



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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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



LSM/Hydro WG Project Accomplishments

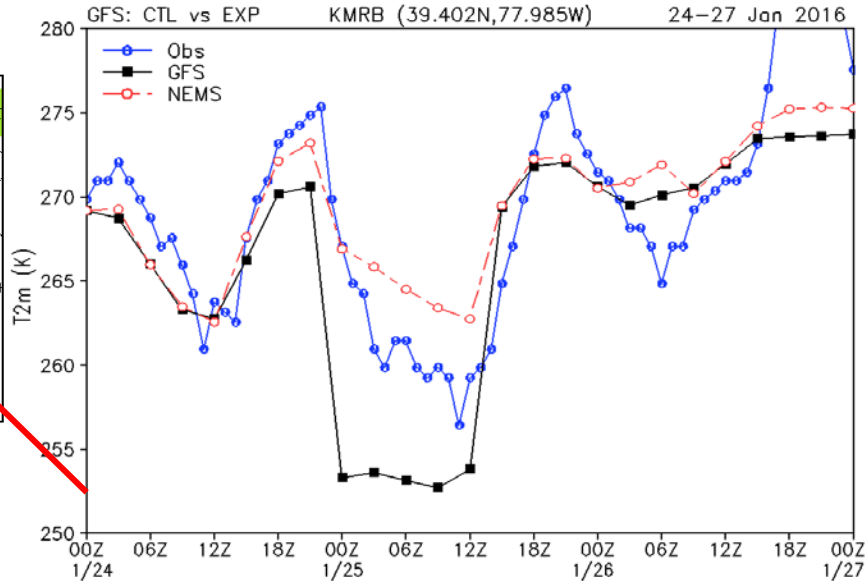
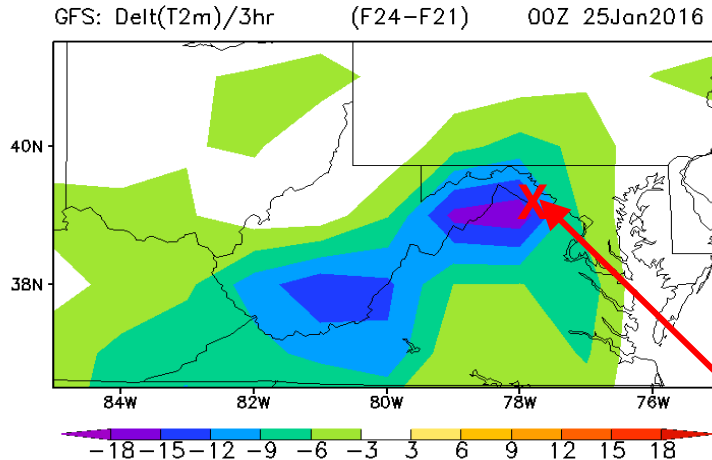


A modified surface layer scheme reduces rapid temperature drop during sunset

NEMSGFS T2m @ MRB Martinsburg RGNL, WV

00Z 01/24/2016 Cycle

T2m @ KMRB



***GFS: Rapidly cooling more than 15 °C during 3hr;
NEMS: Substantially improved: Daytime and around sunset***



LSM/Hydro WG



Team Coordination and Dependencies

- 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