Model Analyses and Guidance

Version 5.0.0 Release Notes - Dec 15, 2023

Scope

The release includes the following changes:

New Models, Products, and Domains:

- Added a new model Automated Tropical Cyclone Forecasting (ATCF) under Tropical Guidance
  - Generated when HFSA-Parent model has a storm
- Added the following new domain to GFS:
  - Pacific (PAC-REGION)
- Renamed the following products to HREF:
  - pmm_refd_1km → pmm_refd_1km_emsl
  - pmm_refd_max → pmm_refd_max_emsl
- Added the following new products to HREF:
  - lpmm_mean_precip_p01
  - lpmm_mean_precip_p03
  - lpmm_mean_precip_ptot
  - eas_prob_1h_rain_0.01in
  - eas_prob_1h_rain_0.25in
  - eas_prob_1h_rain_0.5in
  - eas_prob_3h_rain_0.01in
  - eas_prob_3h_rain_0.25in
  - eas_prob_3h_rain_0.5in
  - eas_prob_1h_snow_0.1in
  - eas_prob_1h_snow_0.3in
  - eas_prob_3h_snow_0.1in
  - eas_prob_3h_snow_0.3in
  - pmm_refd_1km *(no emsl)*
  - pmm_refd_max *(no emsl)*
  - prob_lowIFR_IFR
- Added the following new products to NAEFS:
  - precip_p06 *(only for 0z and 12z cycles)*
  - precip_p24 *(only for 0z and 12z cycles)*
  - precip_ptot *(only for 0z and 12z cycles)*
  - prob_precip_0.25in *(only for 0z and 12z cycles)*
  - prob_precip_0.5in *(only for 0z and 12z cycles)*
  - prob_precip_1in *(only for 0z and 12z cycles)*
  - 10th_percentile_10m_wnd
  - 50th_percentile_10m_wnd
  - 90th_percentile_10m_wnd
  - extreme_index_10m_wnd
  - 10th_percentile_2m_temp
  - 50th_percentile_2m_temp
  - 90th_percentile_2m_temp
  - extreme_index_2m_temp
  - extreme_index_mslp
- Added Omega for 700_rh_ht for HRRR

Other updates:
- Added units to NAEFS and GEFS-MEAN-SPRD product titles
- Improved temperature/dew point color fill for Fire Weather (FIREWX) and RTMA models
- Improved HAFS NESTED products by removing unnecessary border whitespace
- Improved HAFS products by: unifying wind barb color (to black), increasing surface temperature contour from 17°C to 33°C, increasing 500 RH contour intervals
- Improved grid point display for the 2m_apparent_temp, 2m_dewp_10m_wnd, and 2m_temp_10m_wnd products for the Hawaii and Puerto Rico domains for NBM
- Fixed scale factor for the mean_snow_total product for HREF
- Increased image resolutions from 1024x768 to 1280x1024 pixels (excluding SREF-CLUSTER, STORM-TRACKS, SKEWT, UAIR, GFS and NAM Sounding products)
- Changed display order of HFSA/HFSB on Tropical Guidance web page (so that HFSA is first)

WCOSS2 Resource Changes

Resource changes are marked in **bold**.

Model	Directory	Number of images	Disk space per day	Processors per job
atcf	gifs/atcf	varies	varies	**+1 (new model)**
firewx	gifs/firewx	no change	**0.071**	no change
gefs-mean-sprd	gifs/gefs-mean-sprd	no change	**1.6**	no change
gefs-spag	gifs/gefs-spag	no change	**0.661**	no change
gefs-wave	gifs/gefs-wave	no change	**2.2**	no change
gfs	gifs/gfs	**18116**	**10.8**	no change
gfs-snd	gifs/gfs-snd	no change	no change	no change
gfs-wave	gifs/gfs-wave	no change	**1.3**	no change
hfsa-parent	gifs/hfsa-parent	varies	varies	no change
hfsa-nested	gifs/hfsa-nested	varies	varies	no change
hfsb-parent	gifs/hfsb-parent	varies	varies	no change
hfsb-nested	gifs/hfsb-nested	varies	varies	no change
href	gifs/href	**83776**	**2.4**	no change
hrrr	gifs/hrrr	no change	**5**	no change
hrw-arw	gifs/hrw-arw	no change	**0.1**	no change
hrw-arw2	gifs/hrw-arw2	no change	**0.2**	no change

hrw-fv3	gifs/hrw-fv3	no change	**0.2**	no change
ice-drift	gifs/ice-drift	no change	no chnage	no change
naefs	gifs/naefs	**89784**	**3.5**	no change
nam	gifs/nam	no change	**0.01**	no change
nam-hires	gifs/nam-hires	no change	**2.5**	no change
nam-snd	gifs/nam-snd	no change	no change	no change
nbm	gifs/nbm	no change	**0.407**	no change
rap	gifs/rap	no change	**0.4**	no change
rtma	gifs/rtma	no change	**0.914**	no change
skewt	gifs/skewt	no change	no change	no change
sref	gifs/sref	no change	**0.241**	no change
sref-cluster	gifs/sref-cluster	no change	no change	no change
stofs	gifs/stofs	no change	**0.179**	no change
storm-tracks	gifs/storm-tracks	no change	no change	no change
uair	gifs/uair	no change	no change	no change

Total WCOSS2 Disk space change: **~ +32.683GB**

WCOSS2 Updates

A file listing differences between (current production version) and v5.0.0 named **diff_4.1.3_prod_5.0.0_20231215** is placed under **/wcoss/docs** in the baseline.
A copy is also available in Google Drive: diff_4.1.3_prod_5.0.0_20231215

Tickets

The following list contains all tickets that are included in this version:

- [MAG-209] Add new probability products for HREFv3
- [MAG-256] Add Pacific Domain for GFS
- [MAG-298] Add ATCF plots for tropical storms
- [MAG-269] Add Omega for 700 RH chart for HRRR
- [MAG-296] Add units to NAEFS product titles
- [MAG-293] Add new probability products for NAEFS
- [MAG-304] Create new HREF product with only weighted mean of max/1km reflectivity (AWC)
- [MAG-305] Create new HREF product with both LIFR and IFR in one image (AWC)

- [MAG-135] Improve temp/dew point color fill for Fire Weather and RTMA
- [MAG-272] Improve products on Tropical Guidance page by plotting storm-centered domain
- [MAG-292] Improve grid point display for the NBM: Hawaii/PR: apparent temp, mix/max temp
- [MAG-295] Verify gefs-mean-sprd wind plot for correct units
- [MAG-268] Fix error for the mean_snow_total image for HREF
- [MAG-306] Explore increasing image resolutions
- [MAG-299] Check if skewt_config severity hash is needed (Bugzilla 948)
- [MAG-300] Revisit writing status files to $PDY directories (Bugzilla 1279)
- [MAG-301] Update exmag_processor logic that creates transfer list files for sync job (Bugzilla 1234)
- [MAG-302] Address python FutureWarning msgs (Bugzilla 1460)
- [MAG-303] Fix skewt processor "make_cycle_link: command not found" message (Bugzilla 1461)

Notes, Known Issues, Limitations, and/or Restrictions

Based on results from 🔢 MAG v5.0.0 Wall-Clock Testing performed, we have adjusted the wall-clock times for the following jobs:
processor:
jmag_firewx_processor.ecf
jmag_hiresw_arw_processor.ecf
jmag_rap_processor.ecf
jmag_naefs_processor.ecf
jmag_stofs_processor.ecf
jmag_gfs_processor.ecf

send2web:
jmag_wave_sync.ecf
jmag_href_sync.ecf
jmag_naefs_sync.ecf
jmag_gfs_sync.ecf

Deployment/Implementation Instructions

See **implementation_instructions** under **/wcoss/docs** in the baseline.
A copy is also available in Google Drive: 📄 MAG_v5.0.0_implementation_instructions