

CLIMATE MODEL FORECASTS OF NORTH PACIFIC SSTS, 2013-15

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North American **M**ulti-**M**odel **E**nsemble: began 2011

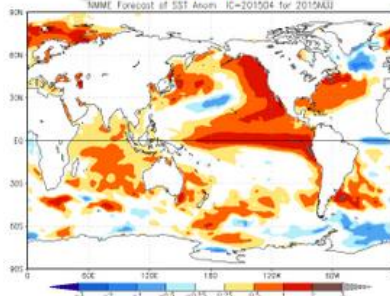
- Not a model but a fluid collection of dynamic, fully coupled climate model ensemble systems, all with ~30 years hindcasts
 - NOAA (Climate Forecast System, GFDL)
 - Environment Canada (two versions)
 - NCAR
 - NASA
- Available Monthly (initialed ~1st of the month, online ~10th)
- Forecasts to 8 months (e.g. May forecasts Jun through Dec)

<http://www.cpc.ncep.noaa.gov/products/NMME/>

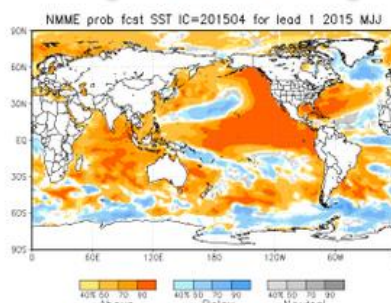
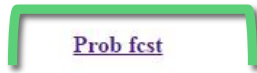
Kirtman, Ben P., et. al. 2014 The North American Multimodel Ensemble: Phase-1 Seasonal-to-Interannual Prediction; Phase-2 toward Developing Intraseasonal Prediction. *Bull. Amer. Meteor. Soc.*, 95, 585–601.

State of the Art: NMME

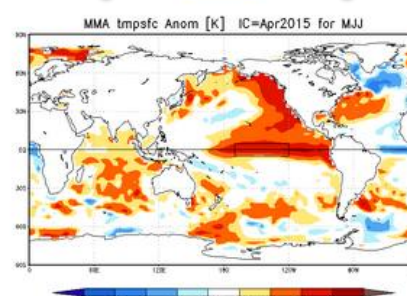
Grid Point Avg
all NMME member



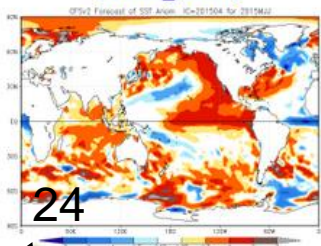
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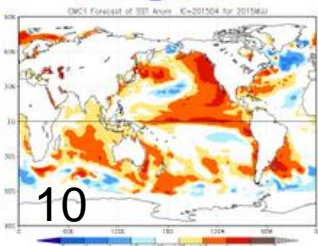
Grid Point Avg
CFS, ECWMF, MétéoFrance



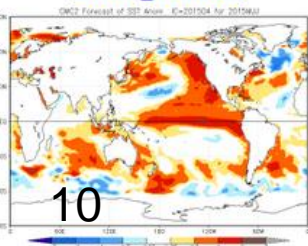
NCEP_CFSv2



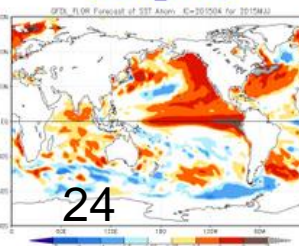
CMC1_CanCM3



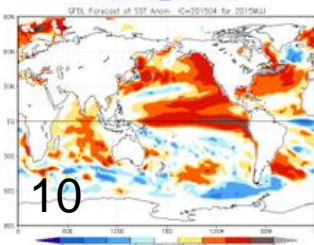
CMC2_CanCM4



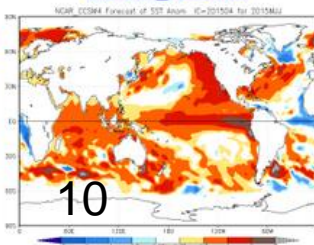
GFDL_FLOR



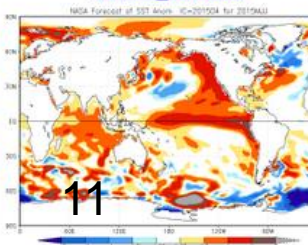
GFDL_CM2.1



NCAR_CCSM4



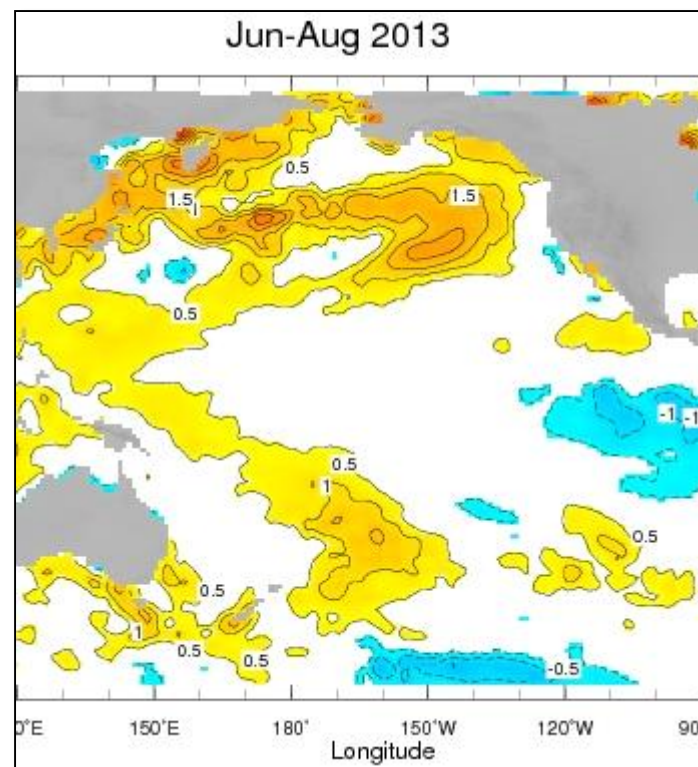
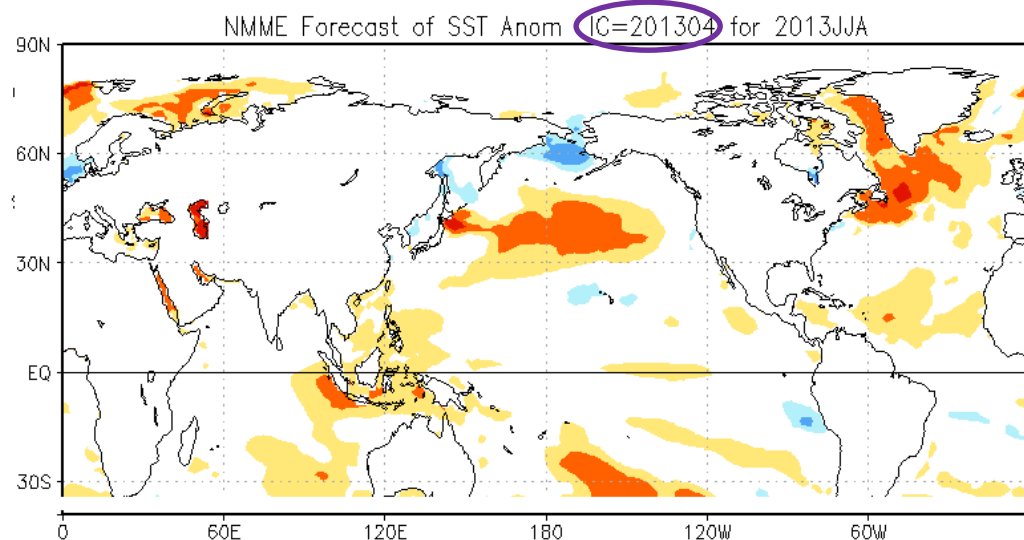
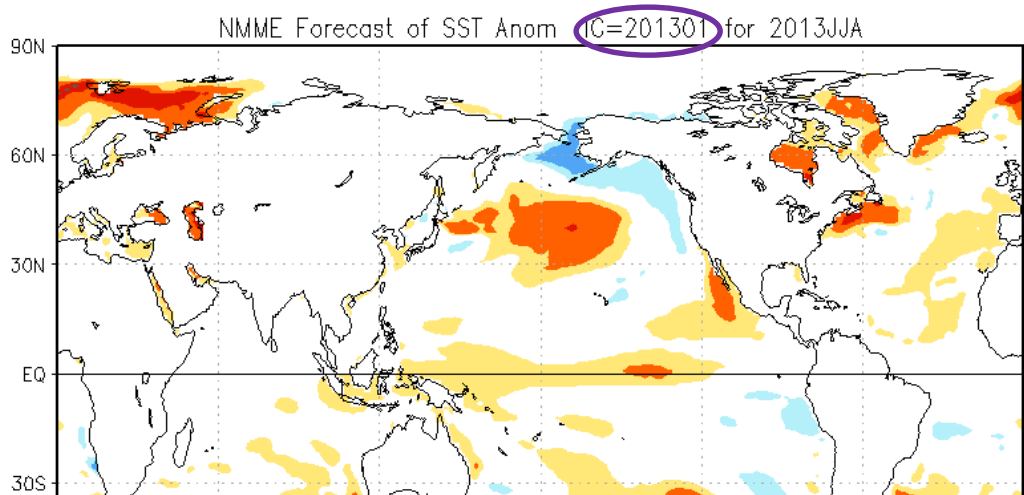
NASA_GEOS5



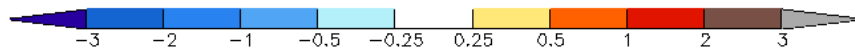
of
members

Ensemble Mean
of Individual
Climate
Forecast Models

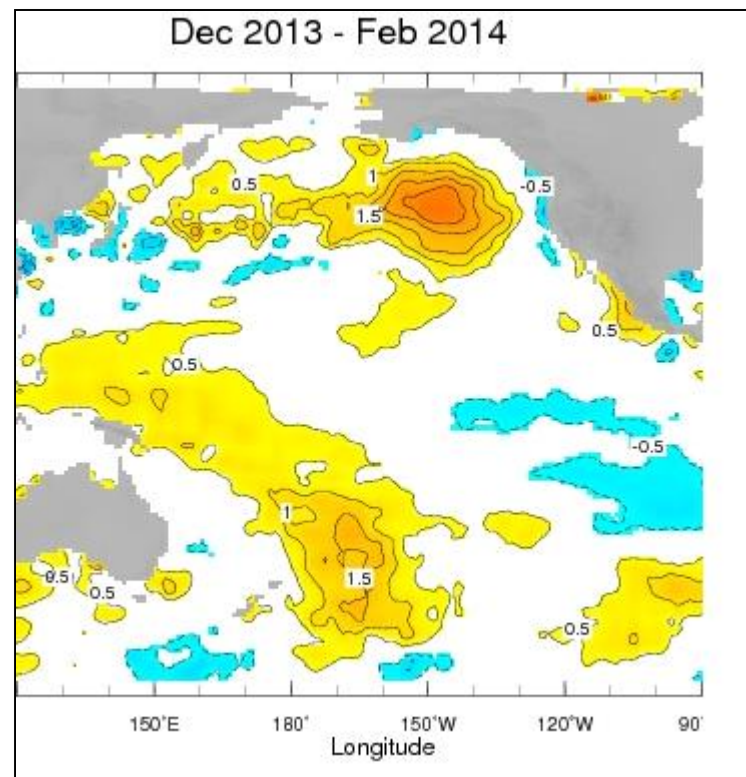
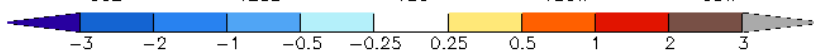
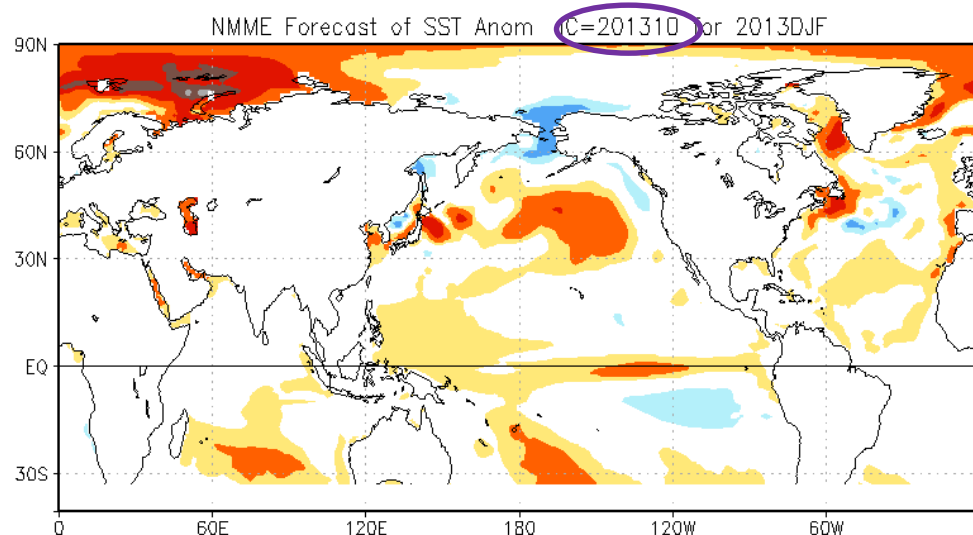
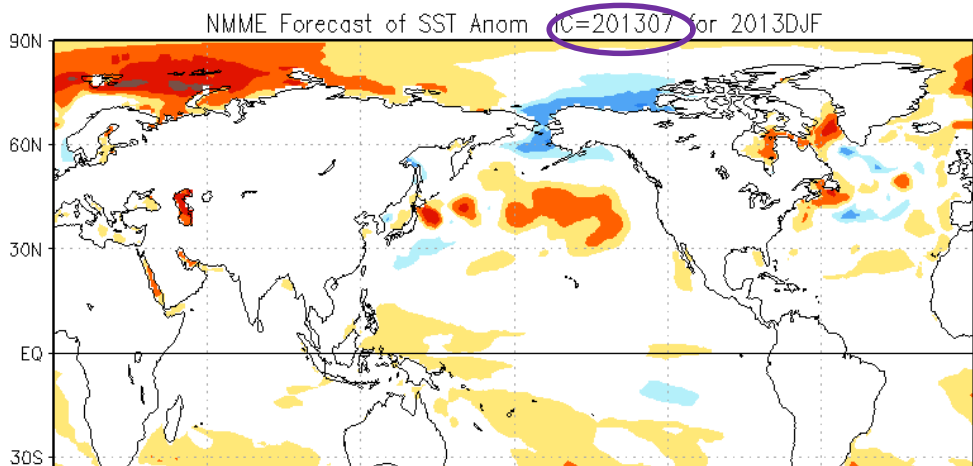
NMME Forecasts for Summer 2013



Courtesy IRI

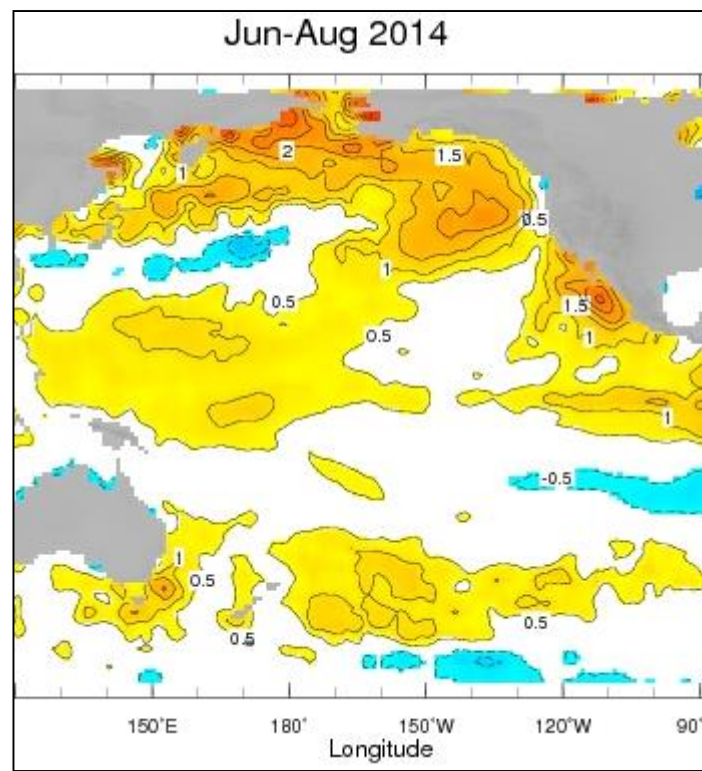
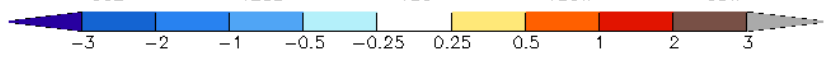
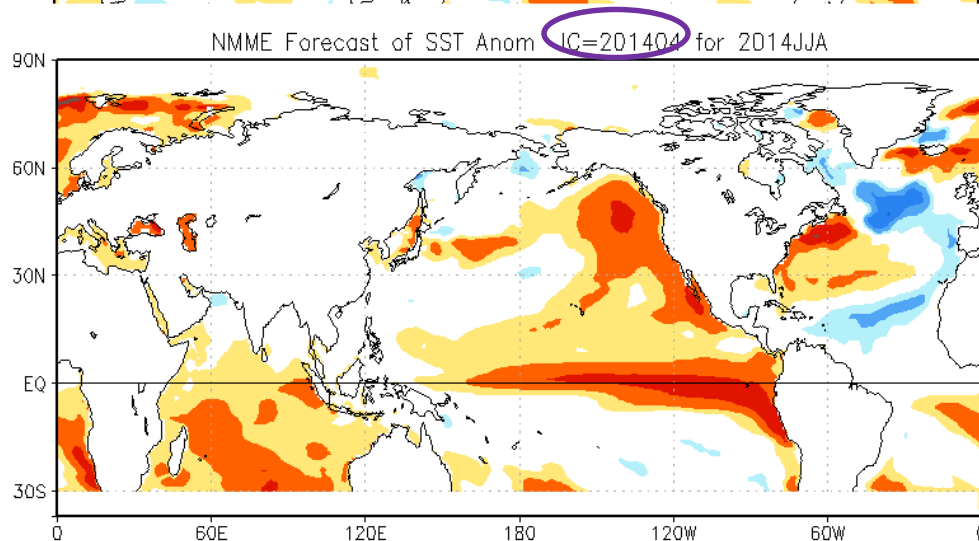
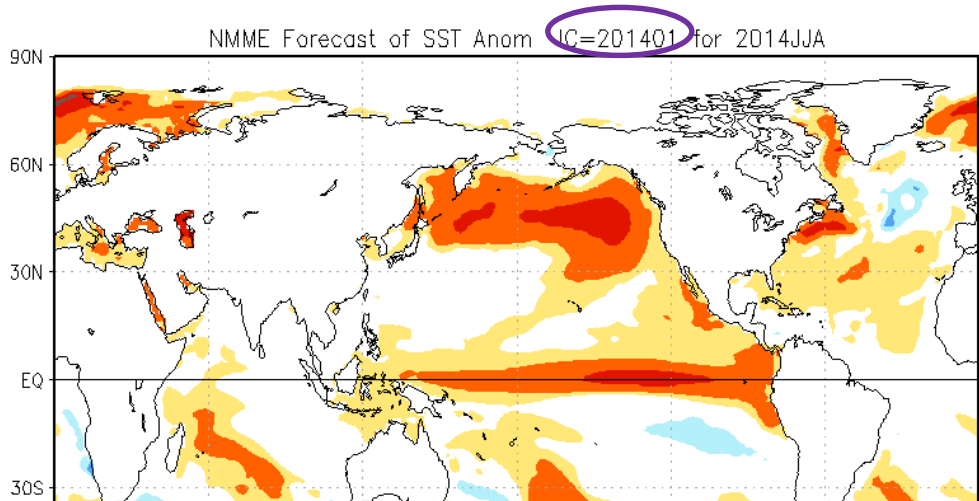


NMME Forecasts for Winter 2013-14



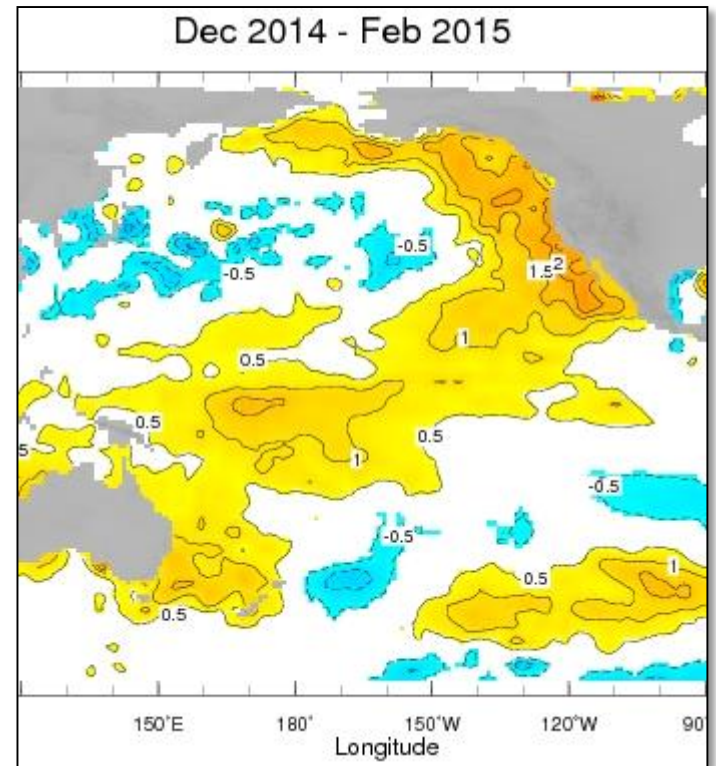
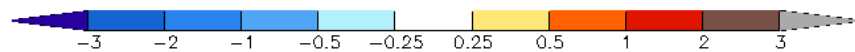
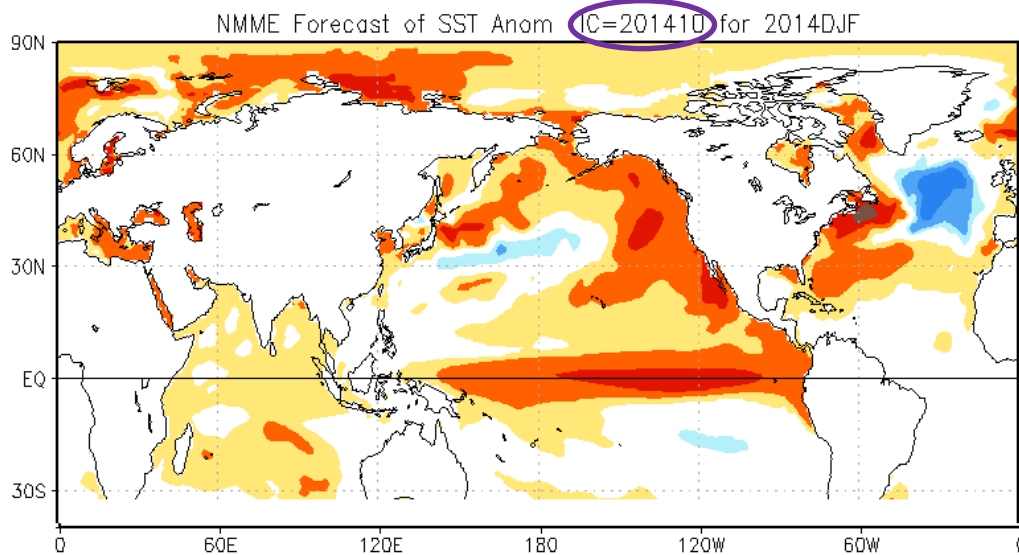
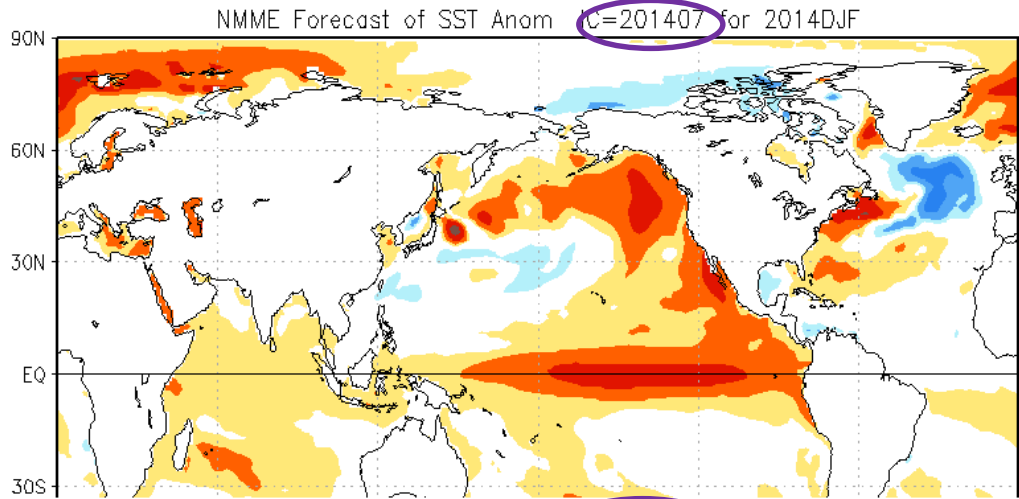
Courtesy IRI

NMME Forecasts for Summer 2014



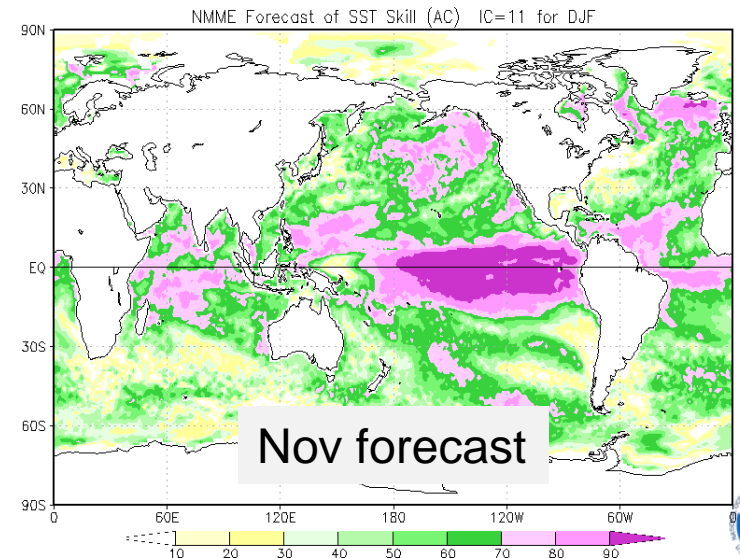
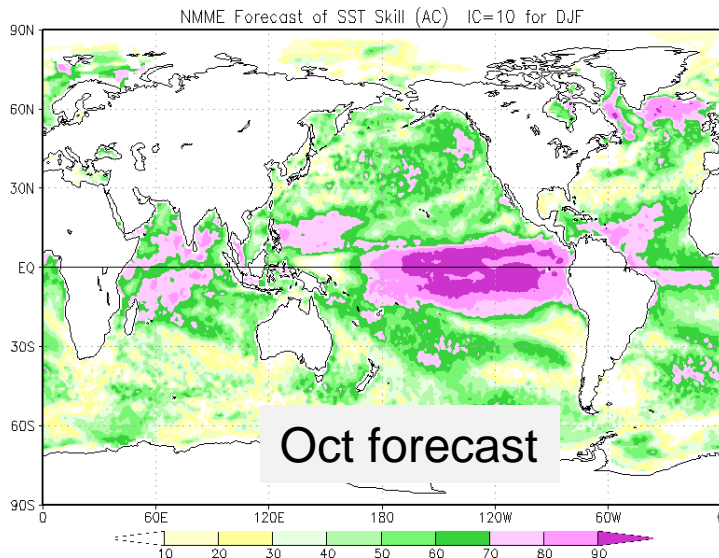
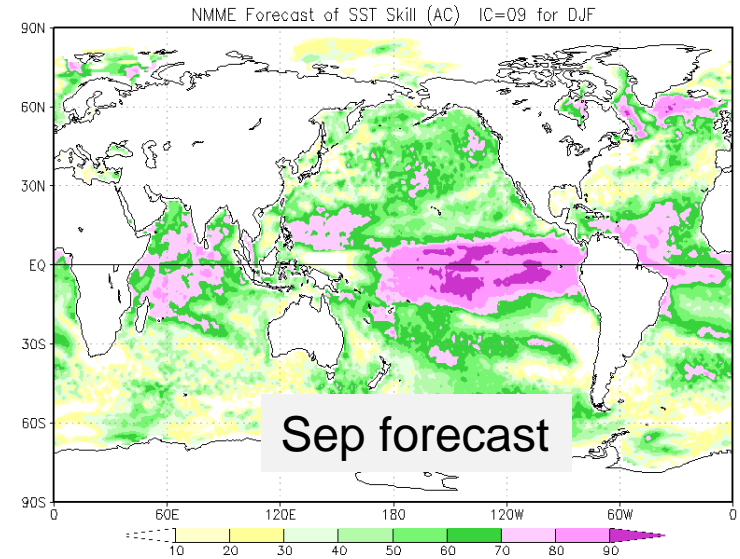
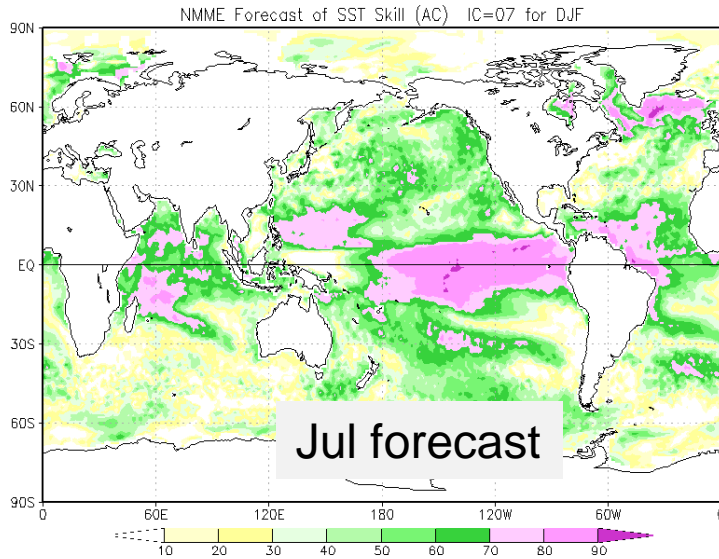
Courtesy IRI

NMME Forecast for Winter 2014-15

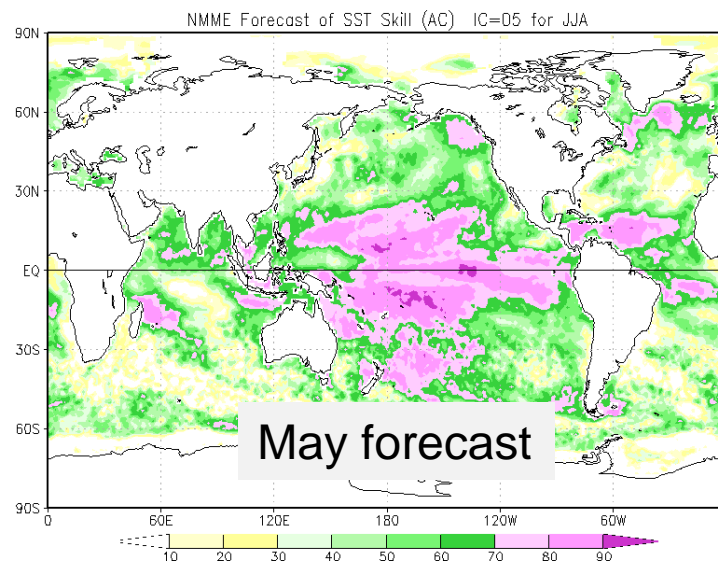
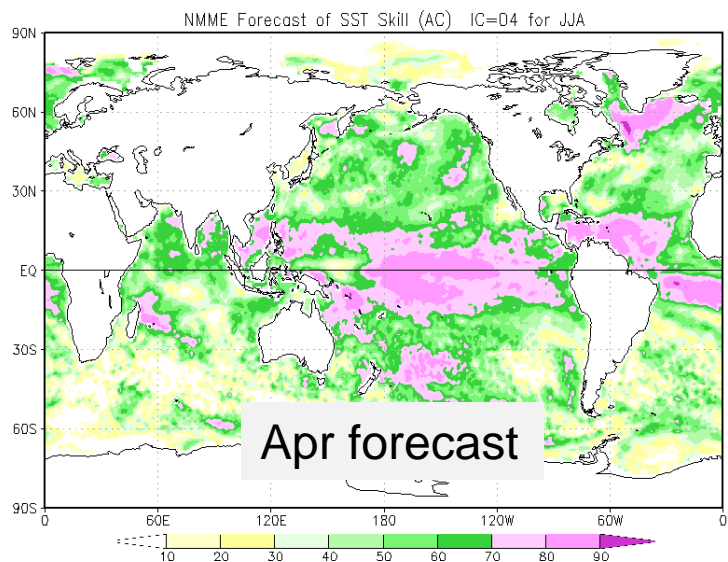
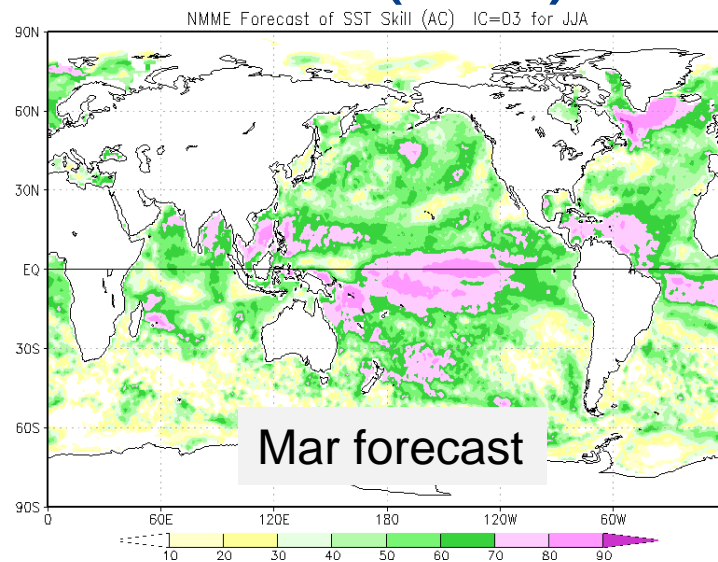
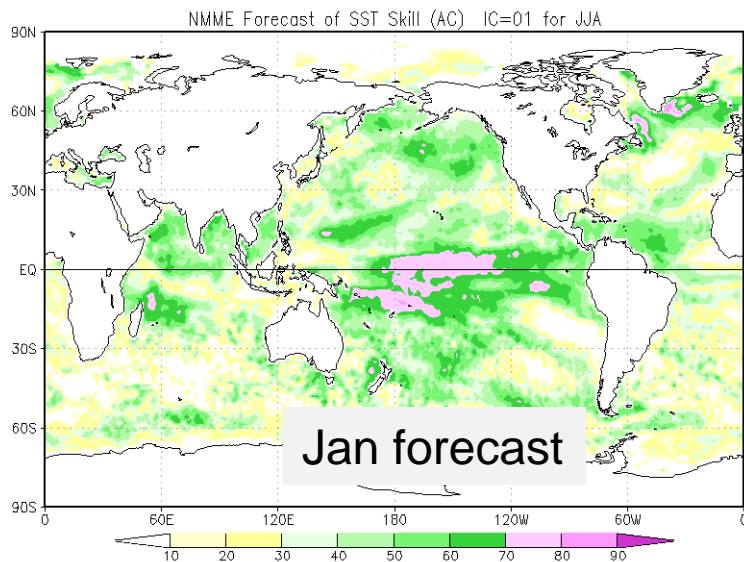


Courtesy IRI

NMME: Winter SST Skill (AC)

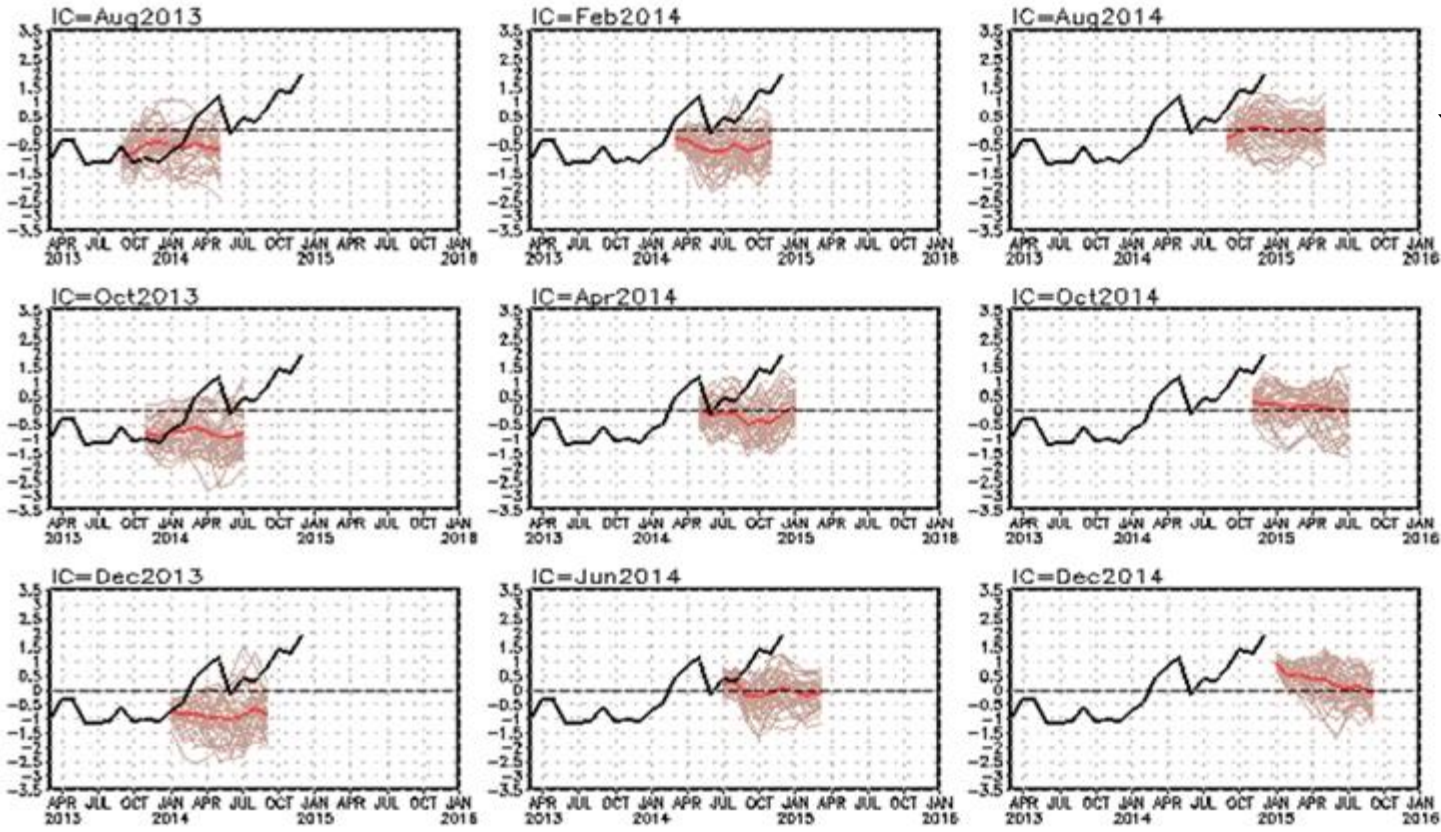


NMME: Summer SST Skill (AC)



NCEP CFSv2 Pacific Decadal Oscillation (PDO) Forecast

standardized PDO index



↓ CPC's PDO Definition

PDO is the first EOF of monthly ERSSTv3b anomaly in the region of [110°E-100°W, 20°N-60°N].
CFS PDO index is the standardized projection of CFS SST forecast anomalies onto the PDO EOF pattern.

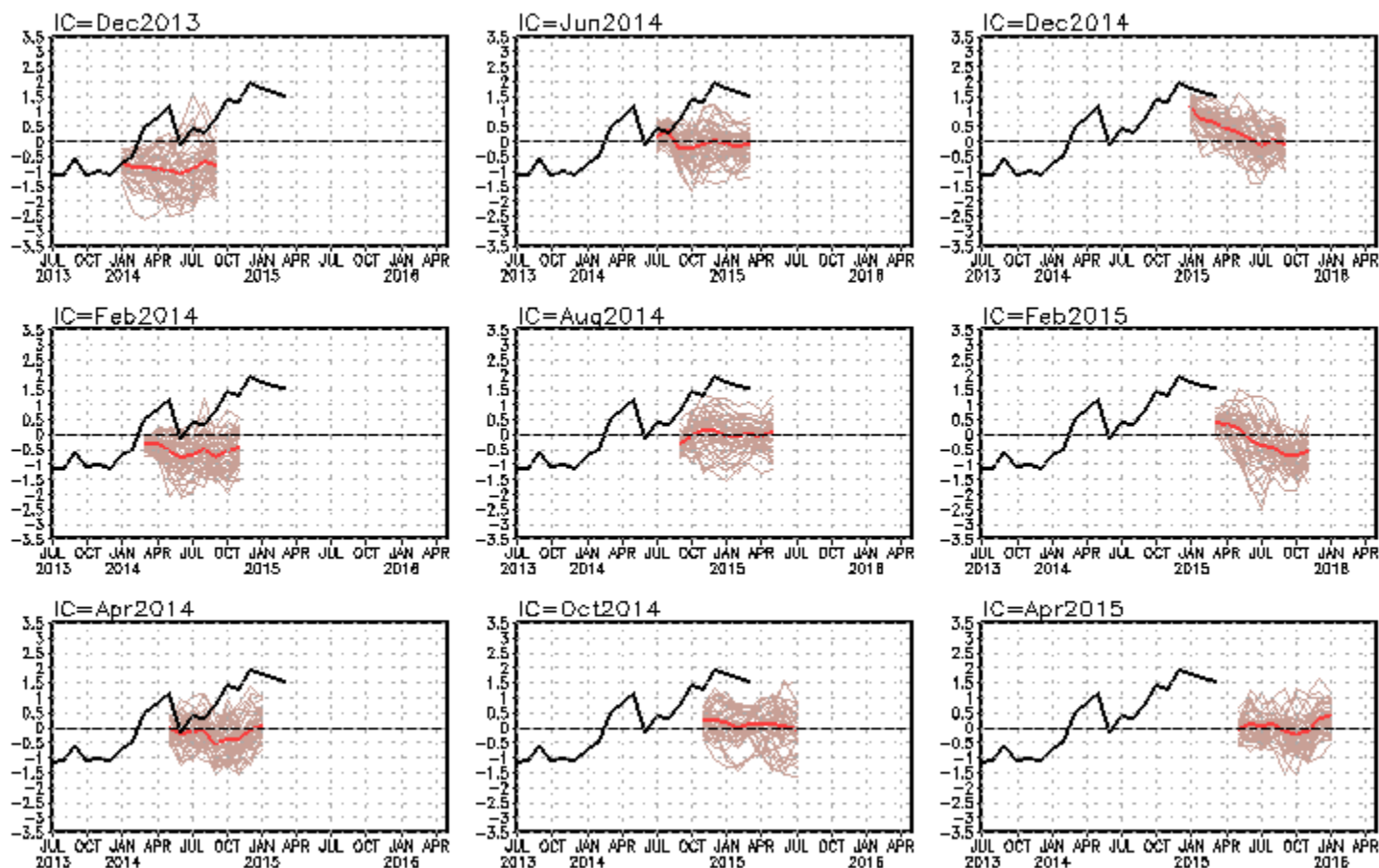
— CFSv2 Individual forecast members — CFSv2 Forecast ensemble mean — Observations

Courtesy Yan Xue/NOAA-NWS-CPC



Recent PDO forecasts from CFS

standardized PDO index

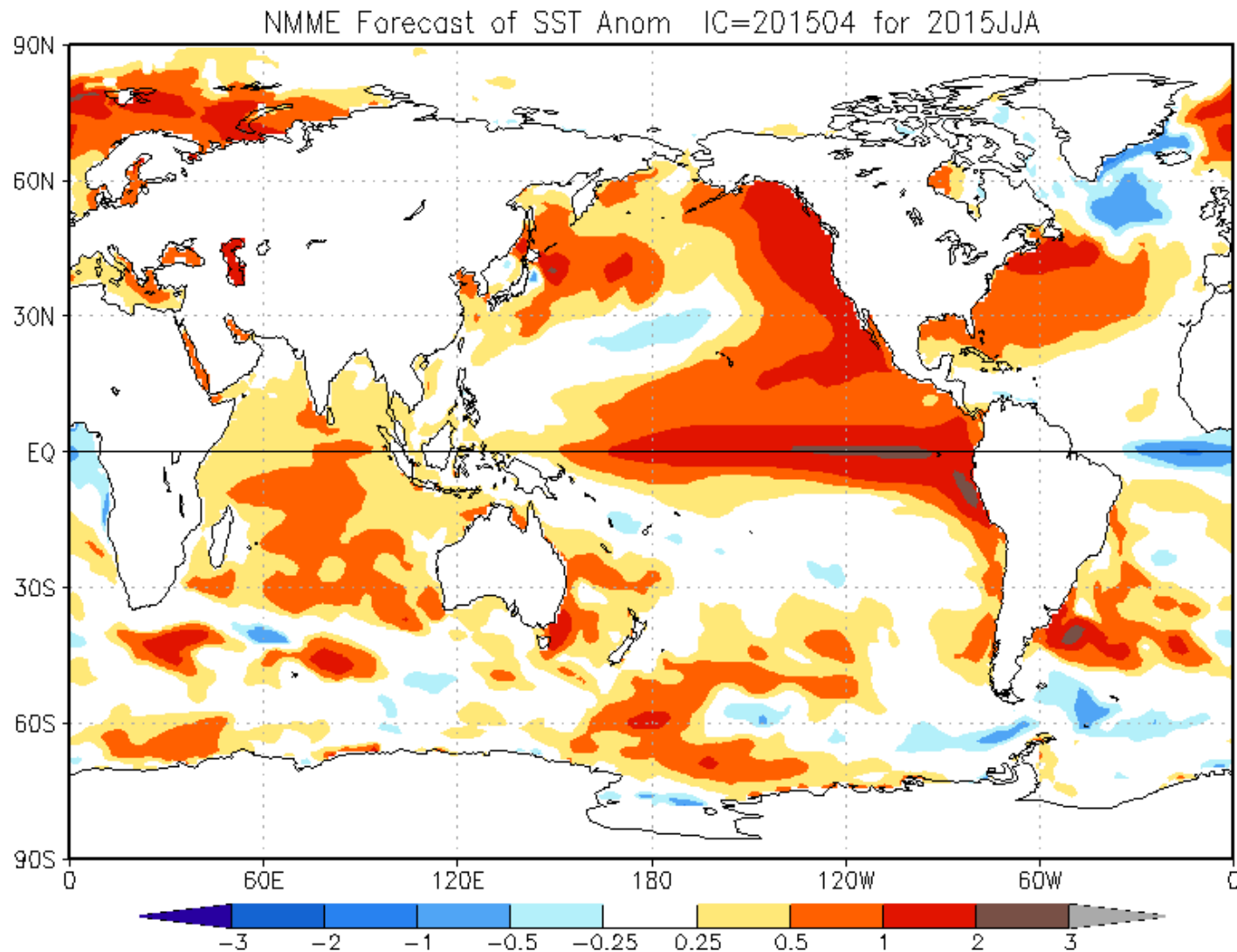


— CFSv2 Individual forecast members

— CFSv2 Forecast ensemble mean

— Observations

NMME Forecast for this summer



Questions?

Thanks

- Kris Holderied (NOS)
- Molly McCammon (AOOS)
- Yan Xue (CPC)

This is so wrong



(Blueberry Hills west of Unalakleet, March 2014)
(AP Photo/The Anchorage Daily News, Bob Hallinen)