Strategic Implementation Plan (SIP) for a Community-based Unified Forecast System

System Architecture Working Group

Presented by

Cecelia DeLuca, NOAA ESRL/CIRES/NESII

Presented at SIP Coordination Meeting
January 31, 2018; College Park, MD
System Architecture WG
Membership

- Jim Kinter (GMU/COLA) **
- Cecelia DeLuca (ESRL/NESII) **
- Tom Auligne (JCSDA)
- V. Balaji (GFDL)
- Rusty Benson (GFDL)
- Ligia Bernardet (ESRL/GMTB)
- Arun Chawla (EMC)
- Philip Chu (GLERL)
- Anthony Craig (NESII)
- Arlindo da Silva (NASA GMAO)
- Jim Doyle (NRL)
- Dave Gill (NCAR/MMM)
- Mark Iredell (EMC)
- Tara Jensen (NCAR/GMTB)
- Jean-Francois Lamarque
- John Michalakes (NRL)
- Phil Rasch (DOE PNNL)
- Suranjana Saha (EMC)
- Vijay Tallapragada (EMC)
- Sam Trahan (EMC)
- Mariana Vertenstein (NCAR CGD)
- Jun Wang (EMC)

- Co-Chair **
System Architecture WG
Project Milestone Accomplishments

• SIP project accomplishments to date:
  – Features and optimizations for UFS in ESMF v7.1.0 (release candidate Feb 2018, coordinated with FV3GFS release in March 2018)
  – Community mediator based on NUOPC/NEMS running in simple CESM and GFDL coupled configurations
  – Coupling support for FV3GFS with write components, atm-wave, atm-chemistry, atm-ionosphere, coastal surge, seasonal apps

• SIP project issues (what slows down progress):
  – Simultaneous changes at EMC create a challenging development environment (repo, website, workflow, etc.)
  – “Graduate student test” of get code and run it not a pass for UFS yet
  – Open questions about where coupled UFS workflows will be supported to the community
GOAL: leverage community expertise to develop coupled UFS applications
Aim to support multiple coupling science approaches (GFDL, CESM, etc.)
CMEPS developed and distributed through CIME community github repository
Validated simple coupled configurations of CESM (active atm & land, data ice & ocn) and GFDL models (active atm & land, data ice, same grid), adding complexity
Working toward Mar 2018 milestone of running simple CMEPS configuration at EMC
Sharing some mediator phases and customizing others enables multiple centers to understand and use the same coupling system

Diagram is illustrative only – components are not complete/correct.
System Architecture WG
Team Coordination and Dependencies

• System Architecture interacts with most other WGs
• Implementing a unified system architecture requires open communication and coordination across WGs, EMC development teams, and EMC management
• System architecture, Infrastructure, and Comm WGs will depend on each other in addressing usability issues (e.g. the graduate student test)
  – Example: developing a community workspace that provides scientific and technical information along with code and data access