



# State of NMME Operations

June 21-22, 2023



# Outline

Product Services

Data Services

2022-2023 in Review

Catalog of uses at CPC

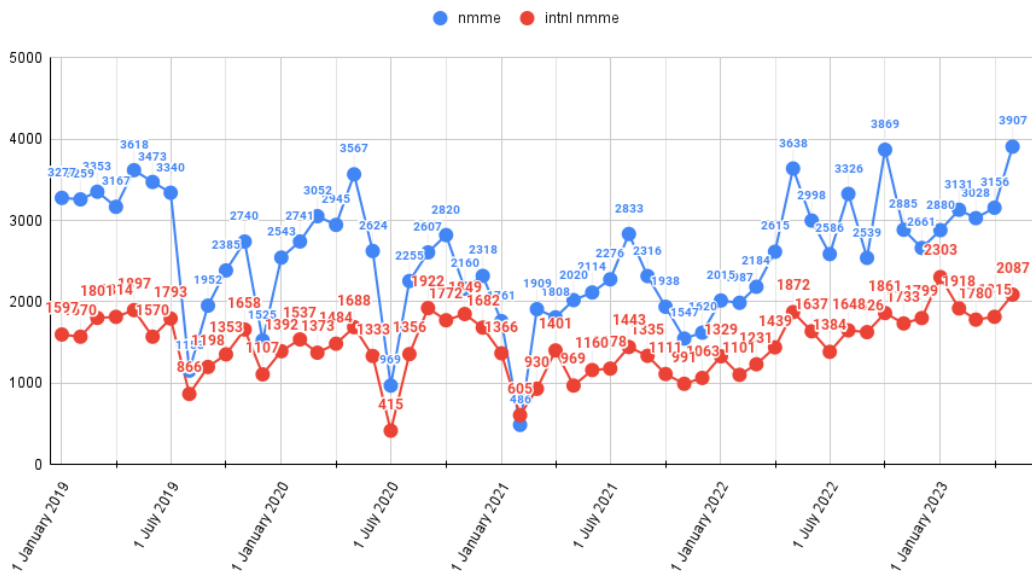
NMME Agreement

What's next?



# Product Services - Web Stats

### NMME and International NMME main page hits



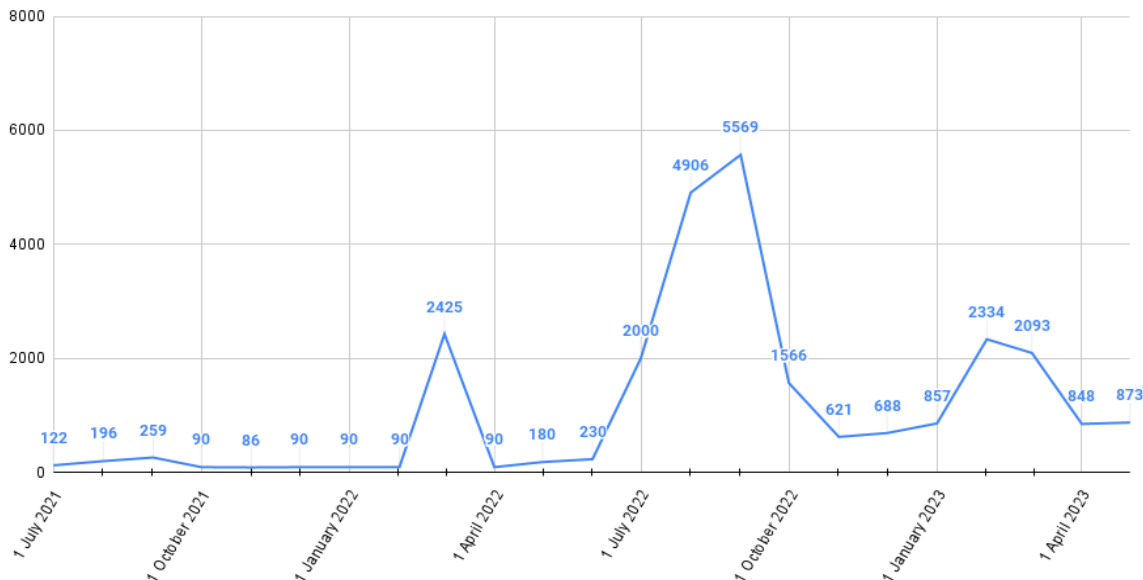
Total	135876	78142
Average	2563.70	1474.38





# Product Services - FTP

NMME FTP hits



Somebody STILL REALLY likes GEM-NEMO (55-57K hits per month)

Some months - Heavy on back data. Often main files (3 vars) each about 100-150.





# Product Services - Web Stats

Most months, the NMME page is the number 1 landing page.

The international NMME page is usually the number 2 most hit page.

- [NMME ENSO Plumes](#) - Sometimes this is number 2.
- [Seasonal products landing page](#) - Sometimes this is number 2.
- [Monthly products landing page](#) - 1 time this was number 2.
- Within International Desk
  - Sometimes seasonal/monthly pages are directly number 1



- Fixed a lot of broken verification links (see following slides, worked with Dan Harnos).
- Working to fix a lot of the hindcast data
  - Realtime ops don't always go back and fix issues, but for internal R&D and R2O we need to.
- Starting transition to new NCEP infrastructure
  - Red Hat 8 - Maybe moving away from GrADS



# Verification

## 1. Verification - CONUS/North America

- a. Have a dedicated resource as of early 2022. YAY! → Mostly Fixed!
- b. Seasonal and Monthly updated through end of 2022. Annual update
- c. ACC and HSS. Brier and RPSS coming
  - i. Do we need RMSE, amplitude and biases in real time?

## 2. Global

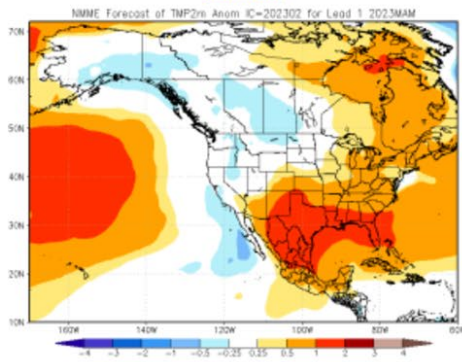
- a. Through 2021 analysis available.
- b. Will pursue updating for data through 2022 (In 2022, this said 2021, so progress!)

## 3. Relative to CFSv2 and IMME/C3S

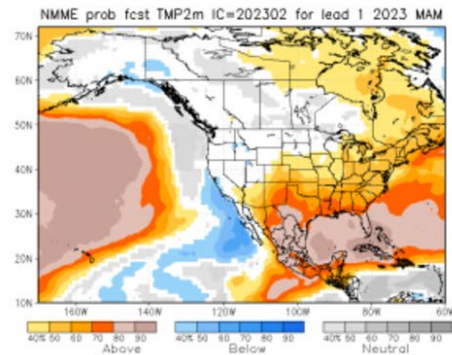
- i. This needs to be fixed.



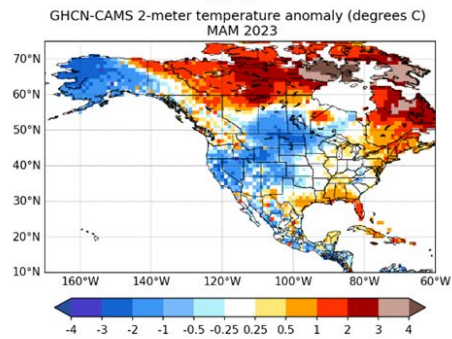
### NMME



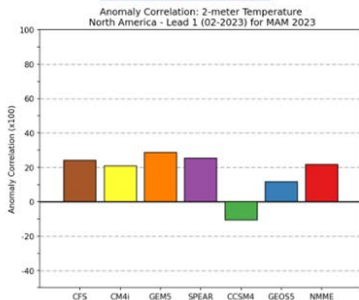
### Prob fcst



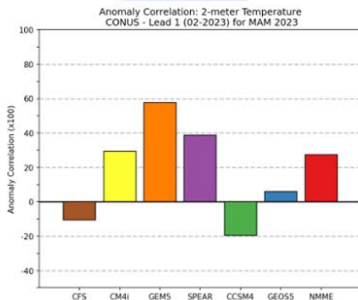
### OBS



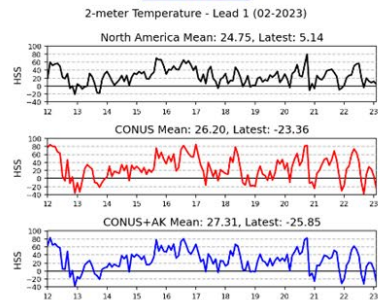
### North Amer. AC



### CONUS AC



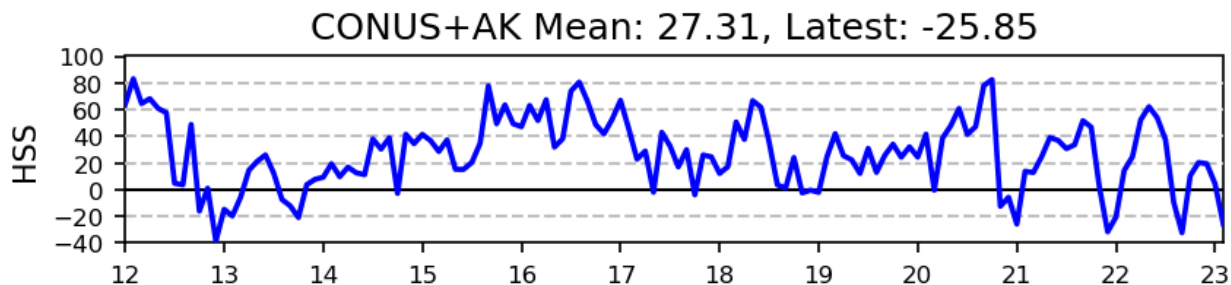
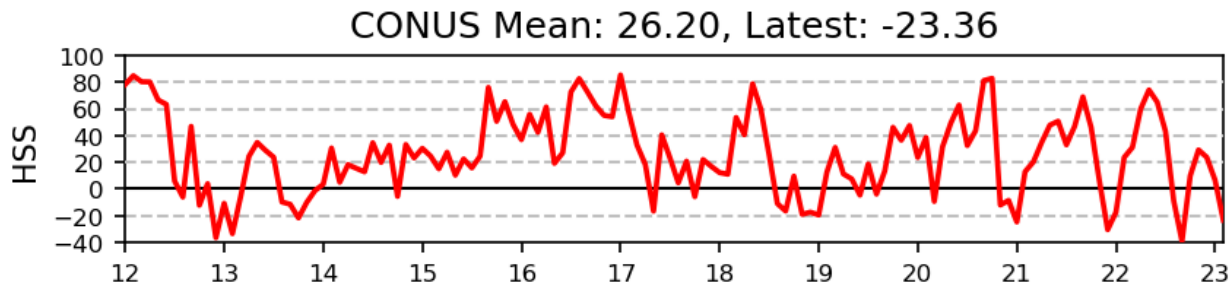
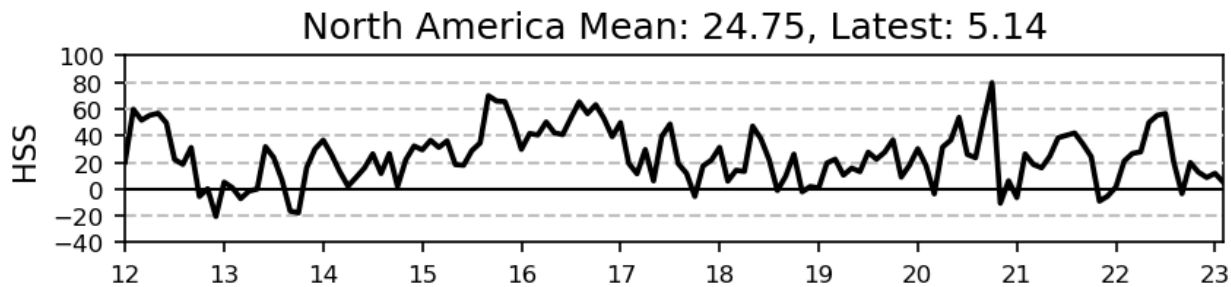
### Heidke SS



[https://www.cpc.ncep.noaa.gov/products/NMME/archive/2023020800/current/V\\_ustmp2m\\_Seas1.html](https://www.cpc.ncep.noaa.gov/products/NMME/archive/2023020800/current/V_ustmp2m_Seas1.html)



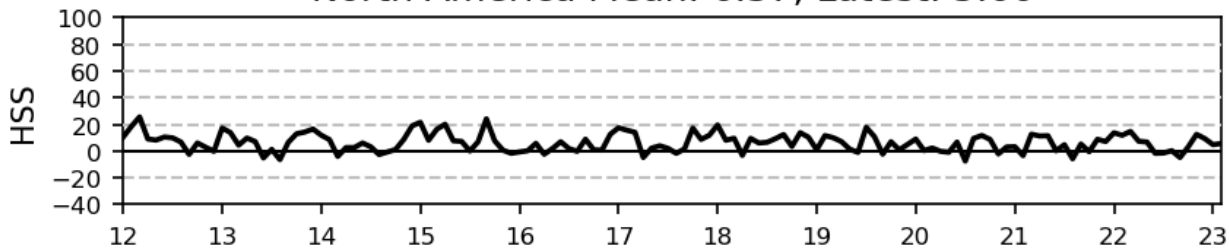
## 2-meter Temperature - Lead 1 (02-2023)



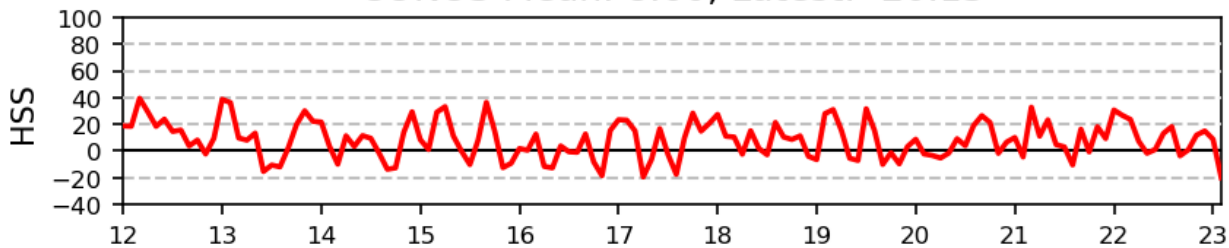
# Precipitation - Lead 1 (02-2023)



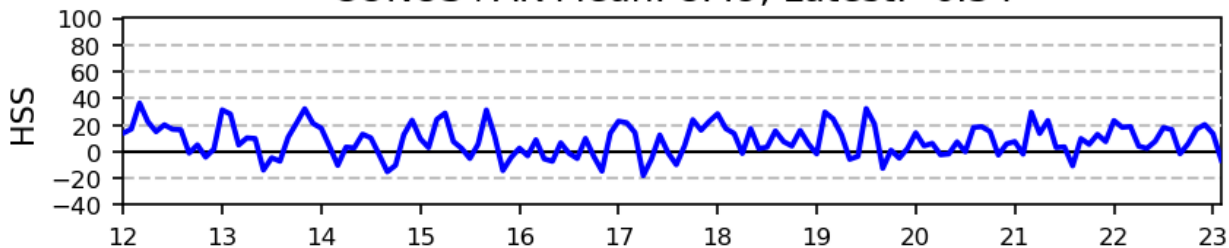
North America Mean: 6.37, Latest: 5.66



CONUS Mean: 8.60, Latest: -20.13



CONUS+AK Mean: 8.49, Latest: -6.34





# Data Services

## 1. Downloads from CPC

a. Timeliness of public availability of real time data (day of availability  $\leq$  8th of month)

i. [CPC FTP](#) - 100%

ii. [International Desk FTP](#) - 100%

## b. Quality

i. June - NASA data later

ii. March - An update on 22 March - digging into it.





1) No new models during this time.

a) Anything coming up?

1) Still working hindcast inconsistency issues

a) CPC and IRI data files don't match.

b) Sometimes CPC doesn't match the providing center

c) Need to set up a QC routine.

d) Hailan, Yutong, and Ginger at CPC, Andy

# Cataloging of Uses at CPC Uses of NMME Data within CPC



Short title of project/task	Year Started	Product supported	Variables used
ENSO forecasting	2011	ENSO	SST
NMME FORECASTS FOR SELECTED INTERNATIONAL DOMAINS	2012	Anom, Std.Anom, Probabilistic Forecasts, Verification measures (SKILL MAPS, HSS, RPSS)	SST, T2M, Precip
Downscaling of the NMME over several international regions	2012	Seasonal rainfall forecasts	SST, Precip, 850-hPa Wind, SLP, Other1
Hybrid hurricane	2014	Seasonal Hurricane Outlook	200-hPa Wind, 850-hPa Wind, SLP
monthly and seasonal meteorological drought forecasts	2014	drought outlook	Precip
Understanding climate variability	2014	N/A	SST, T2M, Precip, Z200
Drought monitoring and Outlook supporting briefing/suggestion.	2015	Drought Outlook supporting Briefing/suggestions.	SST, T2M, Precip
Seasonal variability and Predictability (S2S)	2016	Seasonal Prediction and Predictability	SST, T2M, Precip
CPC monthly attribution analysis	2016	CPC seasonal outlooks	SST, T2M, Precip, Z200
Calibration, Bridging, and Merging (CBaM)	2017	Seasonal Forecasts	SST, T2M, Precip
Seasonal Consolidation	2018	Seasonal Forecasts	T2M, Precip
probabilistic drought forecast	2018	drought outlook	T2M, Precip
NMME forecast verification and correction	2018	seasonal forecast skill and Nino3.4 correction with NN	SST, T2M, Precip, Z200

# Cataloging of Uses at CPC Uses of NMME Data within CPC



Short title of project/task	Year Started	Product supported	Variables used
Teleconnection Forecast / Model Diagnostics	2019	Monthly/Seasonal Forecasts	SST, T2M, Precip, Z200
Seasonal Snowfall Outlook Development	2019	N/A	T2M, Precip
ocean monitoring and ENSO prediction	2019	ENSO diagnostic and discussion, Monthly ocean briefing	SST
NMME Teleconnection post-processing	2019	Research activities/ Web Figures	T2M, Precip, Z200
Drought prediction research and product development	2019	Experimental probabilistic drought outlook	SST, T2M, Precip, 200-hPa Wind, 850-hPa Wind, SLP, Z200
Seasonal Snowfall Prediction Tool	2019	Seasonal Forecasts	T2M, Precip
integrated drought forecast	2020	drought outlook	T2M, Precip
USAPI Monthly and Seasonal	2020	Monthly and Seasonal T and P for USAPI	SST, T2M, Precip
Monthly forecast consolidation	2021	Monthly Forecasts	T2M, Precip
International Desks drought outlook	2021	Experimental drought outlook for the International regions	T2M, Precip
Water Year Outlooks	2021	This is potentially a product itself.	Precip
ENSO and Climate Predictability	2022	ENSO and ocean monitoring and forecast	SST, T2M, Precip, SLP, Z200





# Uses of NMME

## Mailing lists

### 1. Interested Parties

- a. [ncep.cpc.nmme.notifications@noaa.gov](mailto:ncep.cpc.nmme.notifications@noaa.gov)
- b. 556 recipients - as of 6/15/2023
- c. <https://www.cpc.ncep.noaa.gov/nwscwi/forms/comment-form-nmme.php> - Public site to join
- d. Advertise sessions at conferences. Advertise monthly webinars.
- e. Notification of changes to NMME production/delivery

### 2. Production

- a. [ncep.cpc.nmme.production@noaa.gov](mailto:ncep.cpc.nmme.production@noaa.gov)
- b. CPC Staff
  - i. 8 people
  - ii. Primary NMME: Qin (Ginger) Zhang, Mingyue Chen, Matthew Rosencrans,
  - iii. Intl NMME - Vadlamani Kumar, Wassila Thia w
  - iv. Downstream NMME - Dan Collins, Johnna Infanti, Luke He



# Operational Uses and Impacts

- NMME is a critical input to the seasonal forecast process at CPC.
- Need to tighten up some things.
  - Verification, Calibration
  - Monthly QC of datafiles (would that have caught the IRI  $\longleftrightarrow$  CPC differences)
- Model update
  - Need the data 2-3 months before the model is to go operational.







# NMME Agreement

- It's time to start talking/sharing the next one.
- Usually takes 6-12 months to clear all the legal hurdles.

