US National ISI Multi-Model Ensemble

- **Phase I (Continuing)**
  - Added CMC (2 Models), IRI Models Discontinued, GSFC – Updating
  - Adding Evaporation, Runoff, 500 Geopotential Height, T2m(min), T2m(max)
  - CPC Web Site Updates (Probabilistic)
  - BAMS Draft in Preparation
  - Establishing “Application” Collaborations
    - Florida, Texas
- **Phase II (August 2012)**
  - **Leveraging and Enabling Collaborations**
  - Began 1 August 2012 – Multi-Agency Support
  - Enhancements – Model Updates
  - NCAR Data Server (Up by December 1)

home tippett NMME

home tippett NMME.

Documents

outline an outline showing all sub-datasets and variables contained in this dataset

Datasets and variables

land mask	home tippett NMME Lmask[X Y]
nino34	home tippett NMME nino34[**AC Normal Above Dominant Mean rpss Below**]
ocean mask	home tippett NMME Omask[X Y]
prec	home tippett NMME prec[**AC Normal Above Dominant Mean RPSS rpss Below rain**]
sst	home tippett NMME sst[**AC Normal Above Dominant Mean RPSS rpss Below**]
tref	home tippett NMME tref[**AC Normal Above Dominant Mean rpss RPSS Below**]

Independent Variables (Grids)

lead	grid: /L (months) ordered (1.5 months) to (10.5 months) by 1.0 N= 10 pts :grid
start	grid: /S (months since 1960-01-01) ordered (0000 1 Jan 1982) to (0000 1 Dec 2010) by 1.0 N= 348 pts :grid
Longitude	grid: /X (degree_east) periodic (0.0) to (1W) by 1.0 N= 360 pts :grid
Latitude	grid: /Y (degree_north) ordered (90S) to (90N) by 1.0 N= 181 pts :grid

The National Multimodel Ensemble

There is ample evidence of the need for a US national multi-model seasonal-to-interannual prediction system. It is in the Nation's interest to have a multi-model seasonal-to-interannual prediction capability independent of information that may be available from outside sources. The advantage of a MME prediction system is that it, in addition to providing additional forecast information for the surface air temperature and precipitation outlooks that are currently products of the Climate Prediction Center (CPC), the MME can also provide information about fields and phenomena that the US has specific interest in predicting: ENSO cycle, monsoons, intraseasonal variability and the Madden-Julian Oscillation. (Ben P. Kirtman and Dughong Min)

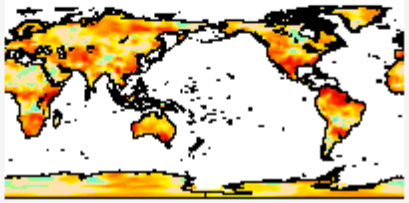
Verification

Precipitation | Near-surface temperature | SST

Precipitation

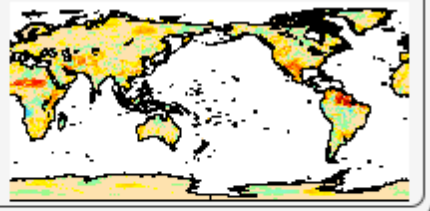
Anomaly correlation

This map shows the anomaly correlation between NMME forecast precipitation and observations as a function of start and lead.



RPSS

This map shows the RPSS for NMME forecast precipitation as a function of start and lead.



Share
+1

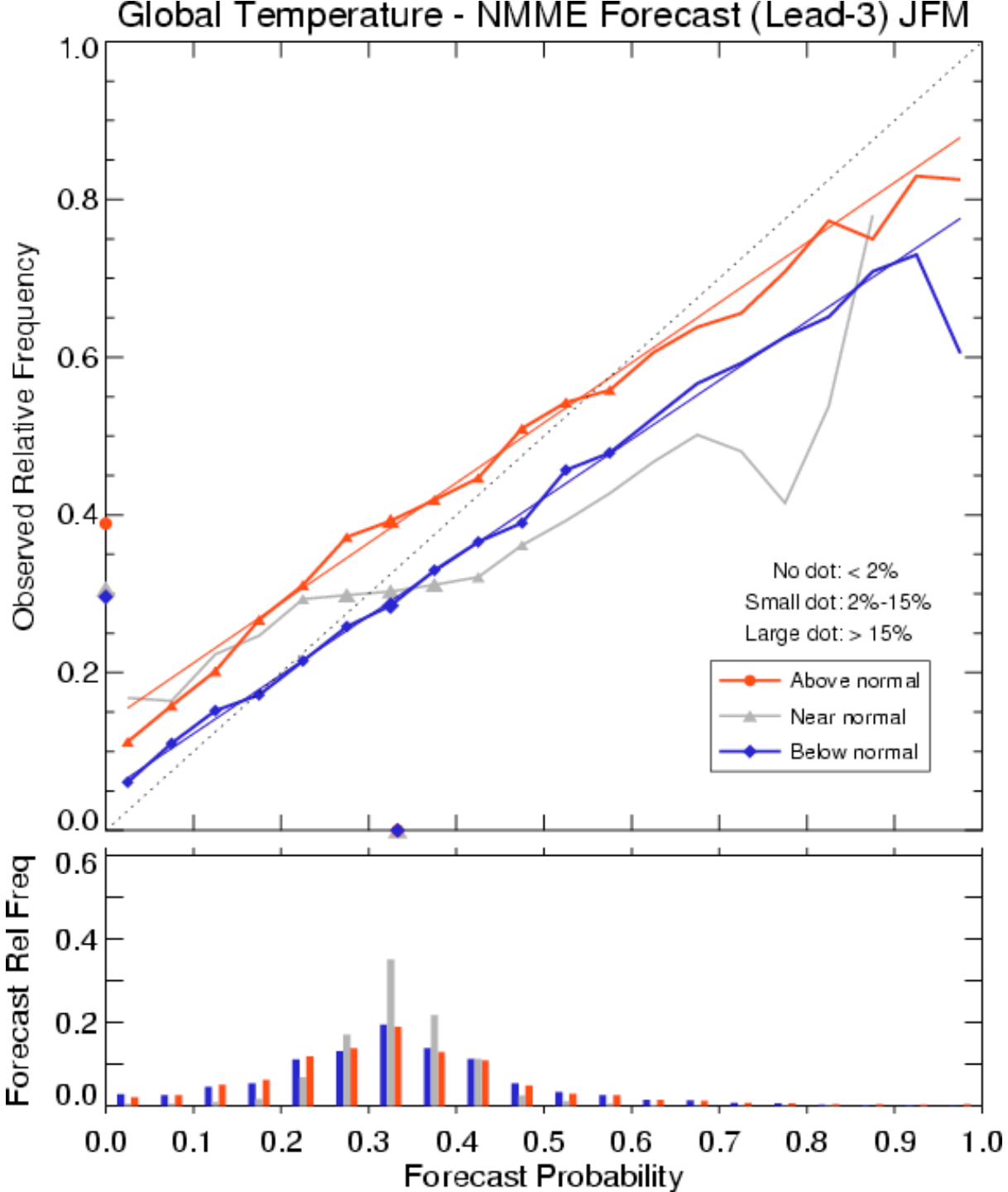
- http://iri.columbia.edu/~shuhua/mis-html/Reliability_nmme.html

The International Research Institute for Climate and Society

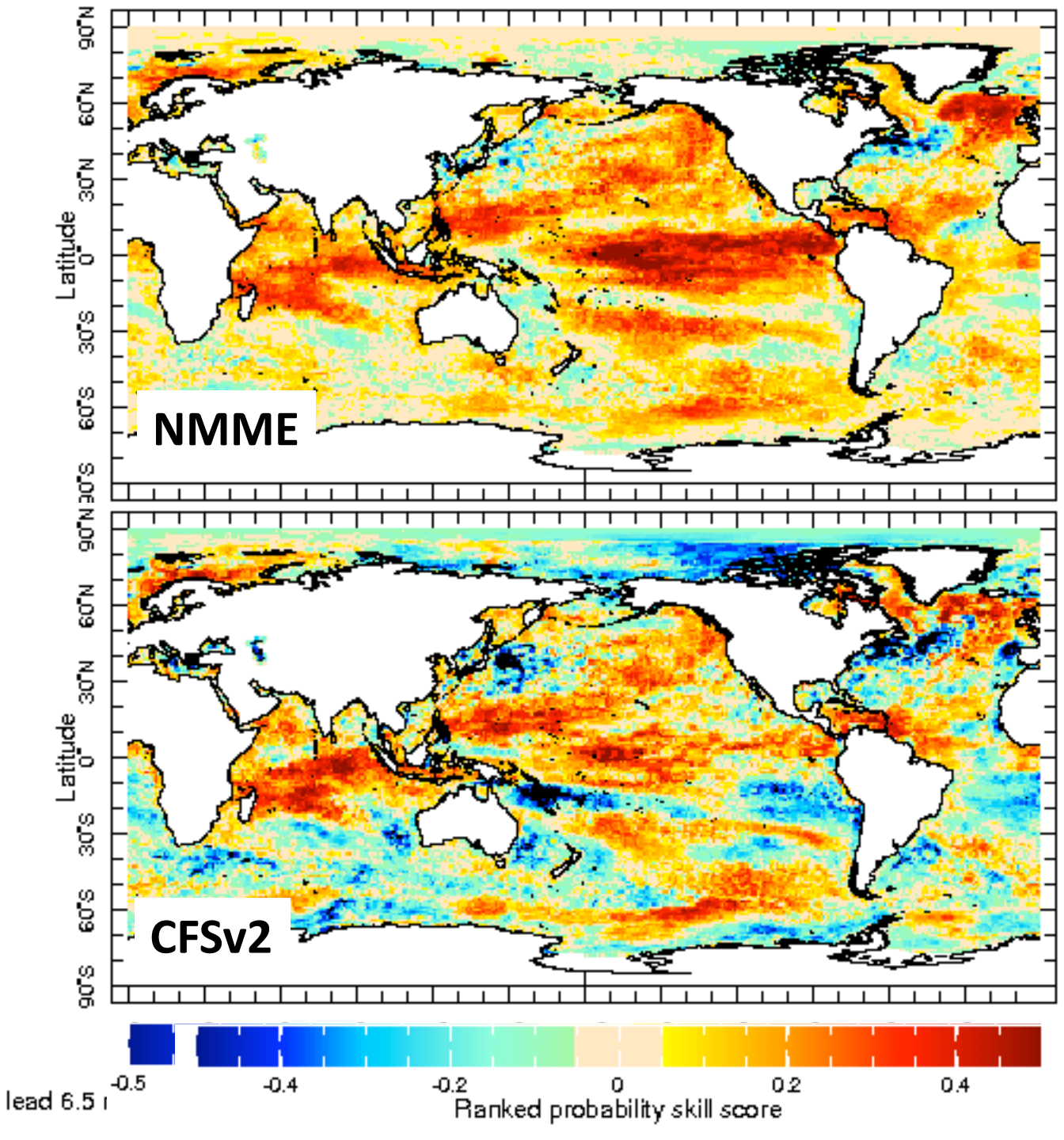
NMME Relibility Diagrams

Period: 1982-2010

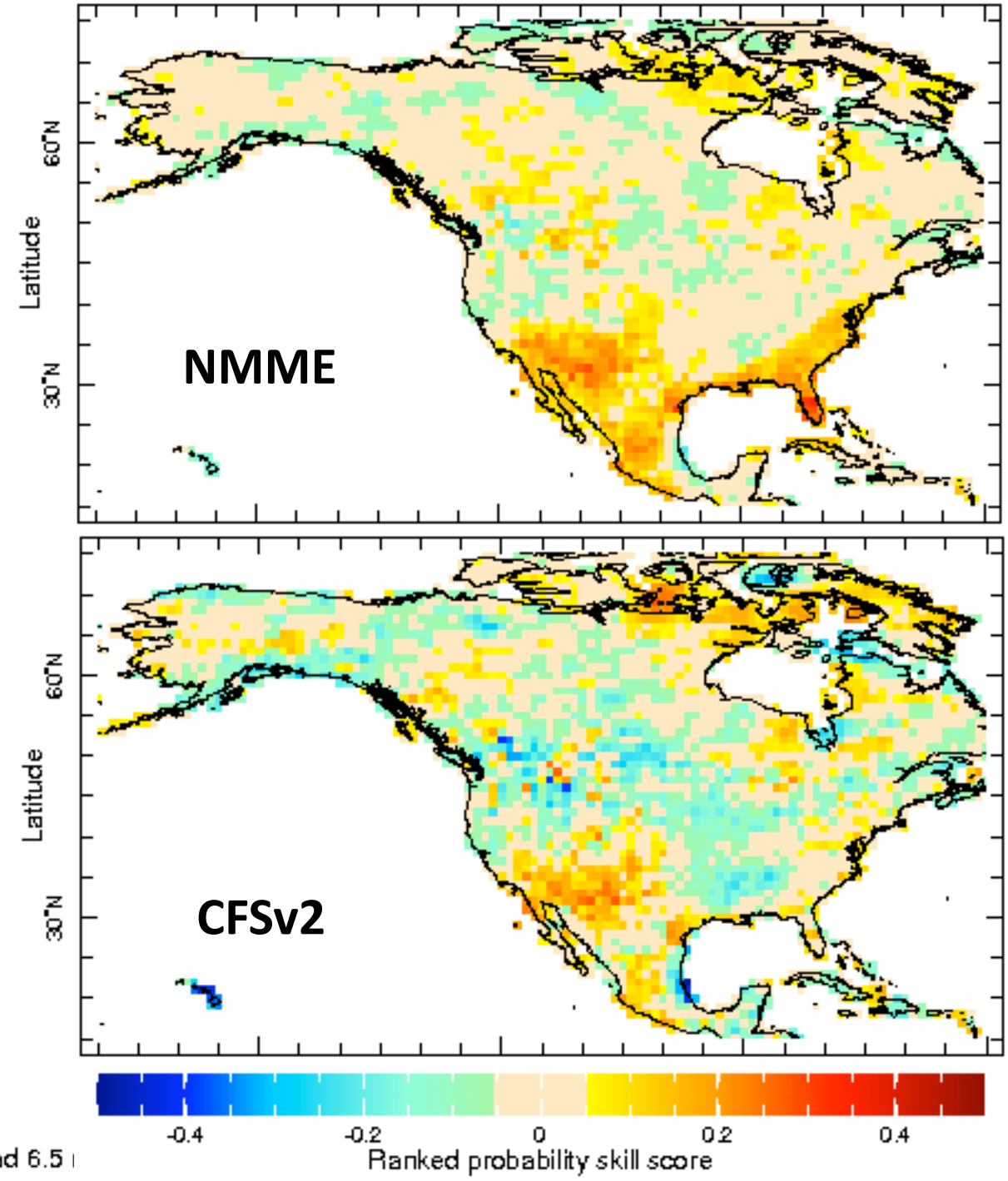
Lead: (•) Lead-1 ( ) Lead-2 ( ) Lead-3 ( ) Lead-4 ( ) Lead-5 ( ) Lead-6	**Season:** (•) DJF ( ) JFM ( ) FMA ( ) MAM ( ) AMJ ( ) MJJ ( ) JJA ( ) JAS ( ) ASO ( ) SON ( ) OND ( ) NDJ
Variable: (•) Precipitation ( ) 2m Air Temperature ( ) Sea Surface Temperature	**Region:** (•) Globe ( ) Tropics (25S-25N)
Reset Submit	**Note:** For the tropics, the reliability diagrams are only available for precipitation.


Global Temperature - NMME Forecast (Lead-3) JFM
Observed Relative Frequency
1.0
0.8
0.6
0.4
0.2
0.0
No dot: < 2%
Small dot: 2%-15%
Large dot: > 15%
Above normal
Near normal
Below normal
Forecast Rel Freq
0.6
0.4
0.2
0.0
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Forecast Probability

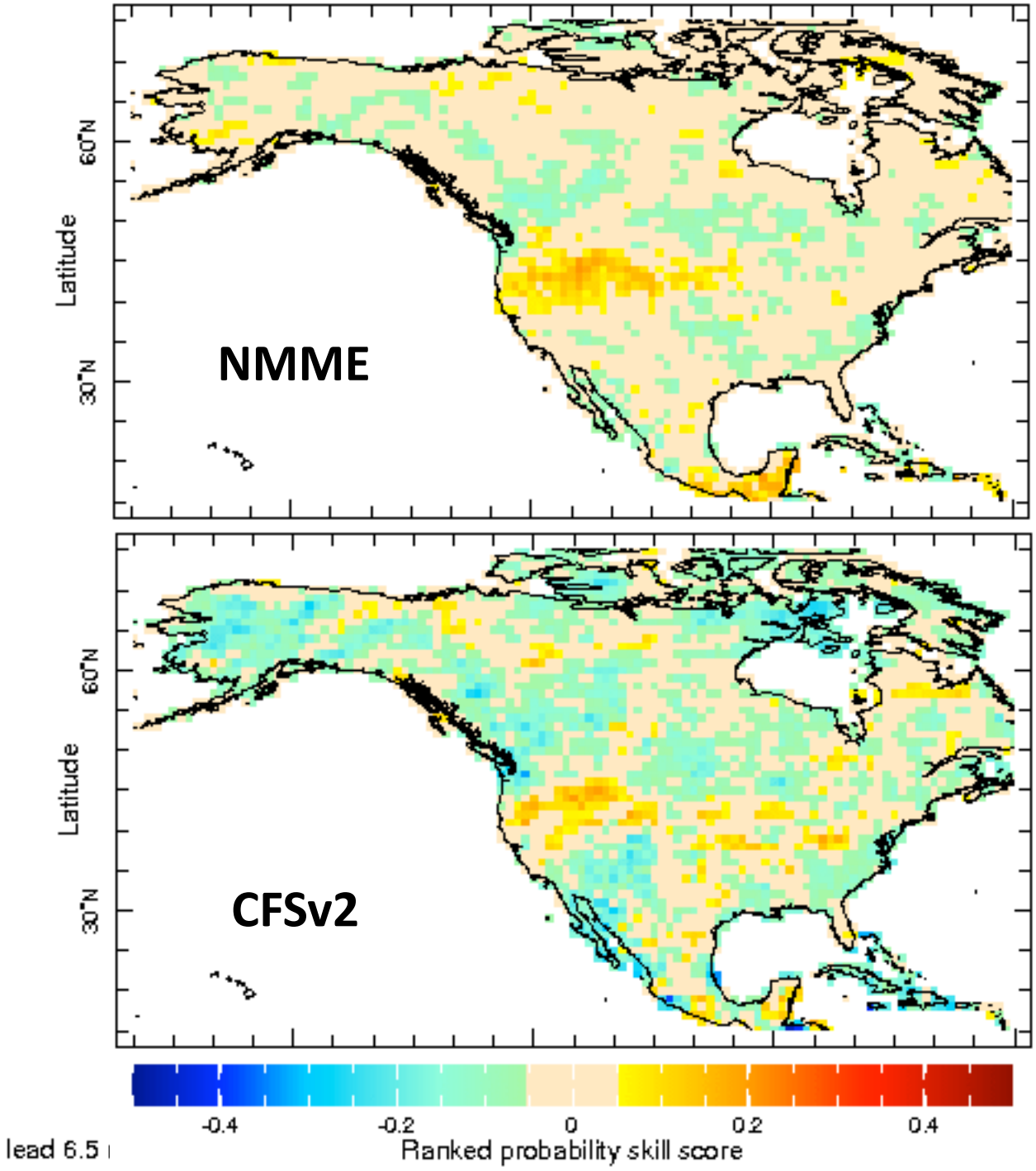
July 1 start DJF SST forecast RPSS

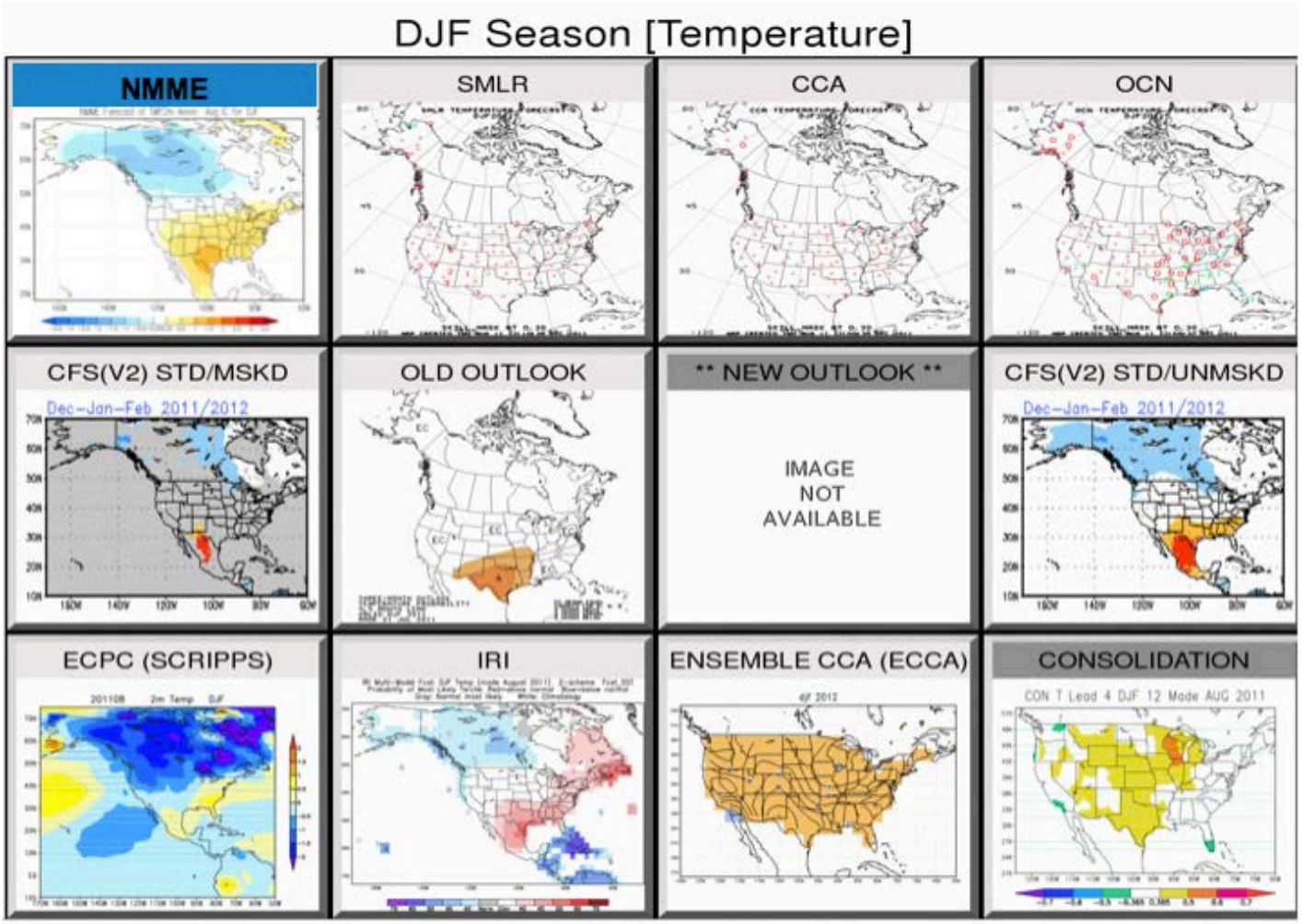


July 1 start
DJF prec
forecast
RPSS



Jan 1 start
JJA prec
forecast
RPSS





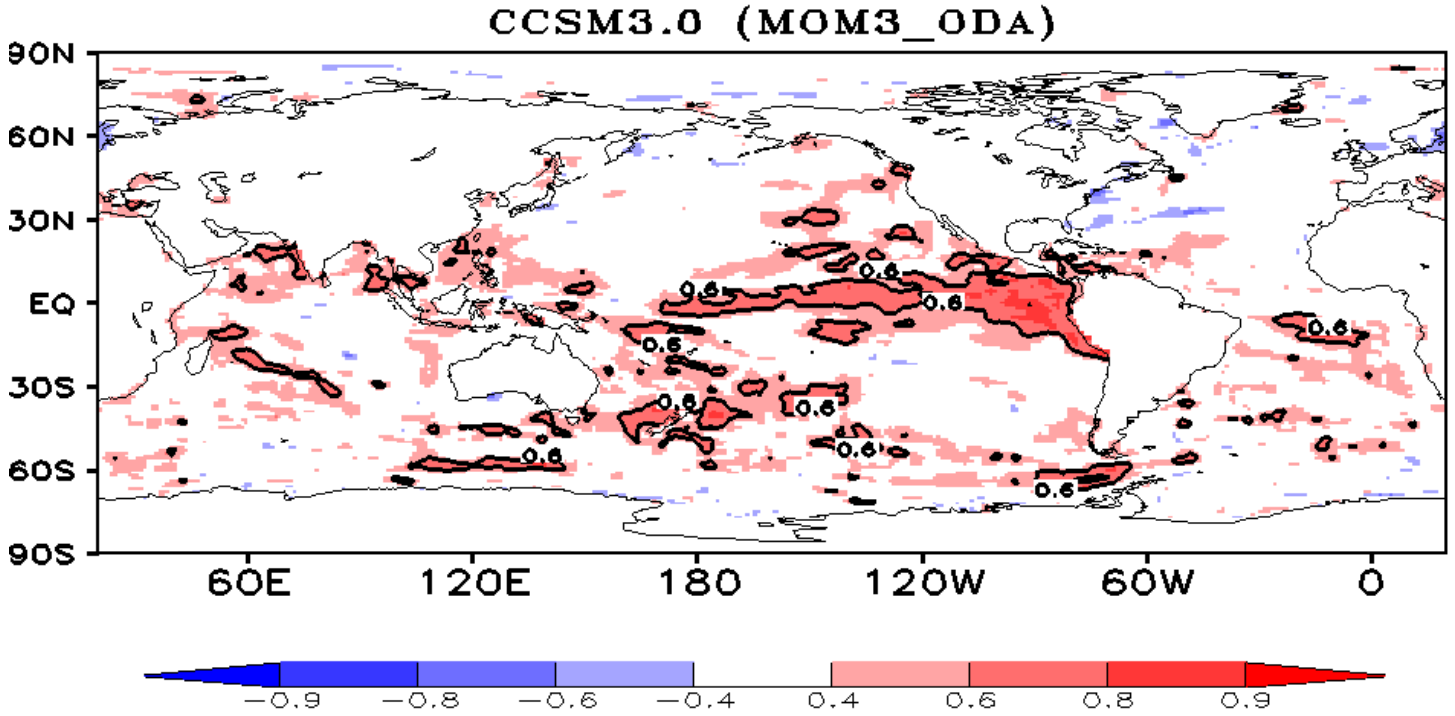
CPC Seasonal Prognostic Map Discussion (PMD):

"PROGNOSTIC TOOLS USED FOR U.S. TEMPERATURE AND PRECIPITATION OUTLOOKS OUTLOOKS FOR JFM THROUGH AMJ 2012 WERE PRIMARILY BASED ON THE NEW NATIONAL MULTI-MODEL ENSEMBLE MEAN FORECAST (NMME). THE FORECASTS STRONGLY AGREE WITH …"

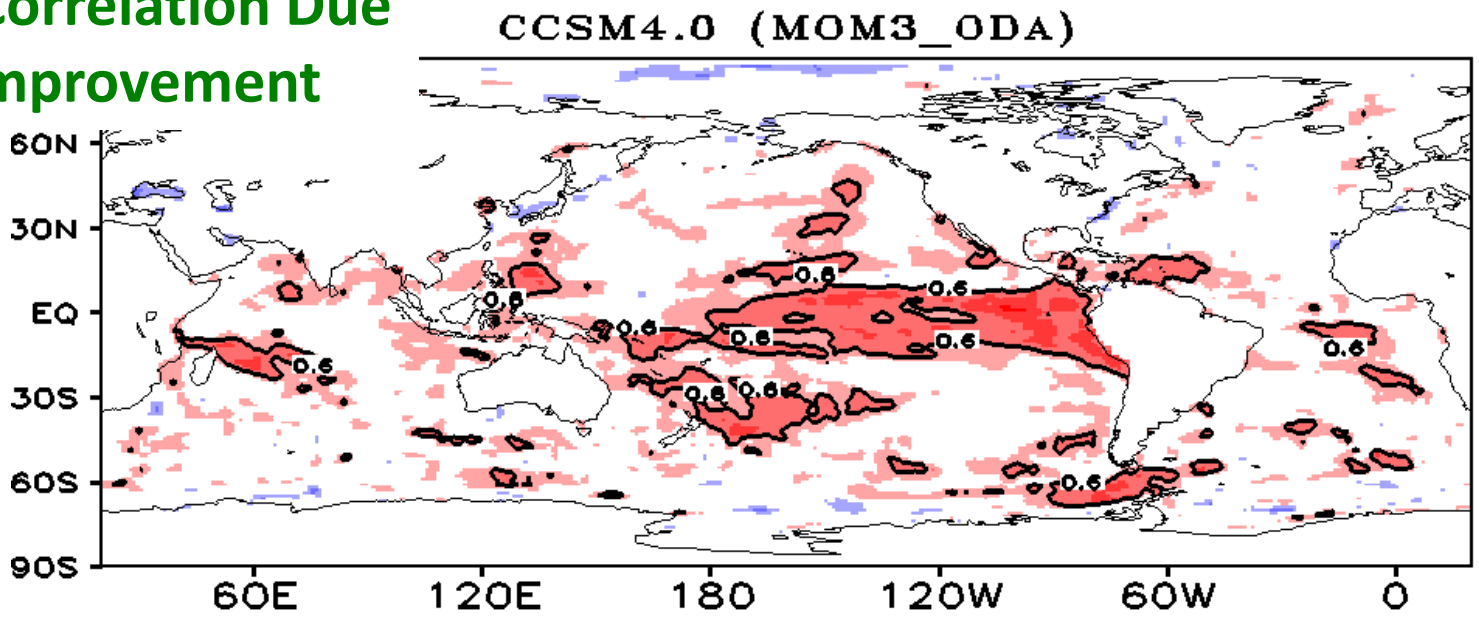
Phase 2 NMME

- **Continue Experimental Real-Time Predictions**
- **Enhancing Current NMME Capability**
  - Model Updates: GFDL-CM2.5 (20 km AGCM), CCSM4, CESM1
- **Assess Forecast Quality**
  - MME Combinations, Model Independence
- **Sub-Seasonal Assessment**
  - Forecast Protocol
- **Improved Data Distribution**
  - NCAR To Host

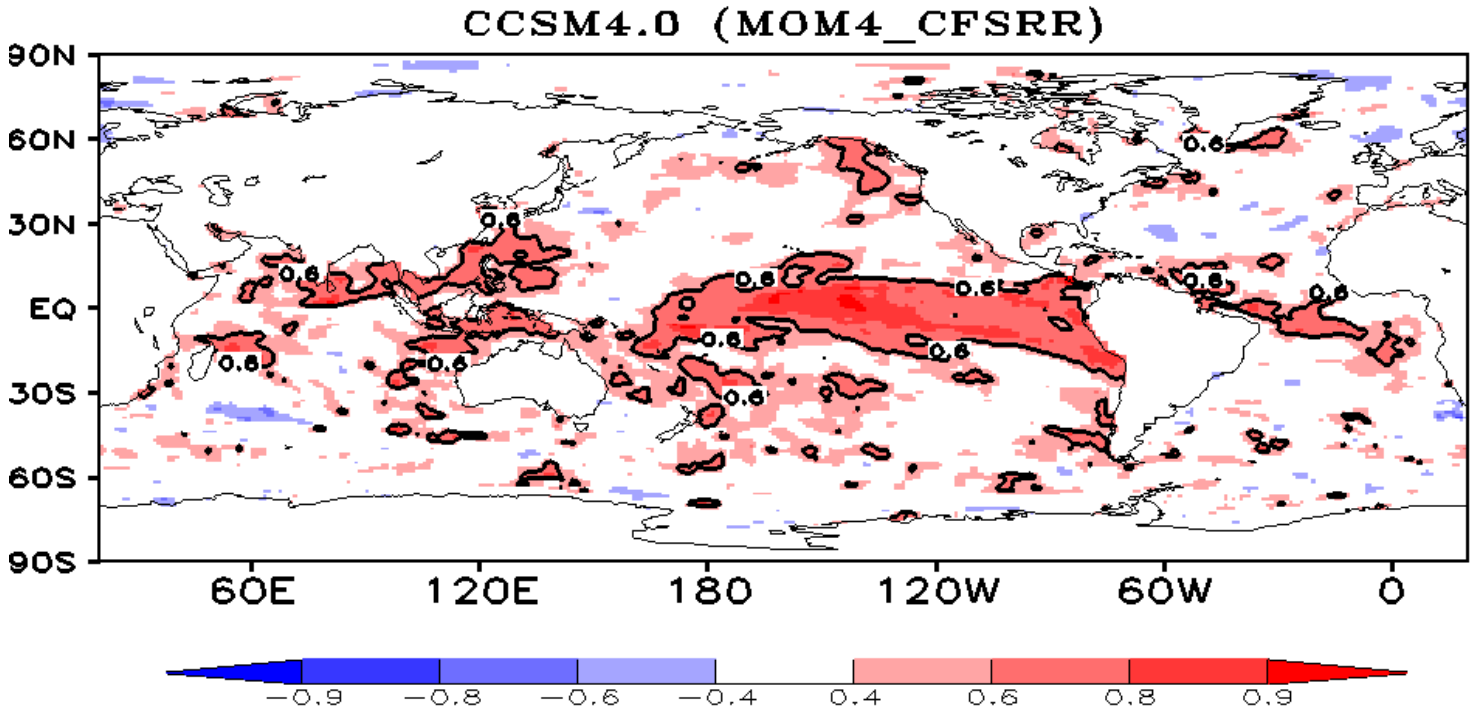
May Initial Conditions 3-Months Lead



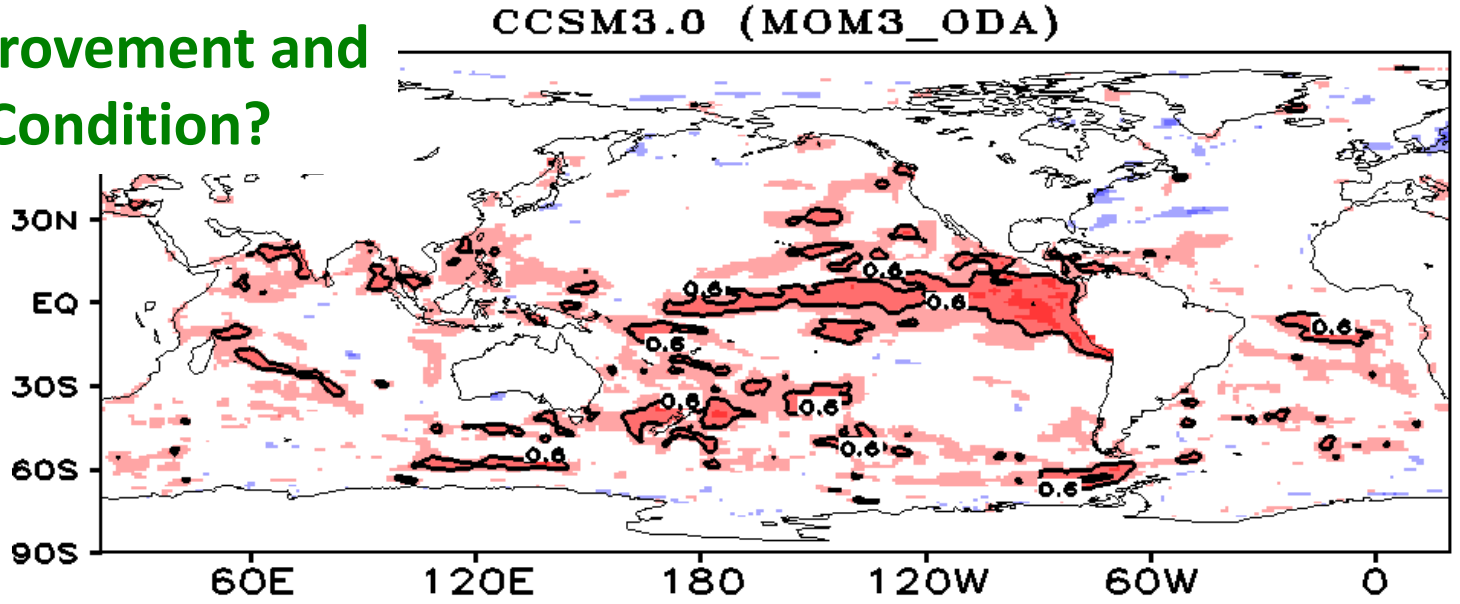
Improved Correlation Due to Model Improvement

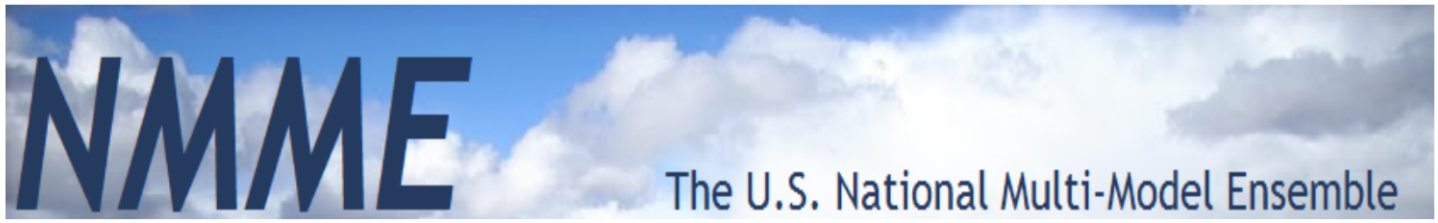


May Initial Conditions 3-Months Lead



Improved Correlation Due to Model Improvement and Better Initial Condition?





Welcome to the National Multi-Model Ensemble home!

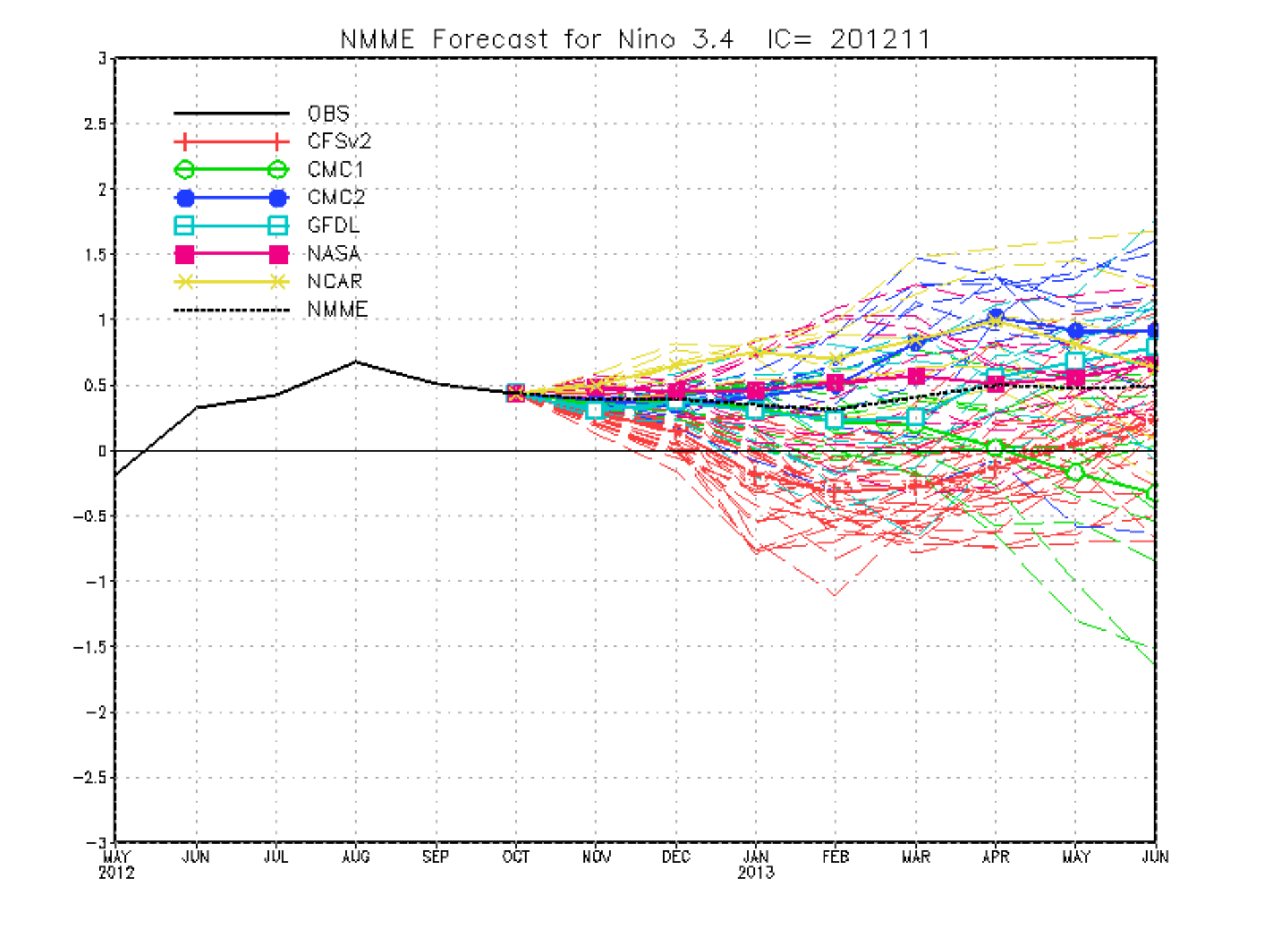
Data and Current Forecasts

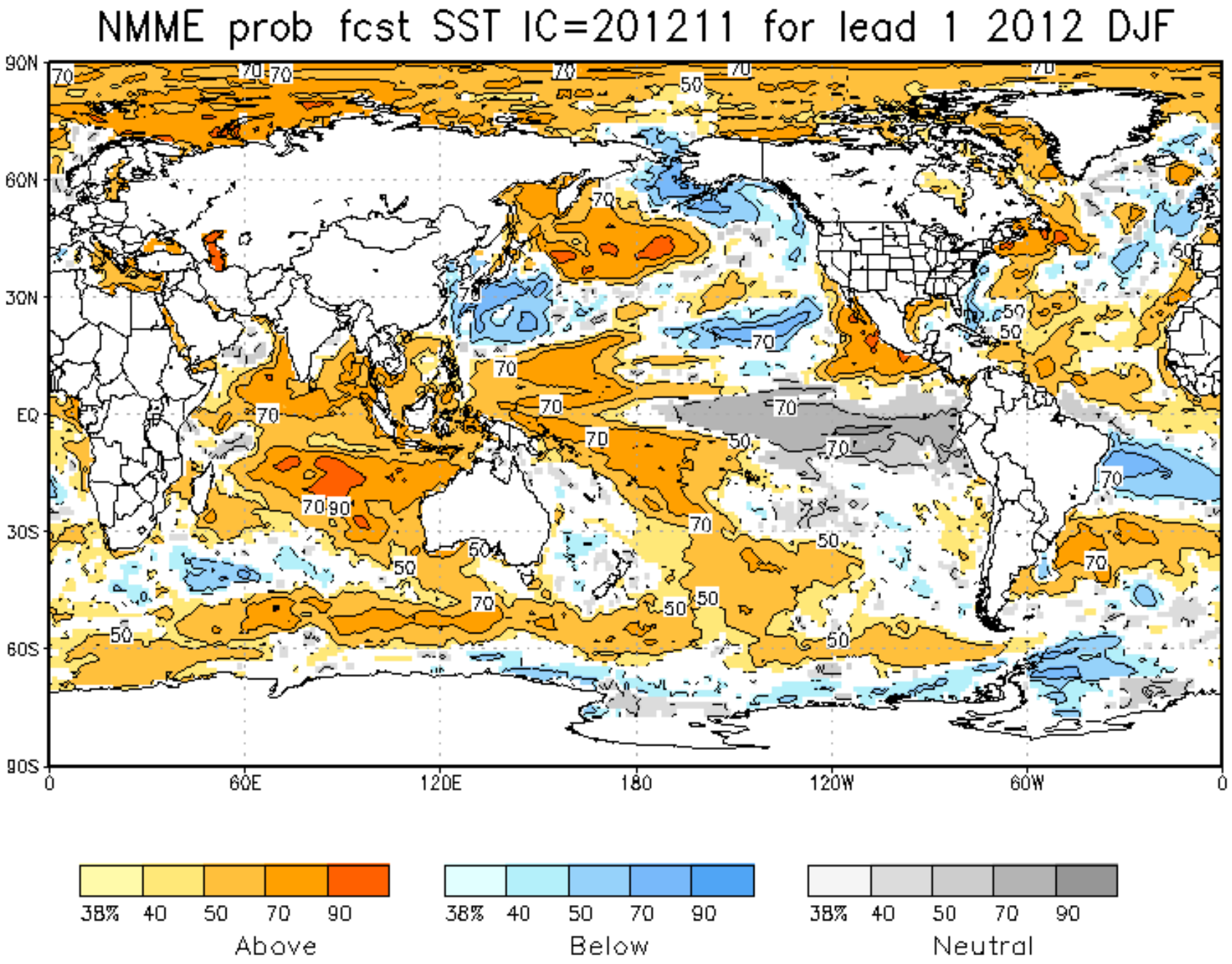
- 3-month mean spatial anomalies
- 1-month mean spatial anomalies
- Niño3.4 Plumes
- International MME
- Experimental: Probability forecasts

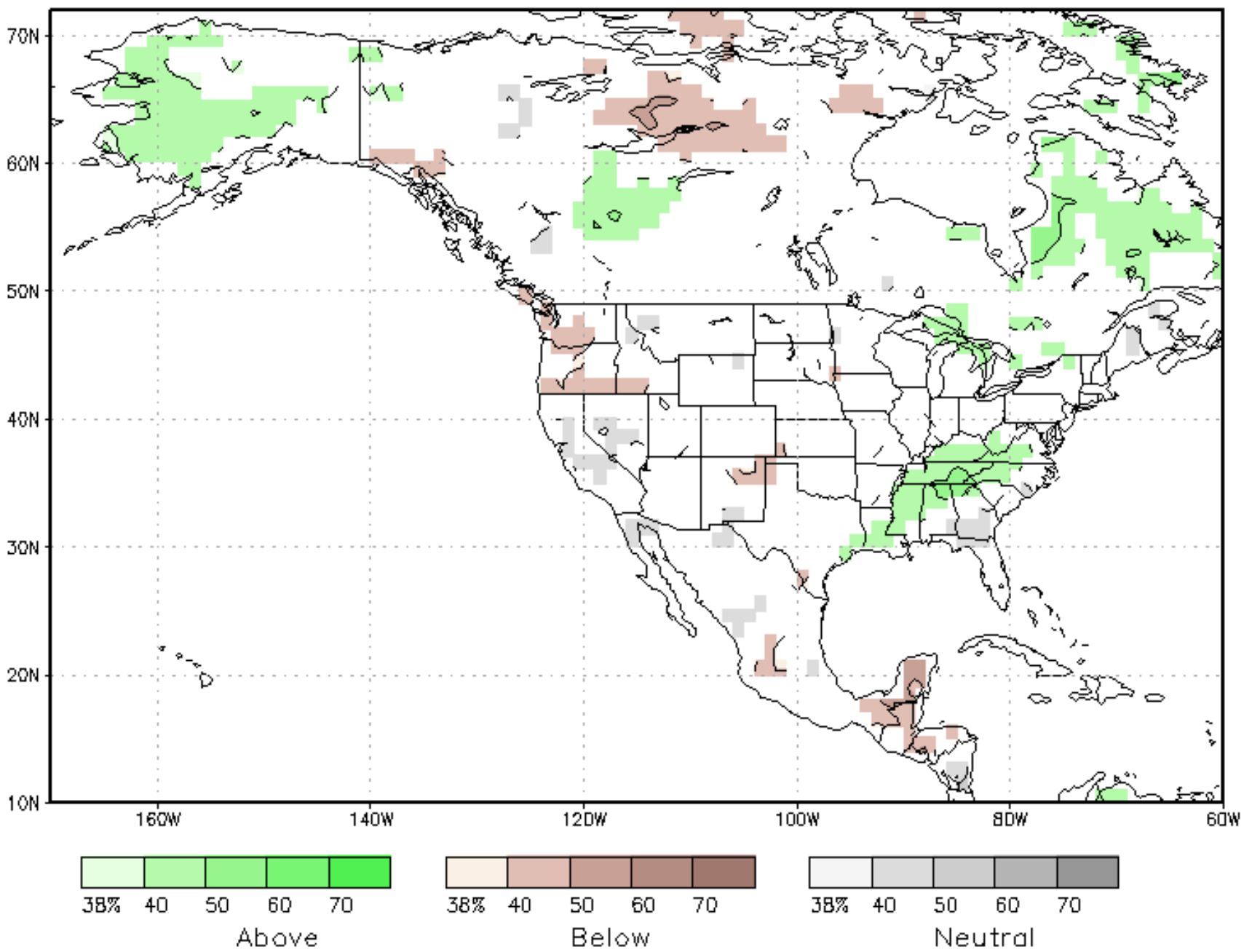
NMME Realtime Forecasts **Archive**
NMME Phase-I Hindcast Data

About the NMME

- Description of the NMME
- Phase-I Forecast Models
- CTB Activities & Documents
- **Join the NMME mailing list**


NMME Forecast for Nino 3.4 IC= 201211
OBS
CFSv2
CMC1
CMC2
GFDL
NASA
NCAR
NMME
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
MAY 2012
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN 2013
FEB
MAR
APR
MAY
JUN


NMME prob fcst SST IC=201211 for lead 1 2012 DJF
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
38%
40
50
70
90
Above
Below
Neutral


NMME prob fcst Prate IC=201211 for lead 1 2012 DJF
70N
60N
50N
40N
30N
20N
10N
160W
140W
120W
100W
80W
60W
38% 40 50 60 70
Above
38% 40 50 60 70
Below
38% 40 50 60 70
Neutral

Major Issues

- Getting Data Into NCAR Server
- Getting Results From NCAR Server
  - Don’t Want to Repeat the CMIP5 Experience
- Prediction and Predictability Research
- How to Complete the Transition to Operations?
  - Continuing to Update the NMME Models