Future of Mesoscale Analysis

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Whether RUA or AoR or XYZ, There Will Always Be A Need For BOTH *Real Time* Mesoscale Analysis & *UnRestricted* Mesoscale Analysis

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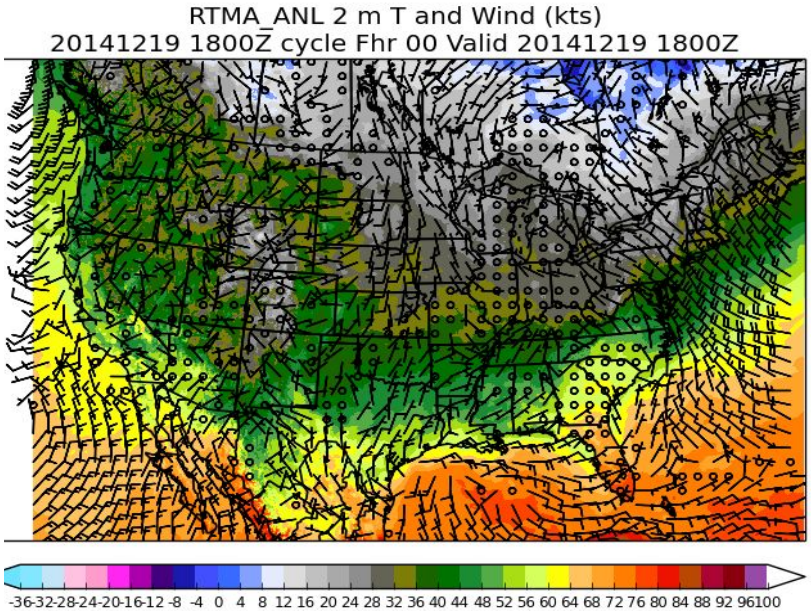
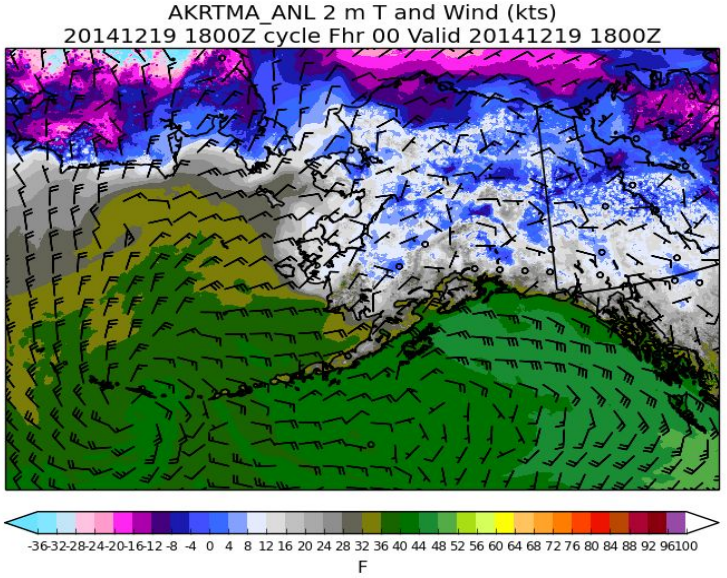
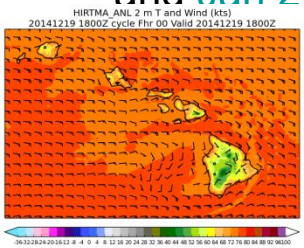
IMSG

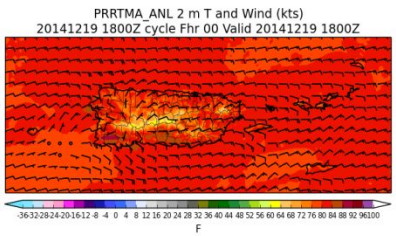
Real Time Mesoscale Analysis [RTMA]
Un-Restricted Mesoscale Analysis [URMA]

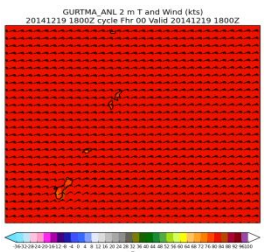
- Hourly **2D**Var 2.5 km surface analysis for National Digital Forecast Database
  - CONUS, AK (3 km), PR, HI, Guam
- URMA is the analysis of record in the National Blend of Global Models project
  - URMA runs 6 hours later to account for late-arriving data
- Guess/Background field
  - CONUS: Downscaled NAM nest + HRRR blend
  - HI and PR: Downscaled NAM nests
  - AK: Downscaled RAP and 6 km NAM nest
  - Downscaled GFS for Guam
- NCEP Gridpoint Statistical Interpolation (GSI) Analysis (Wu et al, 2002)
- Use all available surface observations (METAR, surface synop, ship, buoy, mesonet)
- Satellite obs for sky cover, near-sfc winds
- Recent implementation briefings (April 2015 and Jan 2016)





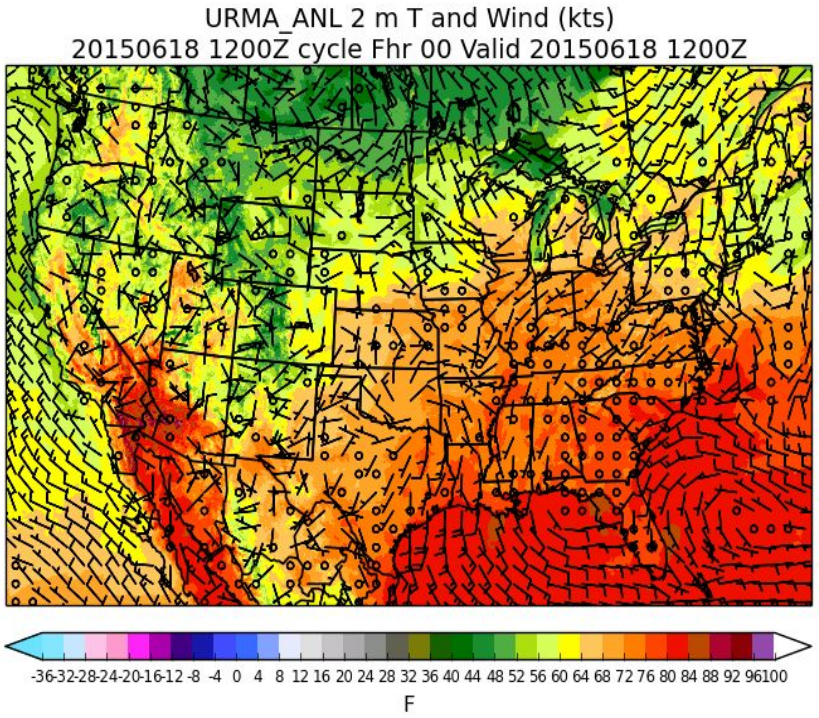


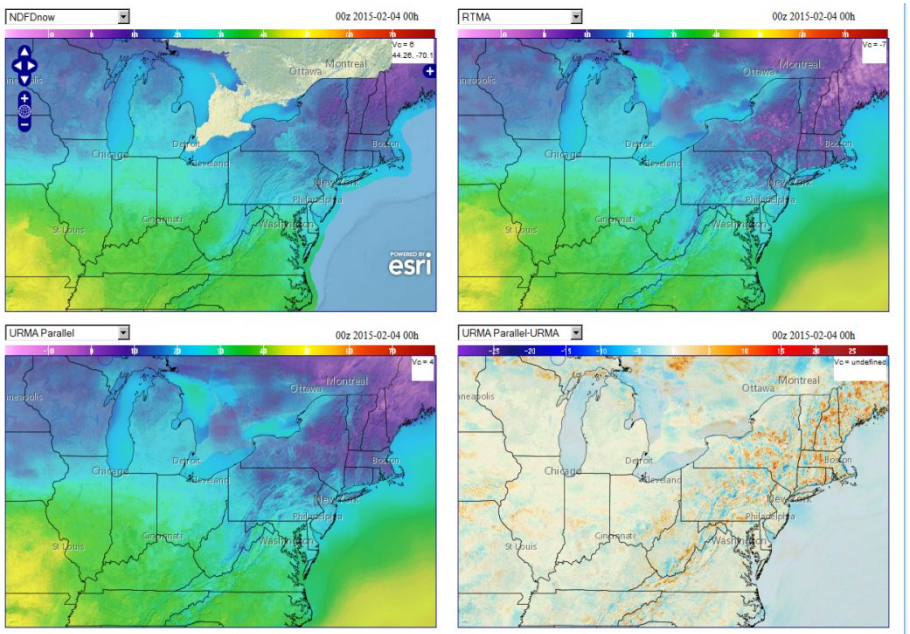




How to View RTMA/URMA

Official Public Source: NCEP MAG Page
Real-time plots: Developer maintained RTMA and URMA
(parallels when testing)
MDL's interactive viewer (intra-NOAA): RTMA/URMA and
NBM comparisons





Field/Research feedback

- AOR/RTMA listserv (aor-rtma@infolist.nws.noaa.gov)
  - A source for discussion, suggestions, questions, comments about RTMA/URMA with users and RTMA/URMA developers
  - An absolutely ***vital*** resource in facilitating improvement in the RTMA/URMA
- Monthly conference calls with field, NWS regions
- Briefings to NWS regions, WFOs , et al.
- **Even more collaboration** since the recent National SOO/DOH workshop
- VLab will play an increasing role.

Future Plans - 1

- Observational quality control
  - Variational quality control (the ‘ultimate’ buddy-check)
  - Temporal consistency (e.g. CLARUS via MADIS)
  - More intense and continual monitoring
- Move to more frequent updates
  - Requirements? Multiple sectors (see -3)
  - Driven by aviation e.g. for Ceiling & Visibility
  - Helicopter Emergency Medical Support (HEMS)
    - Every 15 min by end of 2016, 10 min in 2017, every 5 min in 2018

Future Plans - 2

- Move from 2D-Var to 3D-Var
  - Improved cloud description and PBL
  - Incorporate much more radar [MRMS] and satellite obs
  - More dependence on the background
  - Ensemble var techniques provide the key cross-covariances to get maximum benefit from indirect measurements
  - Much more expensive
  - Refactored GSI may facilitate

Future Plans - 3

- Rapid Update Analysis is a NOAA RTAP proposal for 2017-2019
  - See Rapidly Updating Analysis draft white paper
  - June 2015 workshop featuring attendees from a variety of NOAA stakeholders: http://ruc.noaa.gov/rua/
  - Clear need from a diverse set of customers and sectors
    - Situational wx awareness, analysis of record
    - Aviation and surface transportation, energy, agriculture
    - Hydrology, ecosystems, cryosphere, ocean and coastal waters
    - Fire wx, land/forest mgmt, air quality, hazardous releases …

Future Plans - 4

- This will all be done [EMC & GSD & JCSDA & NSSL], but there is no firm schedule.
- Resources will determine the rate of progress.
- If RTAP and other proposals and projects is funded, it'll get done a whole lot quicker.