Weekly Summary

2022-07-22

Shaorong Wu

Work Summary (July 18 ~ 22)

* Operations

07.16 14:30Z~16:30Z H-8 and MET-9 McIDAS images were delayed/lost. Re-processed 14:30Z H-8 image manually (delayed more than 2 hours).

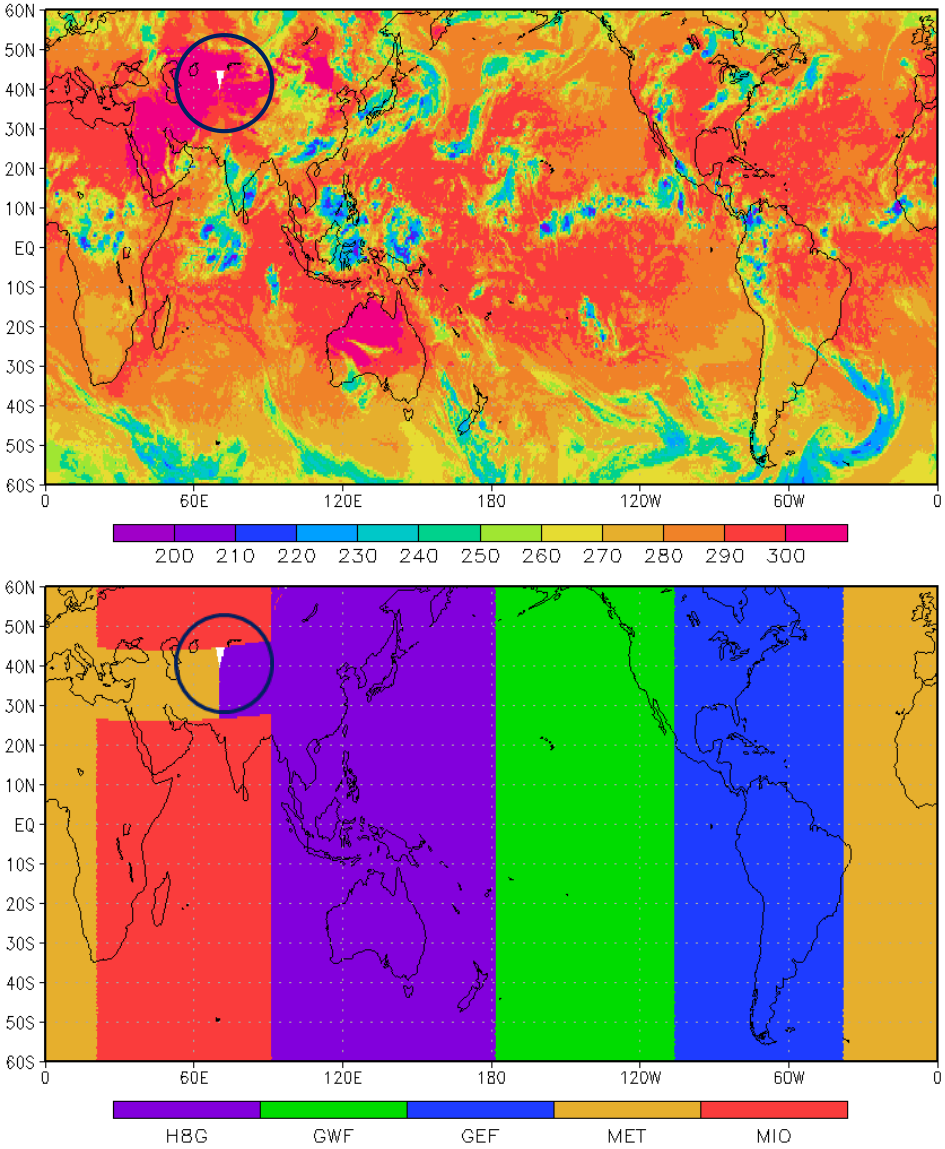
07.18 05:00Z MET-9 image got partial coverage. Re-placed with 05:15Z image.

Completed NCO RFC's 9736, 9737, and 9738 to migrate CPC GPCP Processing, CPC CMORPH V0.x Processing, and CPC CMORPH-Gauge Processing systems on CF.

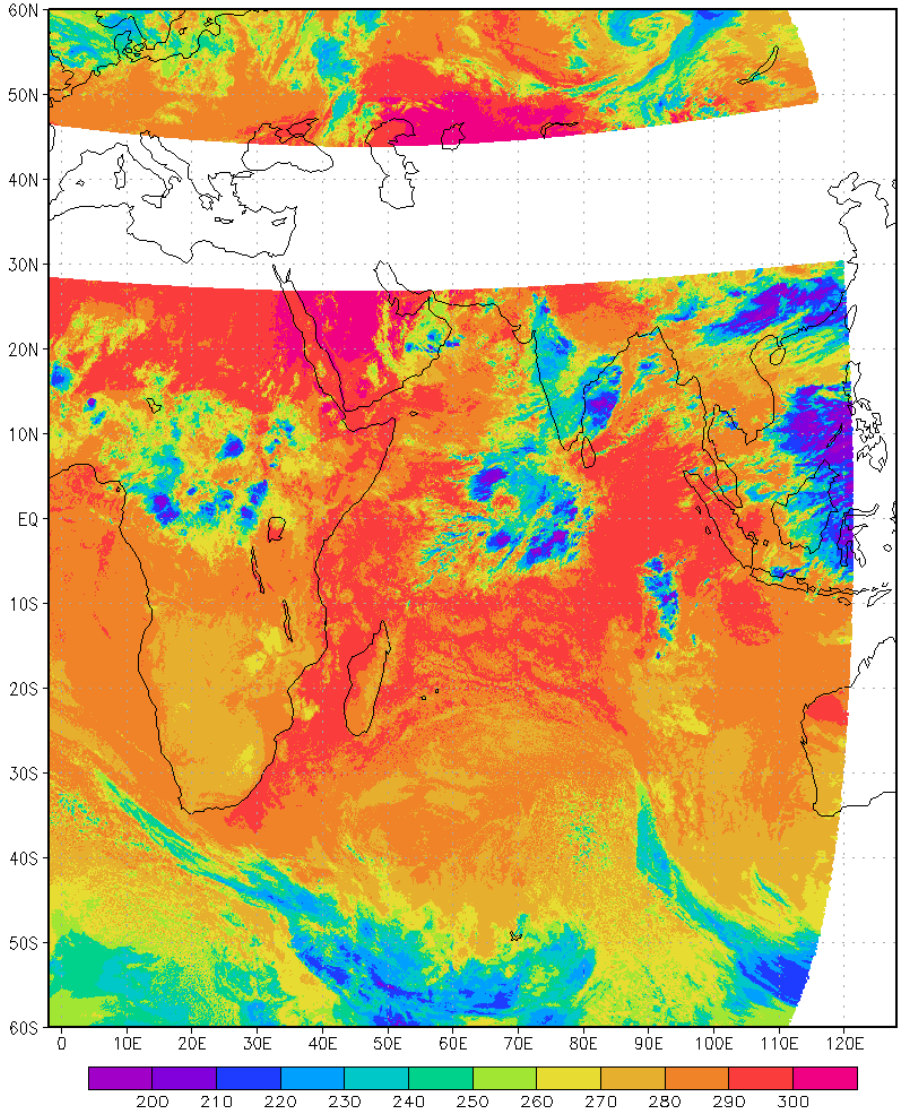
* Others

Finished QC on 2022.05 CONUS daily gauge precip analysis data for USDA/RMA.

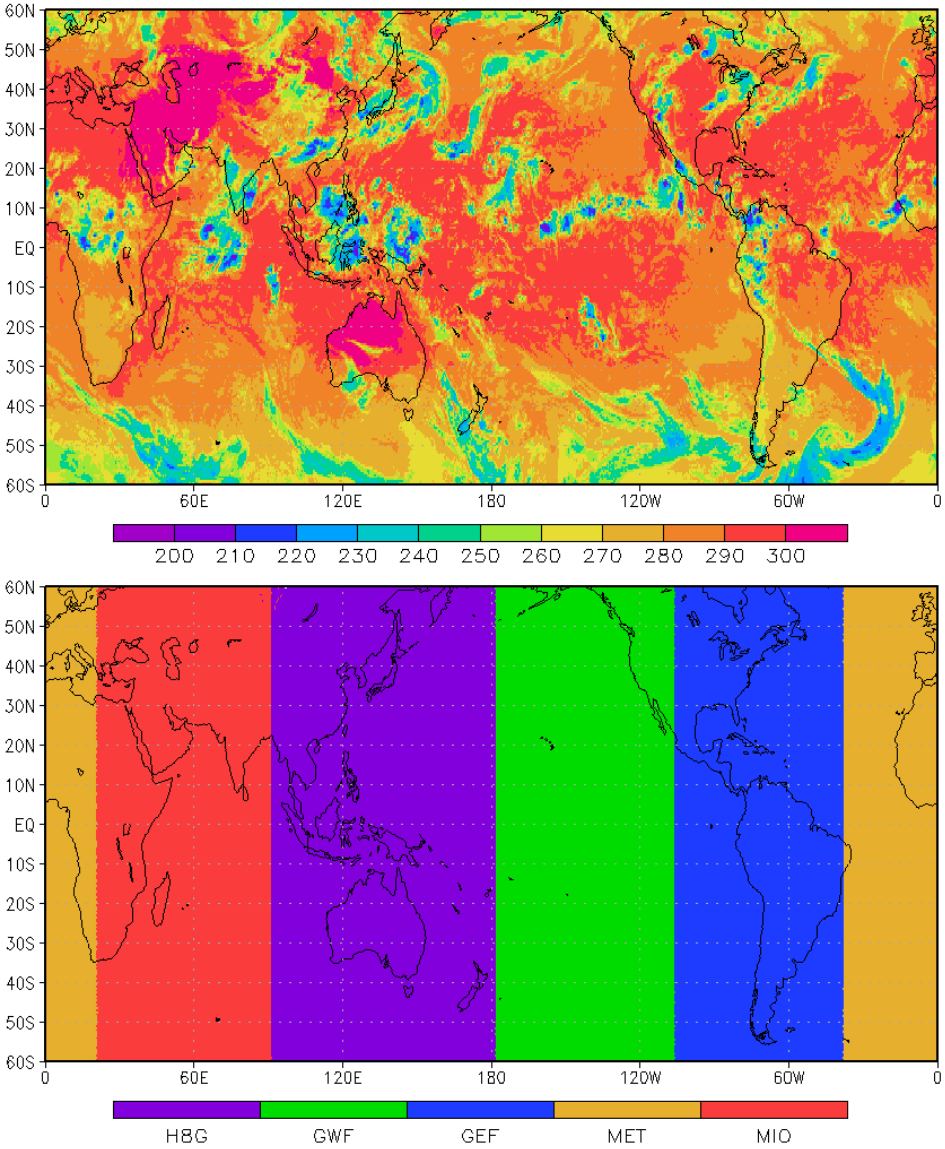
[Mon] 2022-Jul-18 05:00~05:29Z [RT]



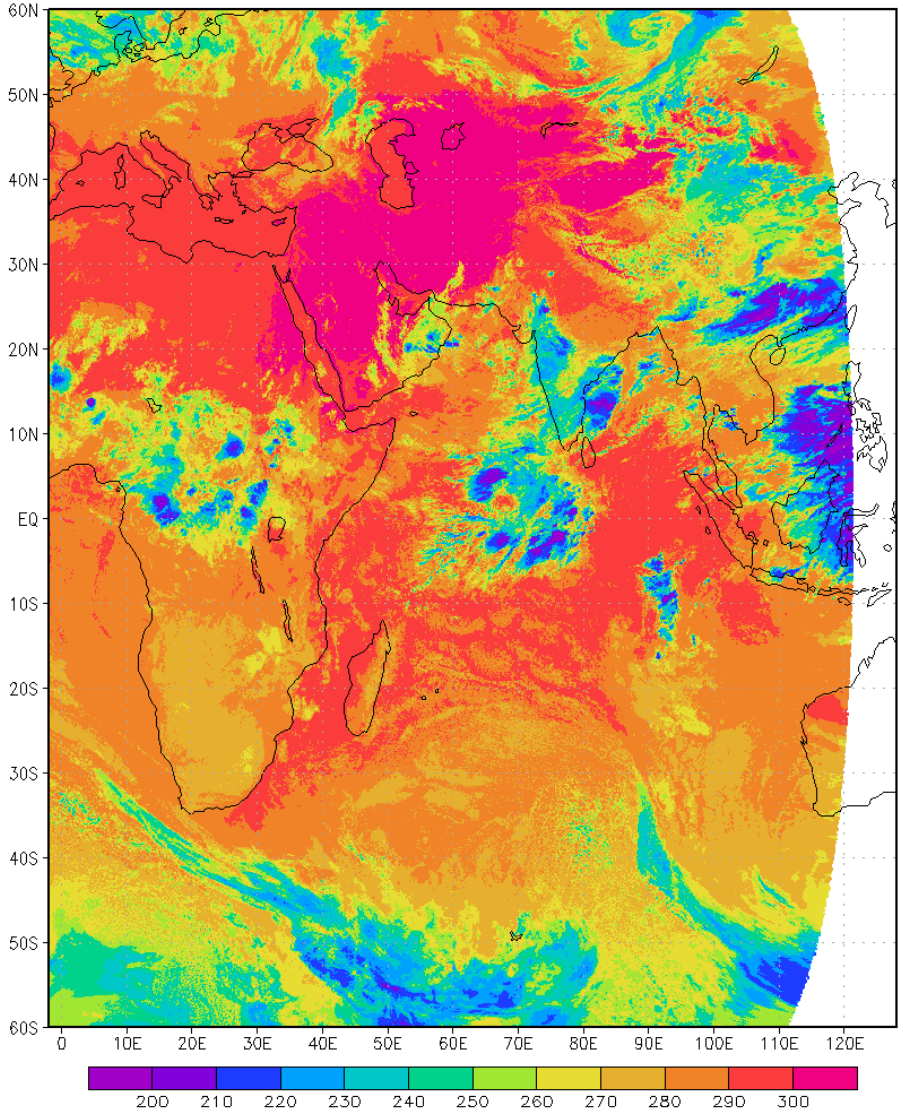
MIO @ 2022-Jul-18 05:00Z



[Mon] 2022-Jul-18 05:00~05:29Z [OP]



MIO @ 2022-Jul-18 05:~~00~~15Z



Bert Katz

Activities for July 18 – July 22

1. The following OpenMP jobs are running in quasi-operational mode on WCOSS 2.0; their C2 VECTOR products are archived to HPSS:
   (a) C2 VECTORS are produced from Gaussian-gridded FV3 GFS fields at 04Z, 10Z, 16Z, and 22Z. Each run requires 2 - 3 minutes.
   (b) C2 VECTORS are produced from real-time 0.05-deg half-hourly geostationary data (see points 6 and 7). Each run requires about 2/3 min.
   (c) hourly blending of C2 VECTORS from (a) and (b). Each run requires 4-5 seconds (but 2 minutes including compression).
   (d) a logfile is updated when the above runs archive their results. That logfile is also updated when the "sfluxgrbFFF" files are unavailable.

2. The snow probability job runs in quasi-operational mode on WCOSS 2.0. It is initiated by the GFS C2 VECTOR processing. Results are compressed and archived to HPSS; updates are posted to a logfile.

3. Stage 4 precipitation analyses for the mainland U. S., Alaska, and Puerto Rico are copied daily to the CPC workstations at 0620 UTC.

4. This week, WCOSS 2.0 was unavailable during the following periods: (1) 7:00 AM - 3:30 PM on July 20; (2) 7:30 PM - 11:30 PM on July 20; and (3) 7:00 AM - 5:30 PM on July 21. WCOSS 2.0 was also taken at 7:00 AM this morning (July 22); it will be returned later this afternoon. These outages are for upgrading the storage subsystem and parallel testing.

Activities for 7/18 – 7/22 (cont'd.)

5. Procedures are running hourly on WCOSS 2.0 to fetch twenty polar-orbiting data streams from the CPC workstations. The “raw1” data files are reacquired as they are updated. Hourly time-stamped data availability tables (including the age of the data files) are generated. The data files and tables are stored in subdirectories by date; the tables are shipped back to similar directories on the CPC workstations. New “unified” standards for file names and file contents are part of a redesign of the processing using configuration files to ease changes in satellite usage. The procedures are acquiring:

(a) PMW data from ten satellites (10 simultaneous jobs). GPROFS data from GPM in HDF5 files are being decoded into standard “RAW1” files.

(b) LEO AVHRR data from five satellites (5 simultaneous jobs). Provision of this data stopped in early Jan. 2021. These processes will be redesigned.

(c) MiRS snowfall data from five satellites (5 simultaneous jobs). NetCDF data from five satellites are being decoded into standard “RAW1” files.

6. A twice-hourly real-time GPE run on WCOSS 2.0 produces GPE and 30-minute MWCOMB2X data, which are compressed for archival to HPSS and shipment to the CPC workstations. Jobs are triggered which create GEOSTATIONARY and BLENDED C2 VECTORS. These results are also archived to HPSS. Each archival is accompanied by an update to a logfile. Timing issues were denying sufficient GPE data to the GEOSTATIONARY jobs. Those timing issues have been resolved. The half-hourly GPE jobs now produce data for two hours before the current hour.

Activities for 7/18 – 7/22 (cont'd.)

7. Procedures are running hourly on WCOSS 2.0 (using data acquired in point 5 to generate various aggregated precipitation products from hour t – 12 to hour t – 1 on twelve processors:

(a) MWCOMB2X data in ~7 minutes. This job triggers a chain of jobs which generate, in order: (1) GPE data; (2) GEOSTATIONARY C2 VECTORS; and (3) BLENDED C2 VECTORS based upon the MWCOMB2X data produced above. A logfile is updated when (1), (2), and (3) archive their results. Timing issues were denying sufficient GPE data to the GEOSTATIONARY jobs. Those timing issues have been resolved.

(b) LEO AVHRR JOINT precipitation estimates, along with MWCOMB and CLOUDSAT estimates, in 6.5 – 7 minutes.

(c) SFCOMB snowfall estimates in 2 - 3 minutes.

(d) APCOMB combined MWCOMB2X, LICOMB and SFCOMB precipitation estimates in ~1 minute.

8. Procedures are running hourly on WCOSS 2.0 to generate morphed precipitation products from hour t – 15 to hour t - 1:

(a) Forward propagation and backward propagation. Two single-threaded jobs are running simultaneously, taking 3-4 minutes. A delaying job ensures timely use of BLENDED C2 VECTORS.

(b) Morphing the propagated results. This takes ~0.5 min. on 15 processors. A delaying job ensures timely use of GPE data. Missing LEO AVHRR data (see points 5 and 7) has caused this job to generate NaN's.

Activities for 7/18 – 7/22 (cont'd.)

9. The daily data gathering jobs, Weekly SSTOI job and the post-processing of the Weekly SSTOI analysis are running in quasi-operational mode on WCOSS 2.0. The following are sent to the RZDM server: GRIB and zipped flat binary versions of the weekly analyses and monthly averaged analyses, and compressed ASCII files containing the weekly and monthly SSTOI analyses for the year-to-date.

This past Monday's Weekly SSTOI analysis was for July 13.

10. After the Tuesday outages of WCOSS 2.0, there were lengthy delays in "catching up" the mirroring of operational products to the developmental machine through Wednesday and early Thursday. These delays were due to: (1) slow transfers between DOGWOOD and CACTUS; and (2) problems with the transfer nodes on CACTUS. (The latter were fixed by 7:30 PM on Wednesday.) The "sfluxgrbFFF" files from the 1200 UTC and 1800 UTC GFS model runs on July 19 were 27 hours late! The files from the next three model runs on July 20 were available at that point due to the order of performing the "catch-up" mirroring. But the "sfluxgrbFFF" files from the 1800 UTC GFS model run on July 20 were six hours late; the files from the 0000 UTC GFS model run on July 21 were three hours late. Recovery from the Thursday outage of WCOSS 2.0 went more smoothly: the "sfluxgrbFFF" files from the 1200 UTC GFS model run on July 21 were immediately available after the outage; the files from the 1800 UTC GFS model run on July 21 were just one hour late.

Yanjuan Guo

Weekly Report (07/22/2022)

- Working on improving the efficiency of new code
- Divide global grids to sub-regions and search for associated subset of station observations
- Check other possibilities

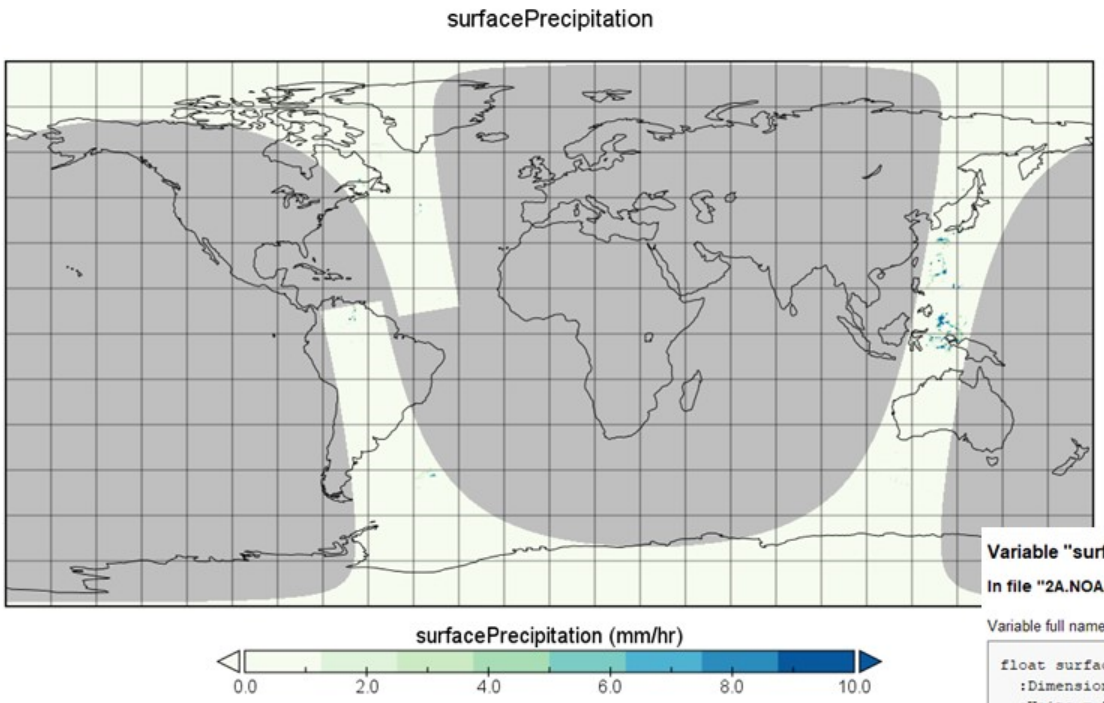
Eric Sinsky

Weekly Summary (7/18/2022-7/22/2022)

Eric Sinsky

- Continued reviewing scientific literature for CMORPH1
  - Xie et al. 2017 – AMS's Journal of Hydrometeorology
- Continued reviewing some of the available documentation for CMORPH2
  - Xie et al. 2019 – CDPW (2019)
- Continued reviewing the CMORPH 0.x scripts and code
  - Preprocessing routines of each of the satellites
  - Routines to calculate the Cloud Motion Vectors
- Configuring Gaea account for HPSS access
- In the process of reactivating my WCOSS2 and modifying my RZDM account as a CPC user

ABOP(MHS)/NOAA-19
20220702 (22:24:19-00:06:48 UTC)



- Plotted directly from the raw NOAA-19 HDF5 file using an interactive GUI-based NASA tool called Panoply (https://www.giss.nasa.gov/tools/panoply/).
- Panoply allows for easy plotting and plot editing of physical variables in HDF5, NetCDF, GRIB1 and GRIB2 files.
- Useful tool if one wants to quickly glance at the data in a particular file.
- Metadata can also be viewed with this tool.

Variable "surfacePrecipitation"

In file "2A.NOAA19.MHS.GPROF2021v1.20220702-S222419-E000648.V07A.RT-H5"

Variable full name: S1/surfacePrecipitation

```
float surfacePrecipitation(2307, 90);
  :DimensionNames = "nscan,npixel";
  :Units = "mm/hr";
  :units = "mm/hr";
  :_FillValue = -9999.9f; // float
  :CodeMissingValue = "-9999.9";
  :_ChunkSizes = 32U, 90U; // uint
```

Pingping Xie

Things This Week

- Precipitation
  - *Updated WMO Weekly Summary*
  - *CMORPH2 (parallax correction, inter-cal, directory structure et al)*
  -
- *Salinity / ocean color / evaporation / Temperature*
  - *Check on T2m station data*
- *OLR*
  -
- *Reviewing papers*
  -
- *CPC business / administrative*
  - *Work group lead meetings et al*
  -
- *Other things*
  -

Emphasis of next two weeks

Critical

- ***CMORPH2 migration (Real-Time Production; Retrospective Processing / adding in MT/FY3B,C,D)***
- ***T2m analysis new implementation***
- ***SHEF migration (MRMS on CF, 1st steps of the new SHEF to CF test account)***
- ***Mexico Data / Canadian Data***
- ***CMORPH2 HPSS storage strategy***

Individual

- Bert CMORPH2 migration (Generalized coding, Retro decoding); WCOSS2
- Yanjuan T2m analysis (testing new implementation strategy)
- Eric: Spin-up, CMORPH inputs / SSS / WCOSS2 storage
- Pingping: Inter-cal / CMORPH2 structure / Mexico+Canada data

Other things