable of satisfying NAM requirements?
 - GEFS capable of satisfying SREF requirements?
 - Medium range reforecasts from GEFS becoming new requirements?

- Will regional systems (NAM, RAP and HRRR) shift to convection permitting applications?
 - HRRRE & NARRE capable of satisfying WOF requirements?

- What will the week 3+ to seasonal guidance system look like?
 - Can/should GEFS be extended to 30-days? (coupling required?)
 - What level of complexity is required in CFS?
 - Can the NMME be developed and sustained?

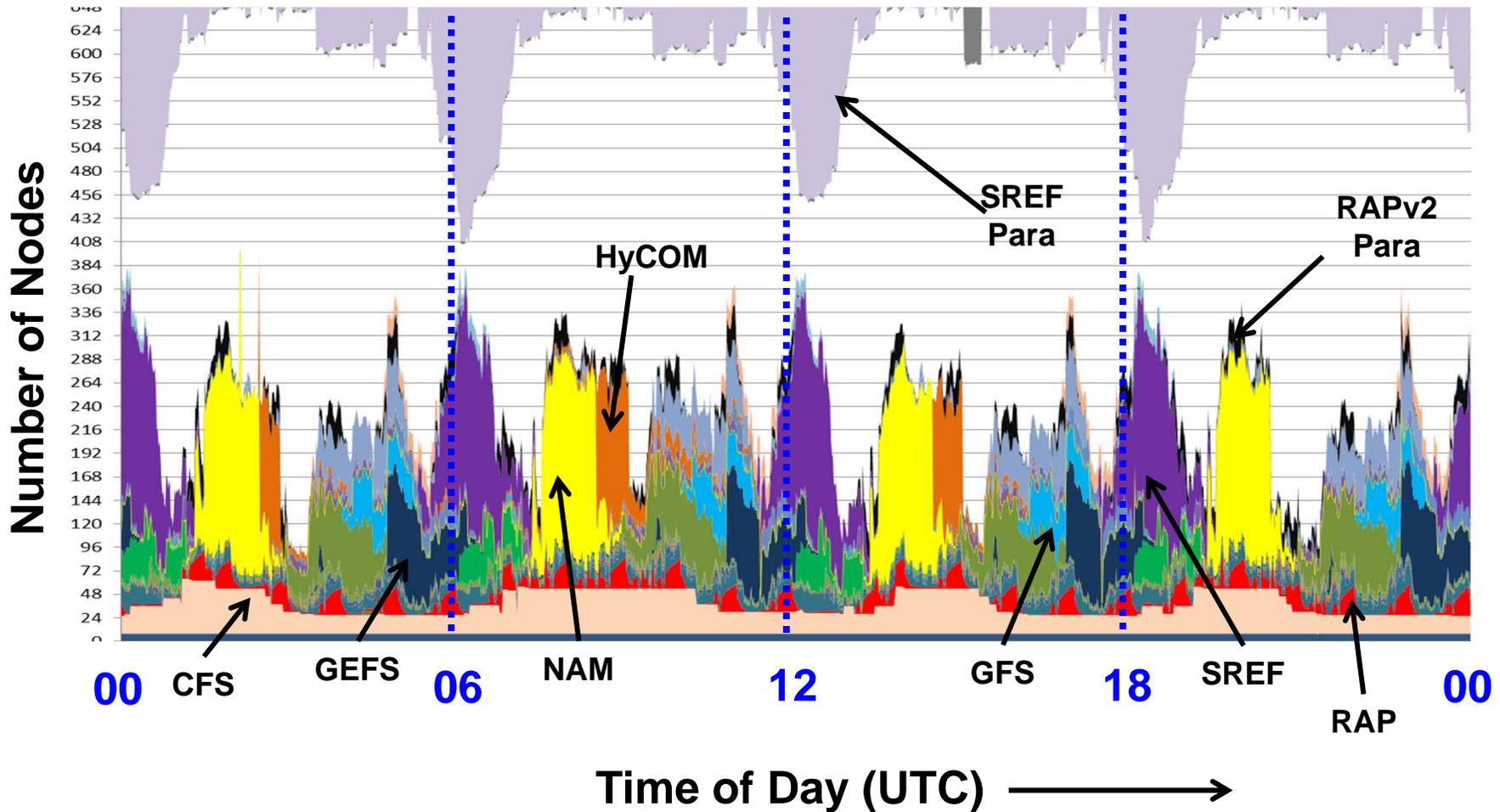
- How does all the above impact down stream systems?
- How can NOAA engage the scientific community effectively?
- How can NOAA engage the stakeholders effectively?



Numerical Guidance Suite Execution WCOSS NOAA Supercomputer



24-h Cycle 01 February 2014

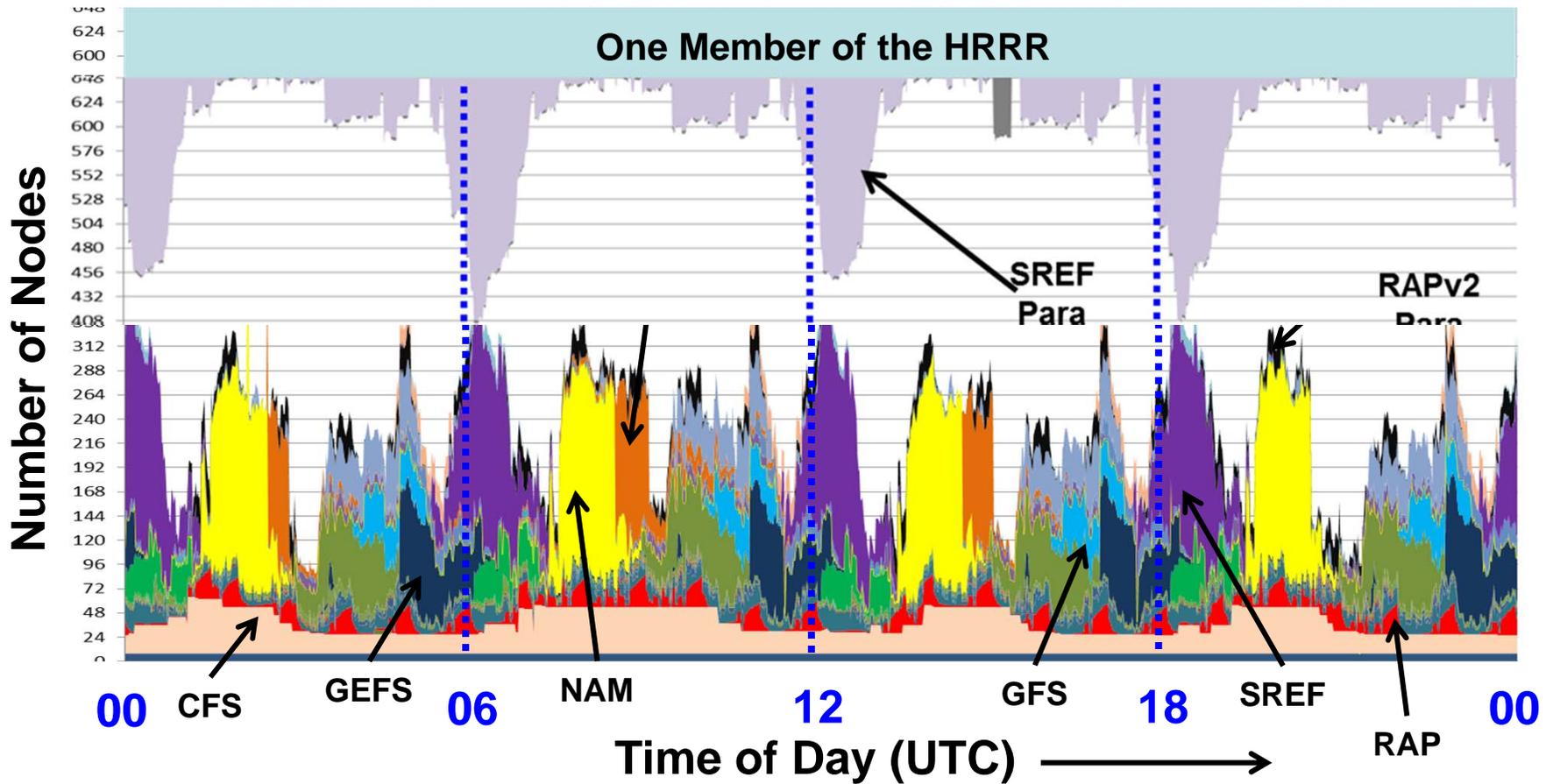




The HPC Cost of a High Resolution CONUS Ensemble System



24-h Cycle 01 February 2014



- Today: WCOSS = 648 Nodes; 1 HRRR Member = 72 Nodes
- Fit 8 HRRR members on WCOSS
- No other modeling systems



NOAA Center for Weather and Climate Prediction



A.K.A.—the new building....

- **Four-story, 268,762 square foot building in Riverdale, MD will house 800+ Federal employees, and contractors**
 - **5 NCEP Centers (NCO, EMC, HPC, OPC, CPC)**
 - **NESDIS Center for Satellite Applications and Research (STAR)**
 - **NESDIS Satellite Analysis Branch (SAB)**
 - **OAR Air Resources Laboratory**
- **Includes 465 seat auditorium & conference center, library, deli, fitness center and health unit**
- **Includes 40 spaces for visiting scientists**
- **Represents a “Game Changer” in our ability to do business**

