NAEFS and GEFS Plans

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Present for discussion

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Major Implementation Plan (on hands charter)

Shooting for 1Q 2009 (before Dec 15 2008)

- Using current GFS/GSI version
  - No plan for implementation concurrent with GFS/GSI implementation
  - Using new GSI/GFS analysis
  - Configuration changes between GFS and GEFS (adv. and disadv.)
- Upgrade horizontal resolution from T126 to T190 for 20 perturbed forecasts
  - 4 cycles per day
  - Up to 180 hours
  - T126 from 180 hours , up to 384 hours (16 days)
  - Using 8th order horizontal diffusion for all resolutions
- Extended 16 days forecast to 35 days
  - 00Z cycle only
  - T126L28 resolution
  - User request (for MJO prediction)
- Introduce ESMF (Earth System Modeling Framework) for GEFS
  - Version 3.1.0r
  - allows concurrent generation of all ensemble members.
- Add stochastic perturbation scheme to account for model errors
  - Increasing ensemble spread
  - Improving the forecast skills

Plans for FY2009

- GEFS
  - Configuration: (4Q 2009)
    - Hind-cast at GEFS resolution (T190L28 (0-180h), T126L28 (180-840h)).
      - Details setting up in discussion
    - Hydro-meteorological ensemble (river ensemble)
      - Pending on operational LDAS/GLDAS
    - Coupling ocean-land-atmosphere model for GEFS
      - Considering ocean model in ESMF
  - Science:
    - 3-D mask for ET with re-scaling (4Q 2009)
    - Surface perturbations (4Q 2009)

Plans for FY2009 (cont.)

- NAEFS
  - Products (1Q-2Q 2009)
    - Statistical down-scaling for CONUS:
      - Additional variables (Tmax and Tmin, wind speed and direction)
      - Pending on RTMA availability
    - Statistical down-scaling for Alaska:
      - 8 variables (T2m, Tmax, Tmin, Psfc, U10m, V10m, 10 meter Ws and Wd)
      - In testing
    - Statistical down-scaling for other regions:
      - Hawaii, Puerto Rico and Guam
      - Pending on RTMA availability
  - New NAEFS component – FNMOC ensemble
    - 4Q 2009 – 2Q 2010 (could be in 2010 plan)
    - Pending on one year evaluation (May 2008 – April 2009)
    - Using mini-Bayesian method for first moment correction
    - Need to coordinate with CMC/MSC

Plans for FY2009 (cont.)

- NAEFS
  - ECMWF global ensemble – Blending to NAEFS (4Q 2009)
    - Pending on one year evaluation (May 2008 – April 2009)
    - Using mini-Bayesian method for first moment correction
    - Need to coordinate with NCO for 00UTC data and 6hr forecast intervals
  - NAEFS new variables for data exchange (1Q/2Q 2009)
    - Approximated 25 additional variables for NAEFS data exchange
    - Using GRIB2 format
    - Need to coordinate with CMC/MSC
  - Precipitation bias correction (4Q 2009 – 2Q 2010)
    - Full-Bayesian with pseudo-precipitation
  - Probabilistic verification
    - Unified probabilistic verification (2Q, 2009)
    - Shared codes with SREF

Plans for FY2010

- GEFS
  - Configuration:
    - Variable resolutions:
      - T270L42 (0-180hr) (considering half-degree products)
      - T190L28 (180-384hr)
      - T126L28 (384-840hr)
    - Full coupling with ocean model (assume in)
  - Science:
    - Improving TS relocation
      - Adopt all new developed TS relocation schemes
    - Improving stochastic scheme
      - Adaptive 2/3-demisional parameters adjustment

Plans for FY2010 (Cont.)

- NAEFS
  - New NAEFS component – FNMOC global ensemble
    - 4Q 2009 – 2Q 2010
    - Pending on one year evaluation (May 2008 – April 2009)
    - Using mini-Bayesian method for first moment correction
    - Need to coordinate with CMC/MSC
  - Improving NAEFS products
    - Introduce full Bayesian model to calibrate high moments
      - For precipitation forecast
      - All variables
  - Statistical down-scaling
    - Precipitation
    - Improving current method
    - Adding new variables (pending on RTMA availability)
  - TC related products
    - Including bias correction
  - Seamless weather-climate interface
    - Merge GEFS and CFS