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

Land surface Models (LSM) and Hydrology Working Group

Presented by

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Presented at SIP Coordination Meeting
May 14-16, 2019; College Park, MD
LSM/Hydro WG
Membership

• Mike Ek (NCAR/RAL/JNT)**
• Helin Wei (NOAA/EMC) **
• Trey Flowers (NOAA/NWS/NWC)**
• Jack Kain (NOAA/EMC)
• Christa Peters-Lidars (NASA/GSFC)
• Tanya Smirnova (NOAA/ESRL)
• Fei Chen (NCAR)
• Brent Lofgren (NOAA/GLERL)
• Elena Shevliakova (OAR/GFDL)
• Sergey Malyshev (OAR/GFDL)
• Chris Milly (OAR/GFDL)

• Co-Chair **
• Randy Koster (NASA/GSFC)
• David Gochis (NCAR)
• David Lawrence (NCAR)
• Brian Cosgrove (NWS/OWP)
• Xubin Zeng (U. Arizona)
• **SIP project milestones completed/progress to date:**
  - Noah MP has been extensively tested in FV3GFS (highlight in next slide)
  - Flake was coupled and tested in FV3GFS
  - A parameterization of heat storage in canopy was developed
  - Land-atmosphere interaction scheme was improved
  - National Water Model V2.0 development completed
    – Upgrade includes first-time coverage for Hawaii and an ensemble medium-range forecast configuration.

• **SIP project issues (main challenges):**
  - NCEP/EMC land team leadership
  - Lack of funding to support some SIP projects
  - Need project to examine Noah MP for NWP->S2S
Testing of Noah MP in FV3GFS

Longtime outstanding issue: nighttime warm biases over Great Plains significantly improved

Structure improvement by Noah MP Scheme flexibility
LSM/Hydro WG
Team Coordination and Dependencies

• Improved communication between SIP and Community Advisory Committee for Water Prediction (CAC-WP) committees will benefit overall effort with respect to governance and coordination.
• Improved coordination with DA WG to expedite land DA into UFS. Future role of NLDAS/NULDAS/LIS?RUC?LM4?
• Follow up with SA WG on land-hydrology-atmosphere and land-hydrology-marine coupling strategy still needed.
• Follow up with Verification WG on land/hydro-specific verification and process-based benchmarking.
• Continue to improve land physics/land data sets, accelerate land DA efforts and test S2S time frame.
• WG membership (land DA, physics: surface-atmosphere interaction)