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
January 31, 2018; College Park, MD
LSM/Hydro WG
Membership

• Michael Ek (NOAA/EMC) **
• Christa Peters-Lidard (NASA/GSFC) **
• Trey Flowers (NOAA/NWS/NWC) **
• Brian Cosgrove (NOAA/NWS/OWP)
• Stan Benjamin (NOAA/ESRL)
• Tanya Smirnova (NOAA/ESRL)
• Georg Grell (NOAA/ESRL)
• Elena Shevliakova (NOAA/GFDL)
• Sergey Malyshev (NOAA/GFDL)

• Randal Koster (NASA/GSFC)
• Xubin Zeng (U. Arizona)
• David Lawrence (NCAR)
• Fei Chen (NCAR)
• David Gochis (NCAR)

• Co-Chair **
LSM/Hydro WG
Project Milestone Accomplishments

• SIP project accomplishments to date:
  – GLDAS has been upgraded to NASA LIS7-based system
  – LIS7 NLDAS testbed includes Noah-MP, CLSM
  – RUC implemented in LIS7
  – NU-LDAS project development was initiated
  – Land physics was upgraded in the NEMSGFS/FV3GFS
  – National Water Model V1.2 development completed, handed off to NCO for implementation in March

• SIP project issues:
  – EMC land team leadership
  – Need project to examine LSMs for NWP->S2S
A modified surface layer scheme reduces rapid temperature drop during sunset.

NEMSGFS T2m @ MRB Martinsburg RGNL, WV

00Z 01/24/2016 Cycle

GFS: Rapidly cooling more than 15 °C during 3hr;
NEMS: Substantially improved: Daytime and around sunset
• Follow up with SA WG on land-hydrology-atmosphere and land-hydrology-marine coupling strategy still needed.

• Follow up with Aerosols/Chemistry WG on BVOC/Dust emissions & deposition velocity still needed.

• Follow up with Verification WG on land/hydro-specific verification and process-based benchmarking.

• Follow-up with DA WG on JEDI and land/hydro DA needed. Meanwhile, will proceed with LIS-based EnKF DA.

• Governance and UMAC vs. CAC-WP