Unifying the Production Suite at the NWS:

What does this mean for Convection Allowing Models?

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Background

Long push from external reviews to provide Strategic Plan for Production Suite

- UCACN, UMAC

Three-pronged Planning approach to enable change

- Strategic plan/vision: High-end view, broader modeling enterprise
- Roadmap: Where to go in 5-10 years, more detail, longer view
- Strategic Implementation Plan: What to do right *right now (next 2-3 years)* to move towards vision of Strategic Plan and Roadmap

This presentation:

- High level view of SV and Roadmap
- What does this mean for Meso Models and CAM
- What does this mean for the WRF community

Status

SV and Roadmap version 0.6 reviewed by

- NCEP Centers, NWS Regions, HQ Offices, OAR Labs, OAR programs, OCIO, UMAC, NOAA LOs through UMTF/RC

Version 0.8 (present)

- Many edits to address 400+ comments.
- Co-author from OAR (John Cortinas)
- General consensus on present manuscripts, but still need to add
  - Section with major time lines
  - Section with needed research foci.

Time line:

- Version 0.8 distributed at SIP workshop (April)
- Drafts for two new sections in Roadmap July-August 2017.
- SIP writing meeting July-August 2017.
- Further review and signatures from AAs time line TBD.

Strategic Vision

Focus on products supporting mission requirements

- "WRN" end-to-end for NOAA enterprise, focus on models

Unified modeling and data assimilation

- Coupled, ensemble based, reforecast and reanalysis
- Including pre- and postprocessing, calibration, verification validation, dissemination, + (end-to-end WRN)

Focus on community modeling

- Approach must work for operations and research!

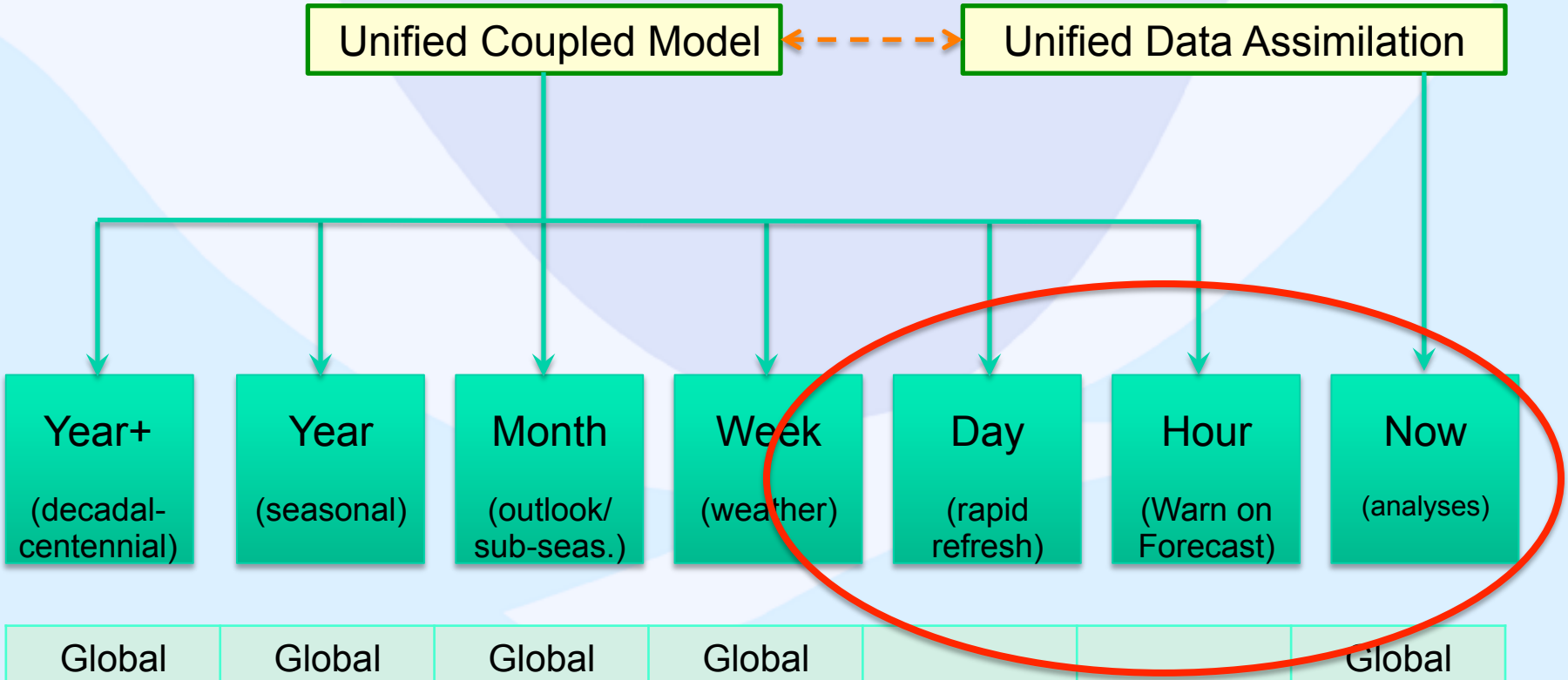
Evidence-driven decisions

- Same standards for all who contribute

Transparent and robust governance

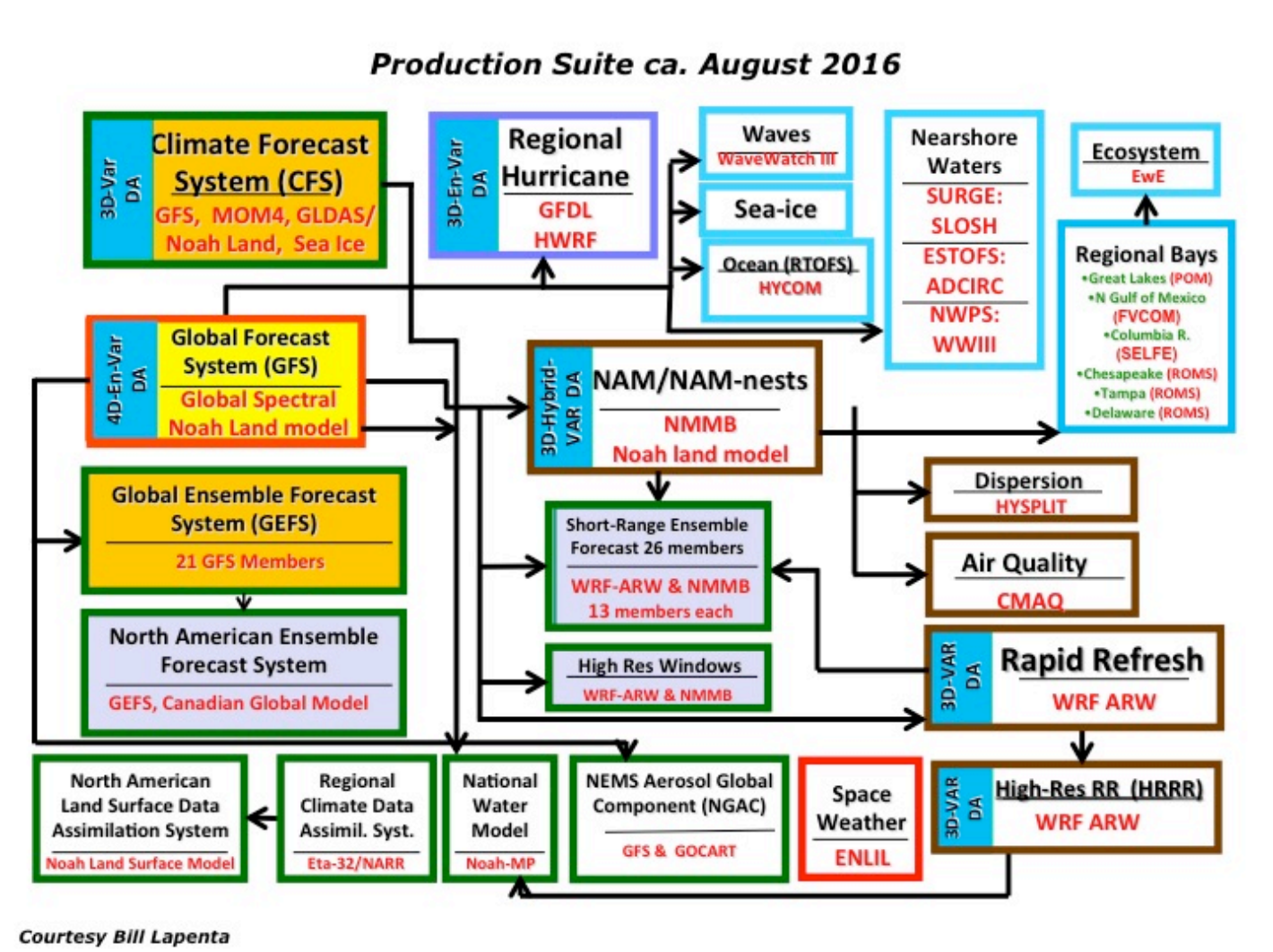
- Service requirements
- Technical requirements / solutions
- Prioritization

Strategic Vision: Temporal Domains



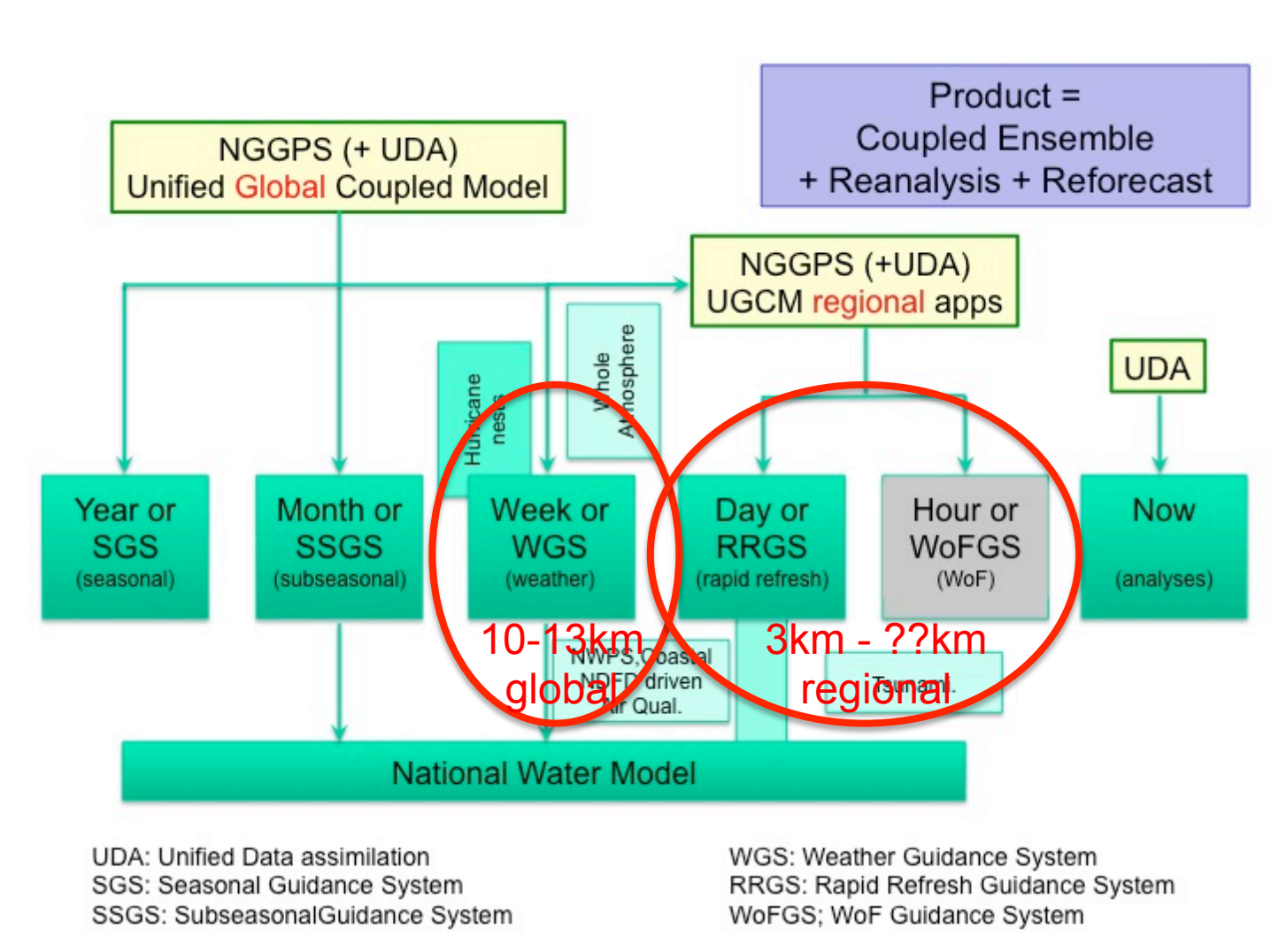
Global	Global	Global	Global			Global
		Regional refinement	Regional refinement			
Down-scaling	Down-scaling			Regional	Regional	Regional

Roadmap: Production Suite



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

Roadmap: Production Suite

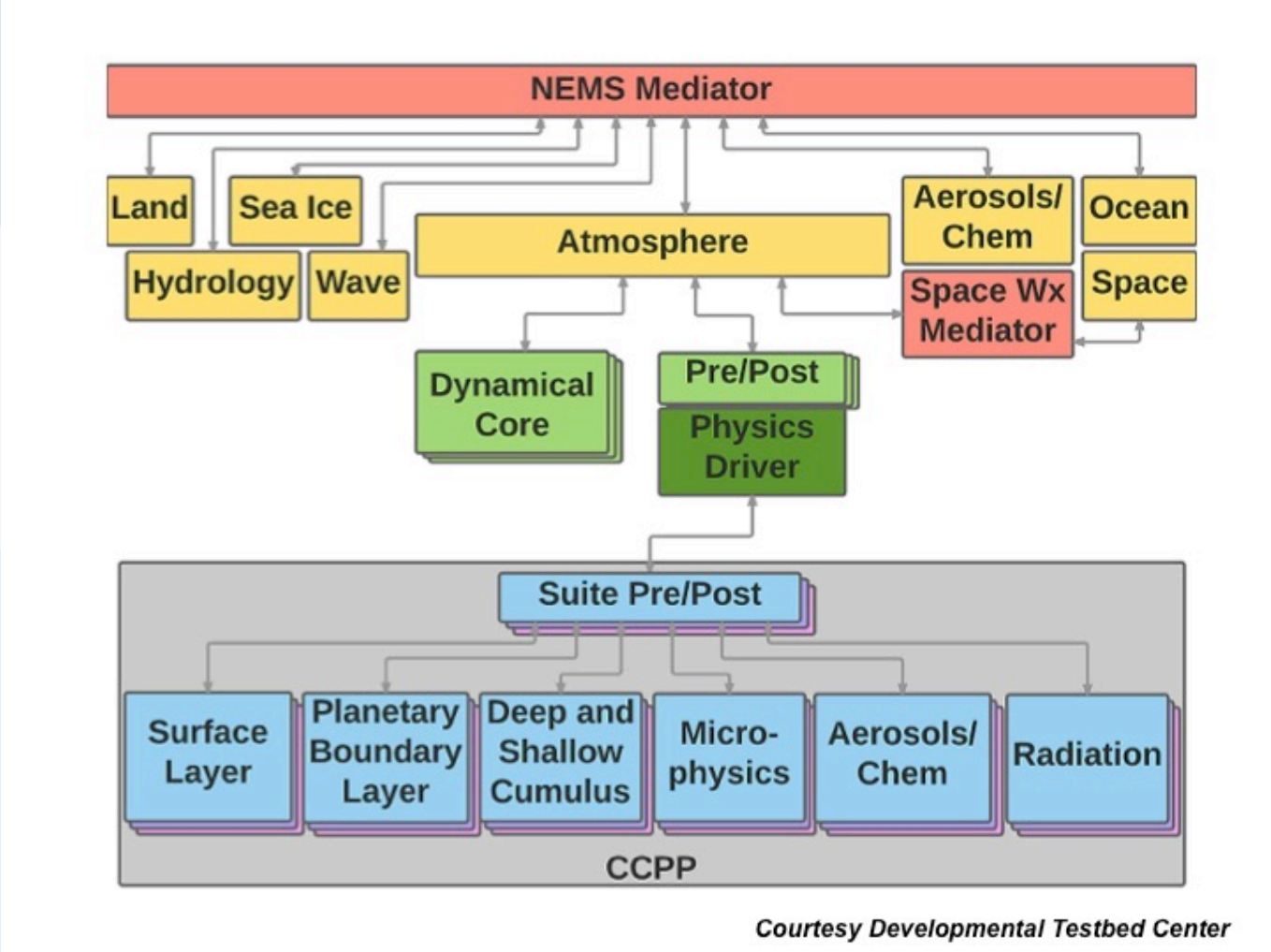


… we will move to a product based system that covers all present elements of the productions suite in a systematic and efficient way

Roadmap: Architecture

ESMF / NUOPC / NEMS architecture enables unified global coupled modeling and DA

Consistent with broader NOAA (UMTF) and US vision (National ESPC)



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CAM in production suite

Push to single unified modeling system

- Experience of other centers (UK Met Office, ….)
- Maintenace of one system rather than multiple systems
- UMAC meeting 2016: FV3 dycore appears suitable for CAM applications

Executive decision of the NWS: we will go forward with developing a unified system accross all scales based on FV3 dycore

- Short term assessment of work needed on FV3 dycore for CAM applications (#1 issue: stand alone regional capability)
- Address improvements needed to make this the core of a world-class model accross all scales.
- Physics on CAM scale as important as dynamic core

CAM in production suite

Short term strategy

- Create initial capability for regional FV3 based model
- Redirect resources at NWS and OAR to do this
  - NAM model now frozen, NMMB team →regional FV3 team
  - GFDL hurricane model retired, replaced by HMON (NEMS based coupling)
  - OAR involvement from start

- Continue development of IPD / CCPP as critical part of NEMS
  - Focus on a select number of physics packages (GFS, RAP/ HRRR, HWRF …)

- HRRR development as basis for RRGS development
  - WRF-ARW until NEMS-FV3 is ready
  - Focus on ensemble and DA development (JTTI)

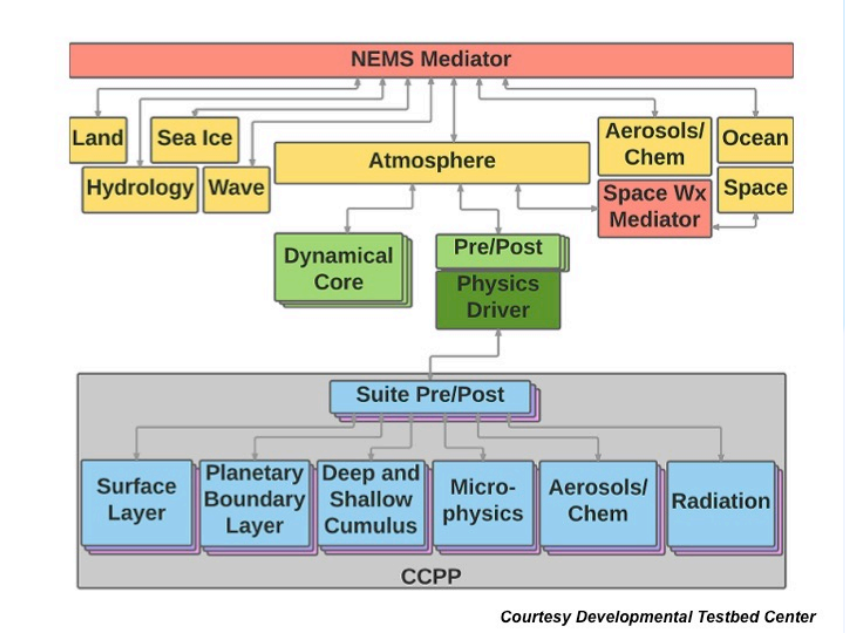
WRF / NCAR / NSF community

What does this mean for the WRF community:

- Where does the WRF community see itself go?
- Focus on mesoscale versus across scales (WRF → MPAS)
- WRF as meso-only model has limited life span in NWS

NOAA / NWS intends to partner with CESM

- Common architecture
- Multiple options
  - Dynamic cores
  - Physics packages
  - Coupled components
- Merging of Wx communities
- Coupling benefits for Meso / CAM
  - NWM, Great Lakes, Coastal.



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ThankYou!