



# EMC Implementation Plan 2018 - 2020

SIP Coordination Meeting January 31, 2018



#### Purpose of the Plan



#### To describe:

- the major development and implementation projects planned for EMC over the next three years
- how those fit within the broader NOAA
   Strategic Vision and Roadmap for modeling,
   and the SIP
- how EMC projects link with other modelrelated projects internally within NOAA and with the broader U.S. modeling community



#### Benefits of the Plan



- Facilitates planning for major resource drivers:
  - Budget
  - Personnel
  - HPC
- Identifies linkages with community partners
- Identifies challenges:
  - Scientific
  - Technological
  - External dependencies



#### **Drivers & Motivation**



- Incorporate scientific advances into Operational models
- Develop the workforce
- Improve support to the Field
- Simplify the NCEP Production Suite
- Move toward Community-based modeling



## Strategies & Approaches



- Unified modeling based on FV3
- Consolidation/optimization of EMC's model suite (incrementally)
- Modernization/optimization of model infrastructure
- Community collaboration:
  - Partnerships with individual EMC projects
  - Broad community partnerships under the Strategic Implementation Plan (SIP)
  - The pending NOAA-UCAR agreement on common infrastructure
  - Enabling collaborative research and development through authoritative code repositories git-based repositories



### Major EMC Projects



- Modeling and Data Assimilation (16)
- Verification, Post-processing and Product Generation (4)
- Software Engineering and Infrastructure
   (7)
- Routine/recurring upgrades (13)
- Aligned with EMC's new organizational structure
- Project Management



## Alignment



- Every project is linked to an Annex in the SIP document
- Every project has a linked quad chart describing:
  - Project Information 8 Highlights
  - Schedule
  - Resources
  - Risks & Issues
- Every Project narrative also includes
  - Dependencies and Linkages to other Projects
  - Core Development Partners and their Roles



# Alignment



Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18
SIP v1 development (2018 - 2020)							SIP v1		SIP v2 Development (2019 - 2021)								SIP v2		
		EMC IP v1 Development (2018 - 2020)							EMC IP v1		EMC IP v2 Development (2019 - 2021)								EMC IP v2



## FY 2018 Implementations



- November 1, 2017: High-Resolution Window Forecast System/ High-Resolution Ensemble Forecast (HiResW v7/HREF v2)
- November 8, 2017: Space Weather Modeling Framework (SWMF) v1.5.0
- December 13, 2017: RTMA/URMA v2.6.0
- Q2 FY 2018: GLOBAL Wave Model
- Q2 FY 2018: Nearshore Wave Prediction System (NWPS)
- Q2 FY 2018: Real-Time Global Sea Surface Temperature (RTG SST)
- Q2 FY 2018: North American Ensemble Forecast System (NAEFS)

- Q3 FY 2018: Rapid Update/ High-Resolution Rapid Refresh (RAP/HRRR)
- Q3 FY 2018: FV3GFS Beta (will run as a parallel with operational GFS)
- Q3 FY 2018: Hurricane
  WRF/Hurricanes in a Multi-scale
  Ocean-coupled Non-hydrostatic
  model (HWRF/HMON)
- Q3 FY 2018: Air parcel transport, dispersion, chemistry, deposition (HYSPLIT)
- Q3 FY 2018: Air Quality Model (AQM)
- Q4 FY 2018: RTMA/URMA
- Q4 FY 2018: Real-time Ocean Forecasting System (RTOFS)



#### **FV3GFS** Release Strategy

Vertical Lagrangian Coordinate

A finite-volume integration method for computing pressure gradient force in general vertical

An explicit flux-form semi-Lagrangian shallow-water model on the sphere

A Two-Way Nested Global-Regional Dynamical Core on the Cubed-Sphere Grid



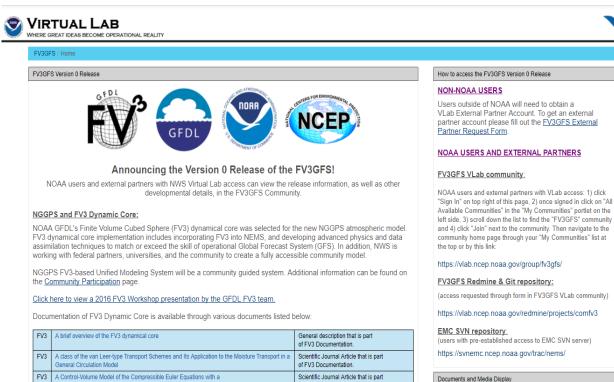
Release Version 0 Documents

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6 Documents

- Access FV3GFS Project on VLab
  - https://vlab.ncep.noaa.gov/web/ fv3gfs
- Code repositories set up on VLab GIT
- Community Wiki page, Forums and Developers Pages on VLab

Next Release of FV3GFS (including pre- and postprocessing) planned for March 2018 through github.com and/or Vlab Git



 Limited support from EMC to run FV3GFS forecast only experiments on WCOSS, Theia and Jet

of FV3 Documentation

of FV3 Documentation

of FV3 Documentation

Scientific Journal Article that is part

Scientific Journal Article that is part

Scientific Journal Article that is part

 Unified Community Research and Operations Workflow (CROW) under development





#### **Questions?**