S2S Metrics Issues

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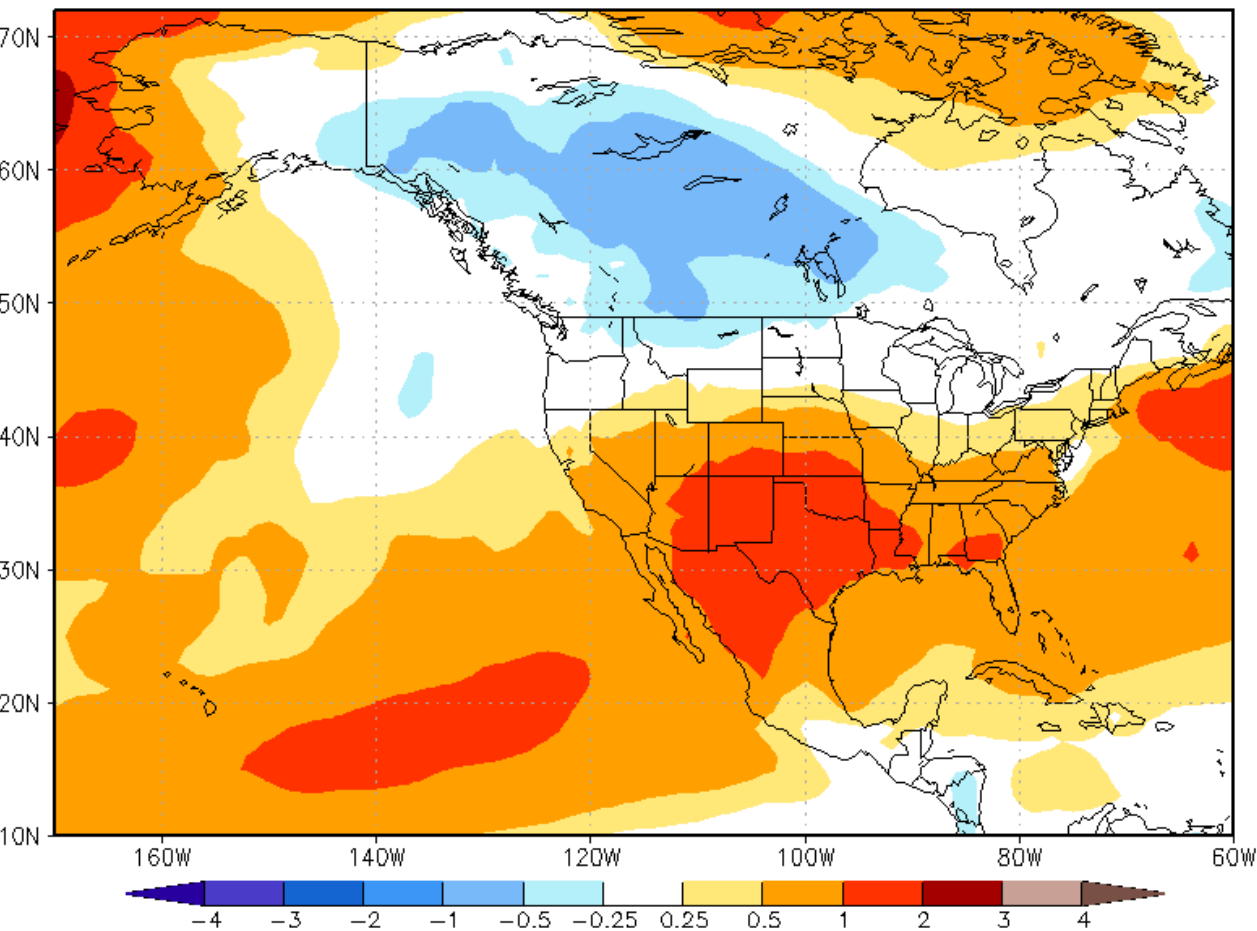**University of Miami - RSMAS**

Metric Issues

- **Bias Corrections**
  - **A Posteriori vs. A Priori**
- **Calibration**
- **Quality Assessment – Skill Masks**
- **Is Retrospective Quality Representative of Real-Time**
- **What "Skill Values" Correspond to "Actual Value"**
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- **What are the Appropriate Metrics**
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  - **Forecast of Opportunity Metrics**
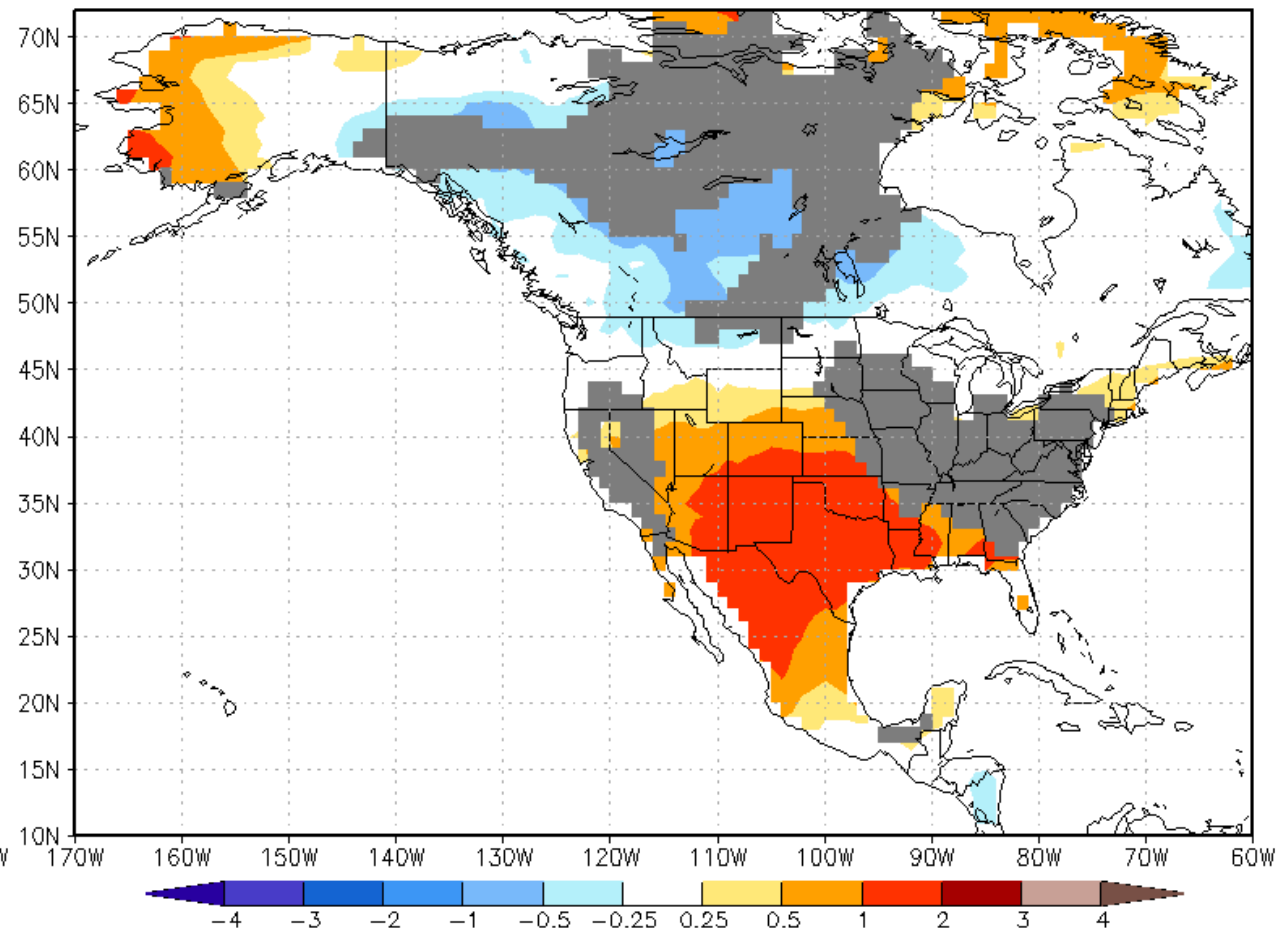
Bias Corrections: Very Much Necessary
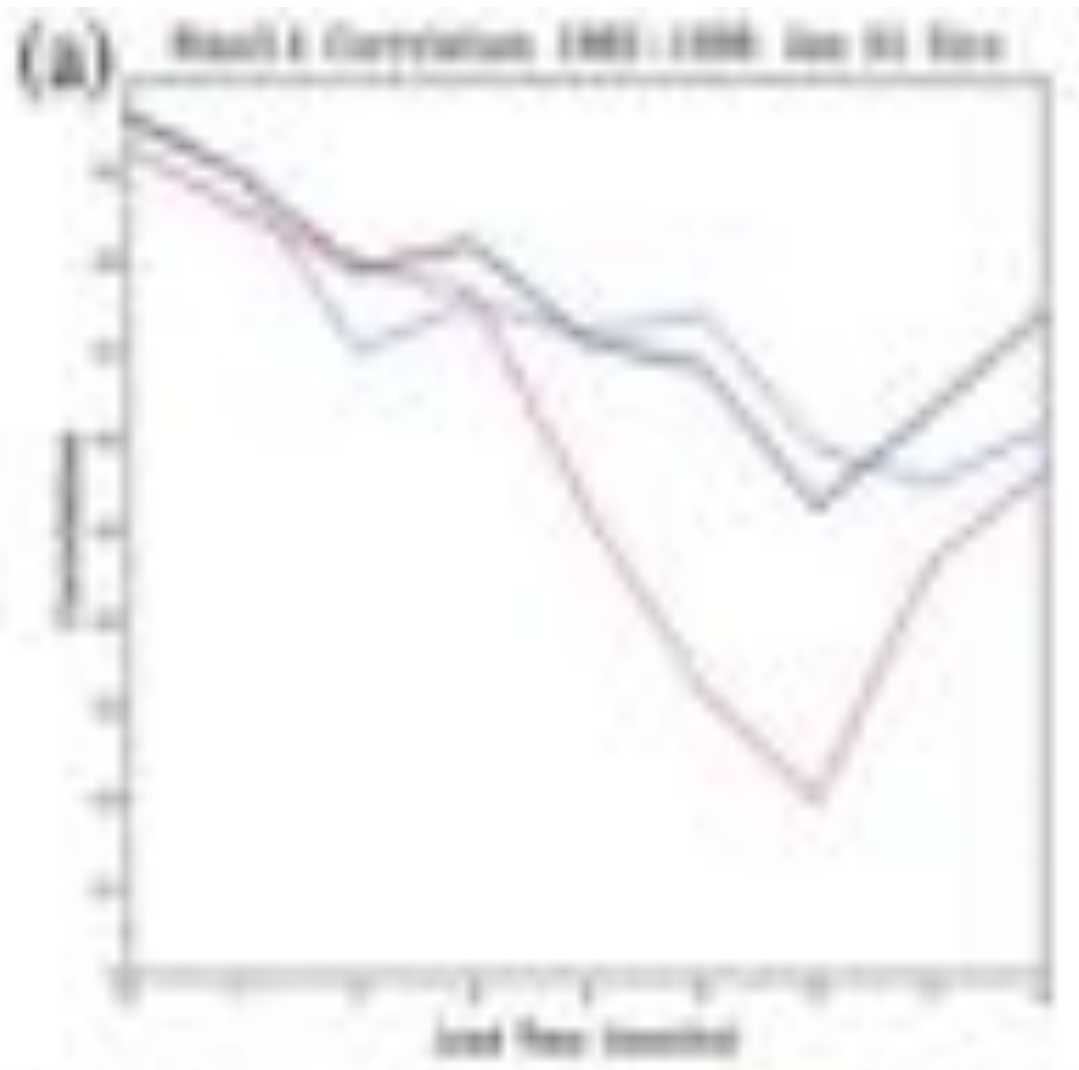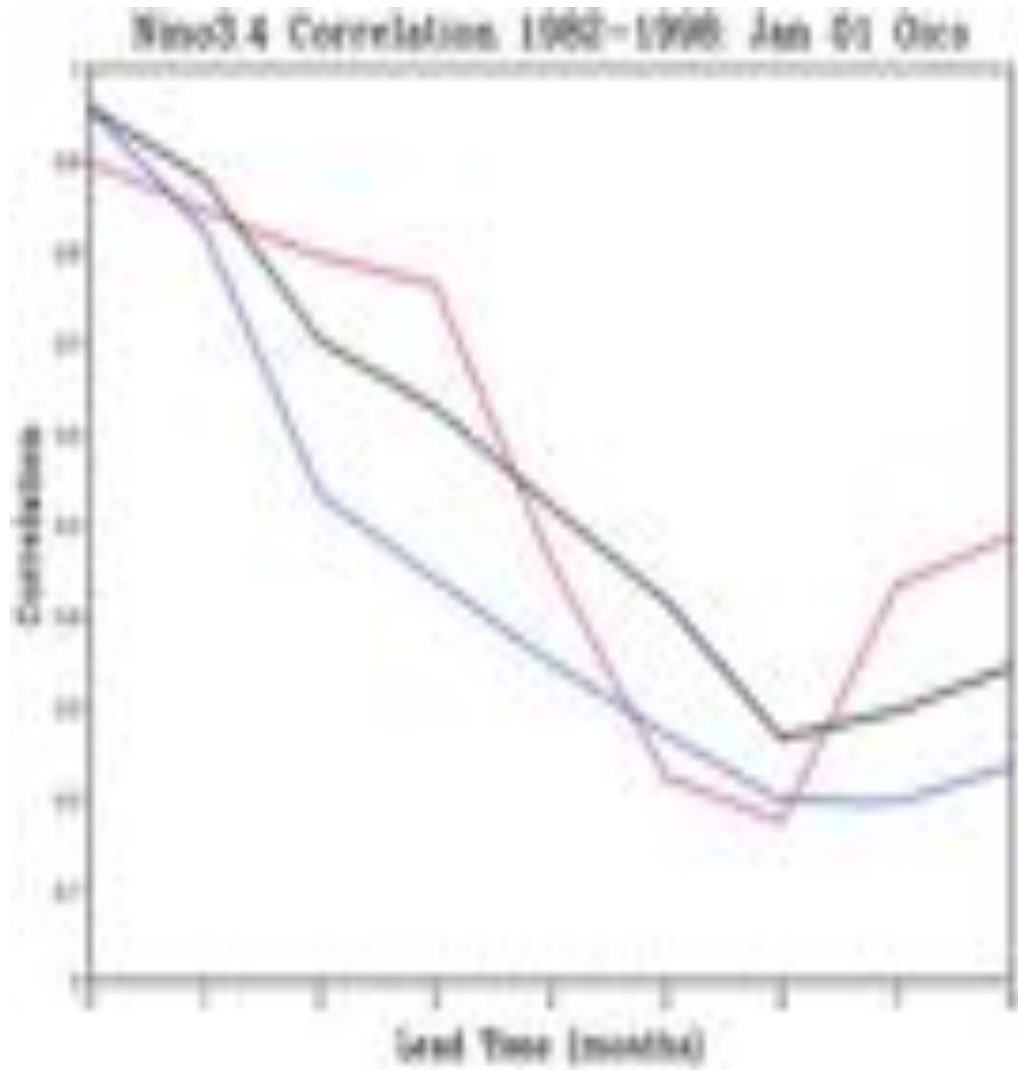
How to Implement Skill Masks: Overall Skill or Skill of Opportunity?
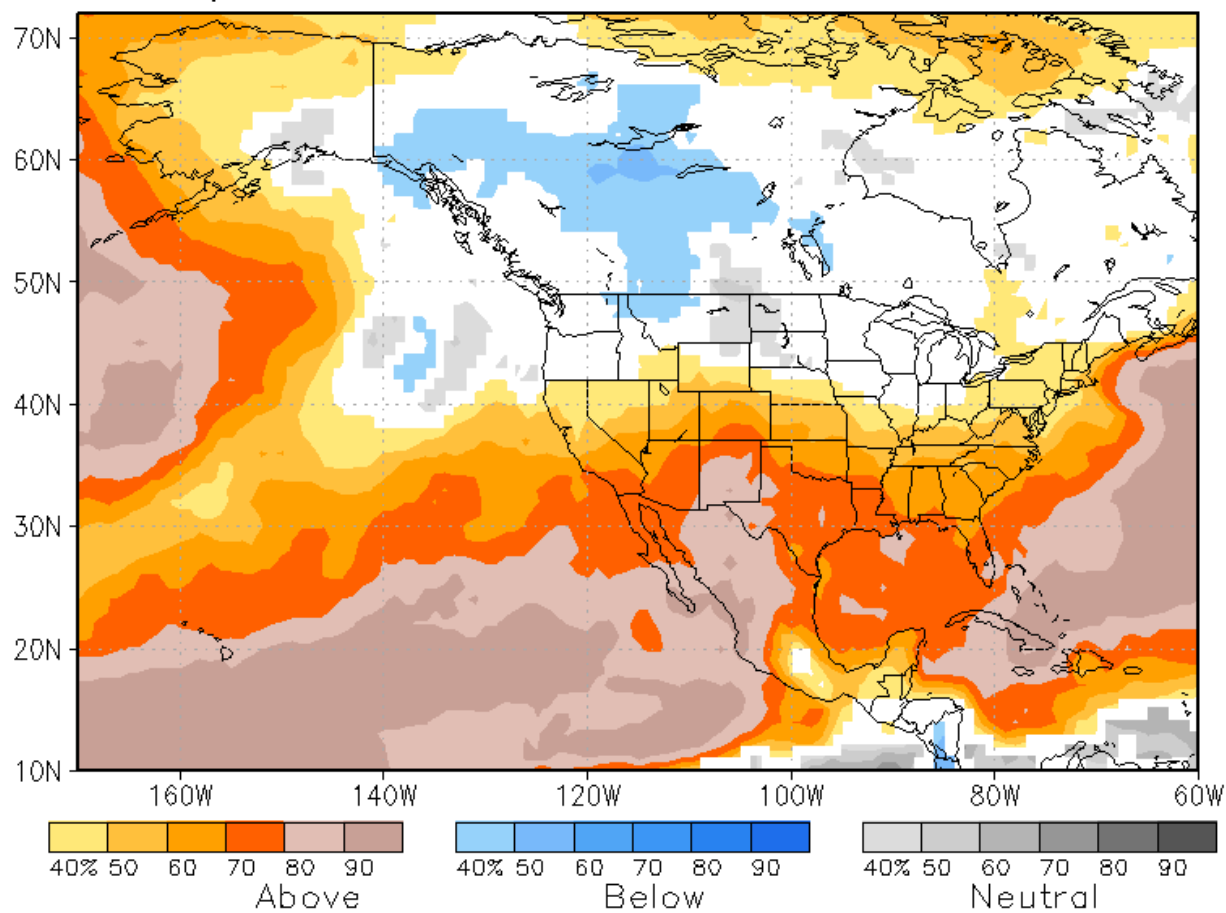

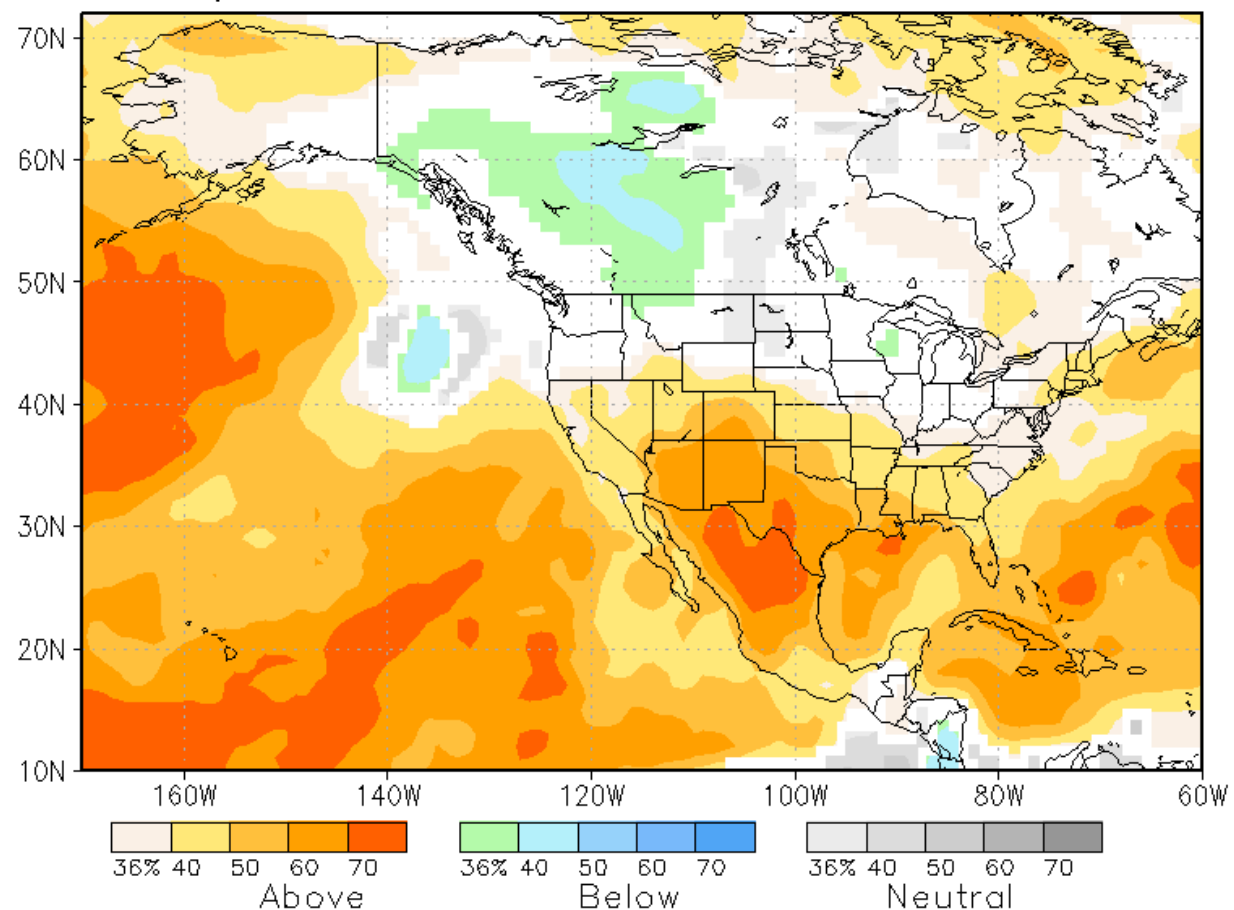NMME Forecast of TMP2m Anom IC=201802 for Lead 1 2018MAM

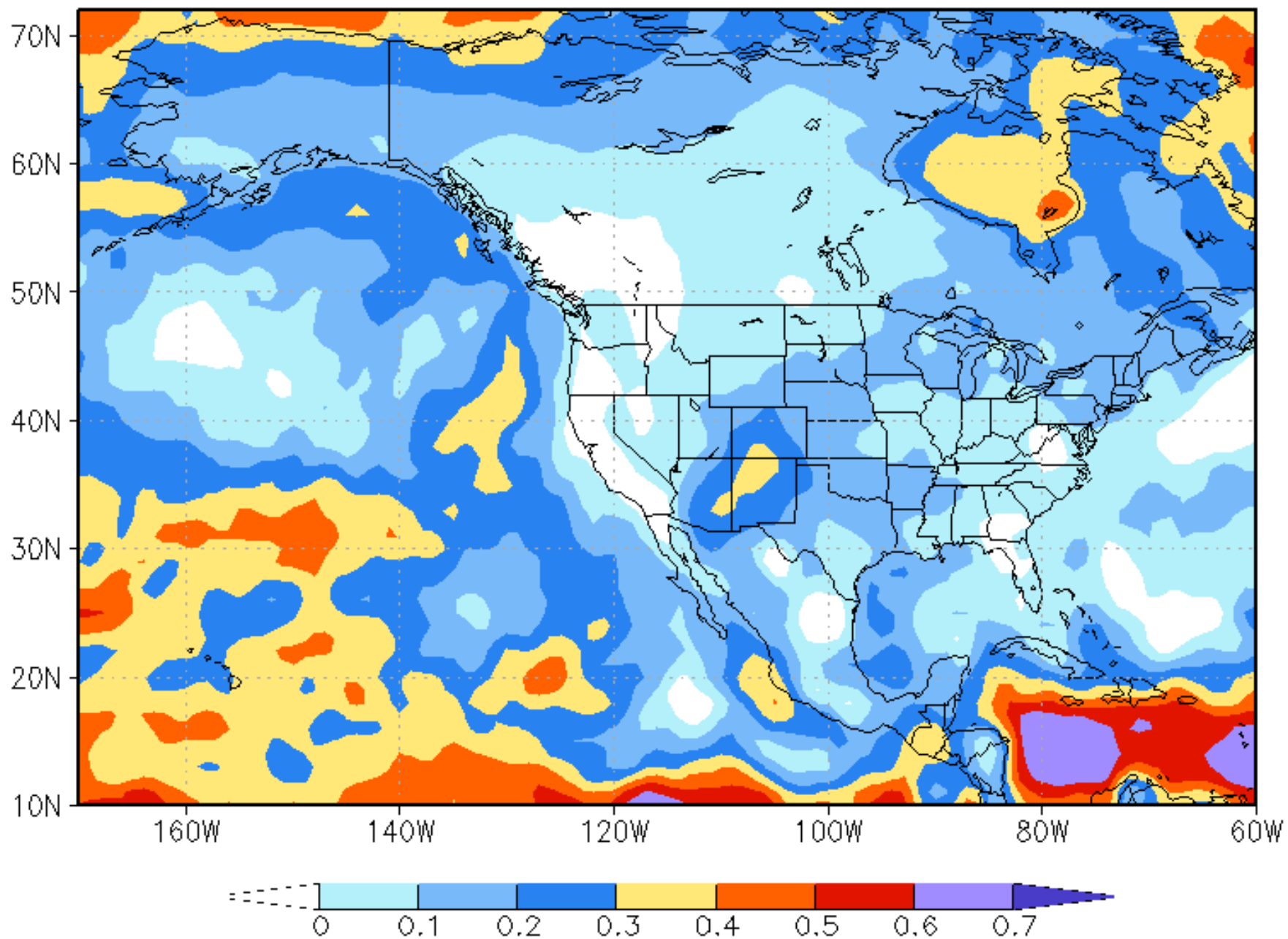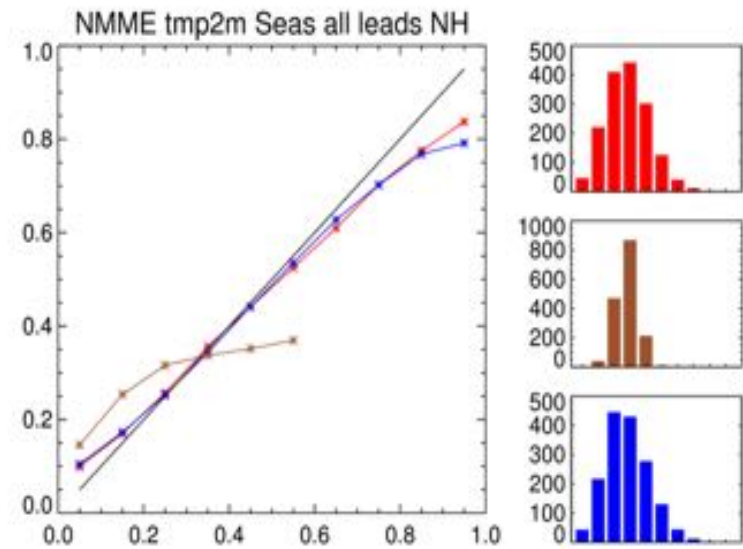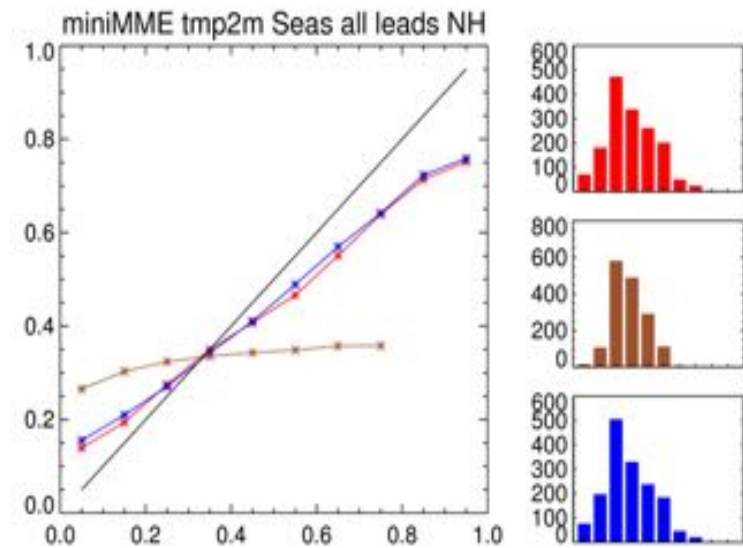# How to Implement Probability Forecasts: Calibration and Resolution
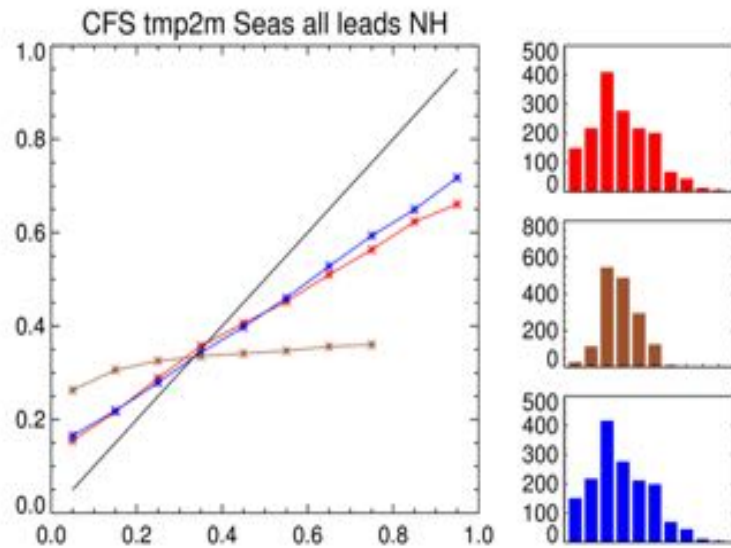

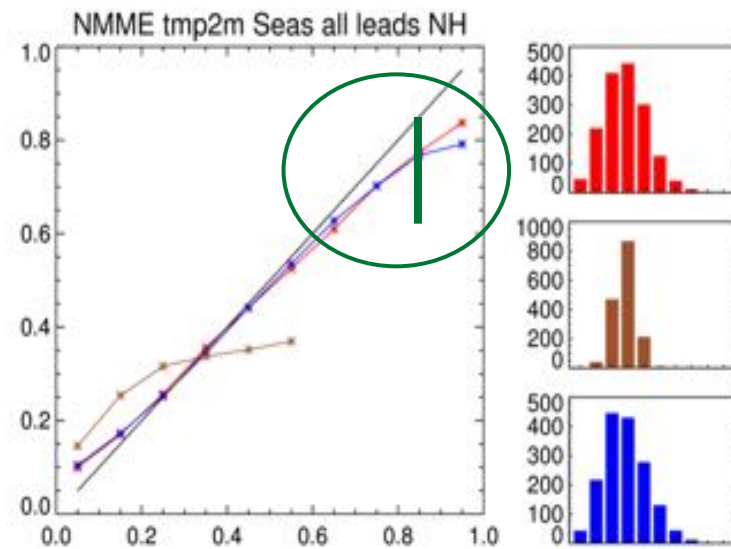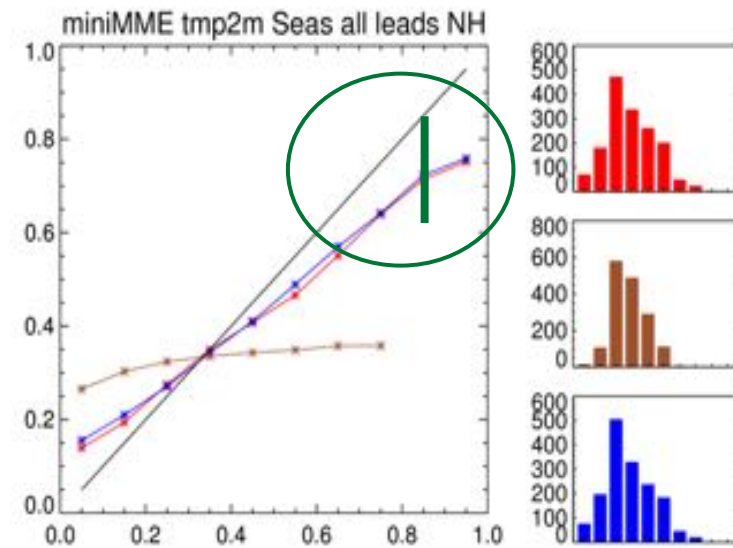NMME prob fcst TMP2m IC=201802 for lead 1 2018 MAM

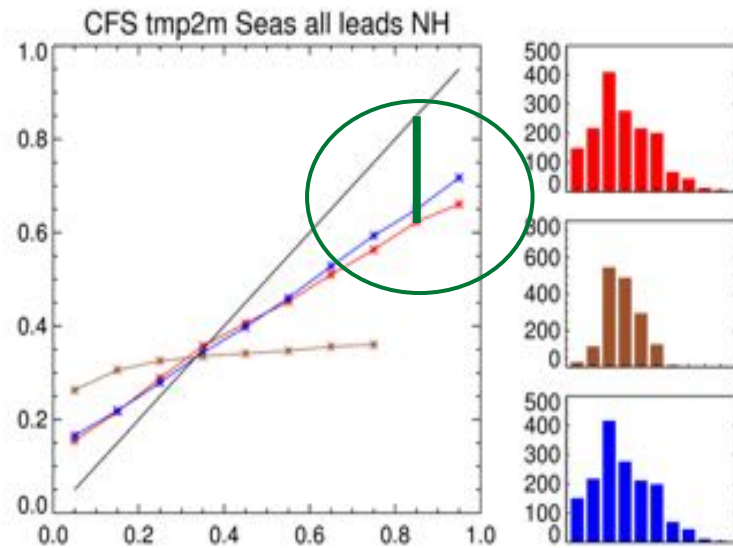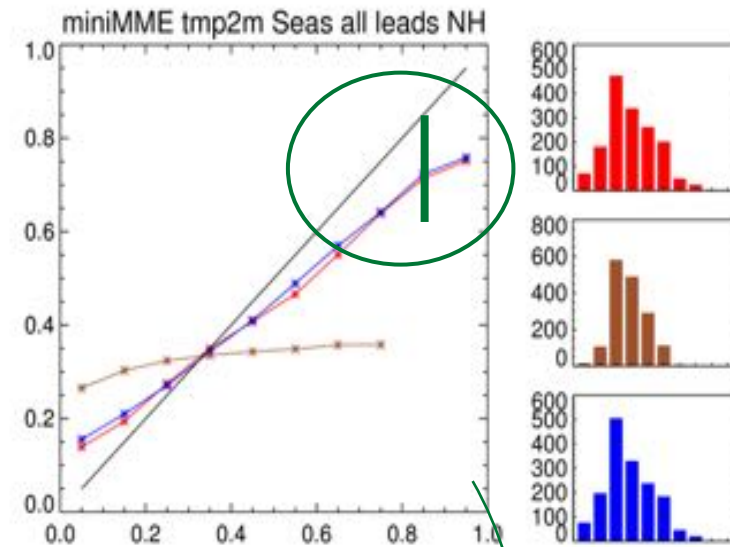NMME prob fcst TMP2m IC=201802 for lead 1 2018 MAM

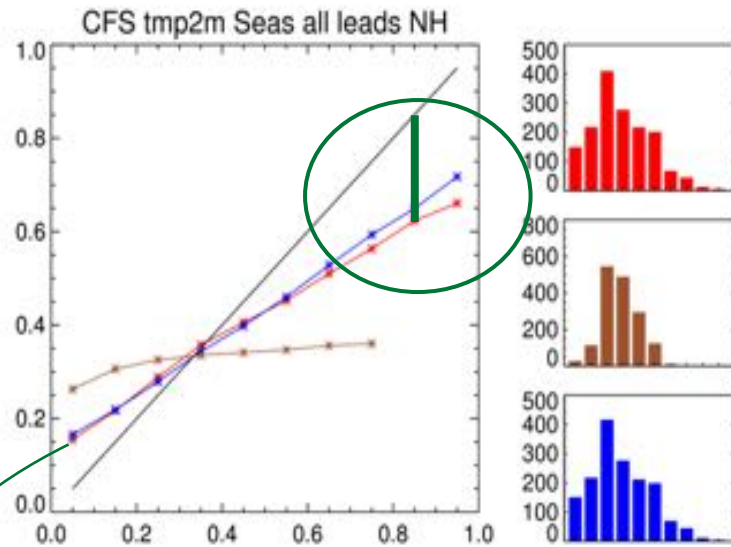tmp2m RPSS Aug forecasts for lead 1: SON

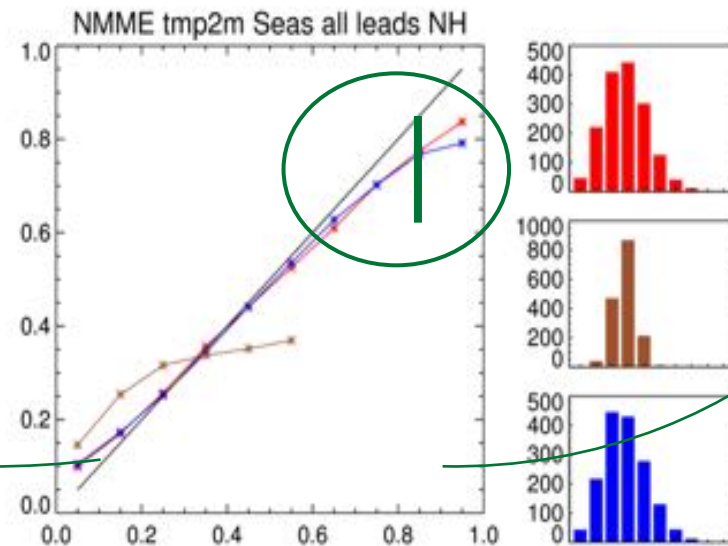**Reliability: If the forecast calls for a 70% chance of being warm, was it in fact warm 70% of the time?**

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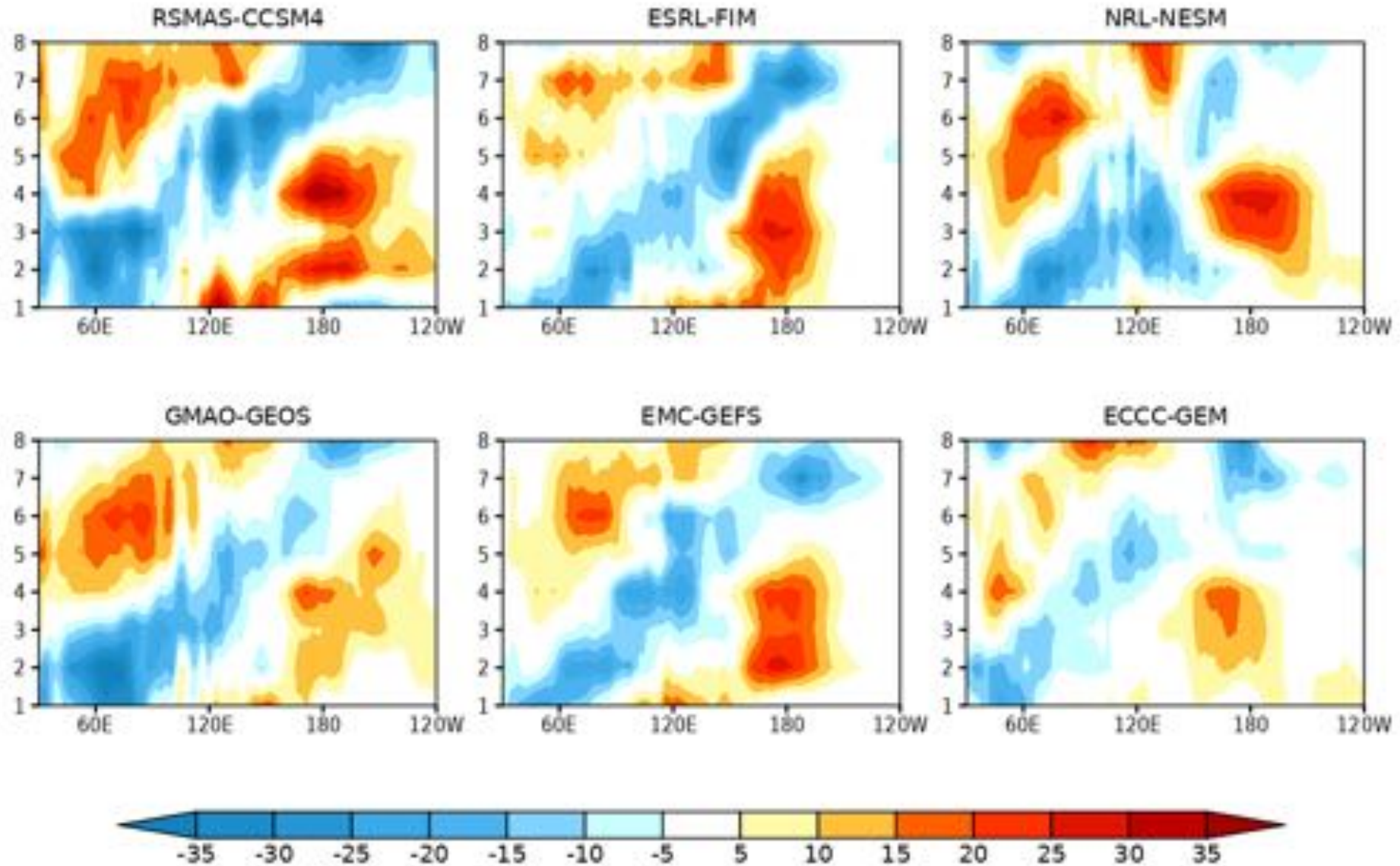
"Apples to Apples" for Multi-Model Impact

CFS tmp2m Seas all leads NH

miniMME tmp2m Seas all leads NH

NMME tmp2m Seas all leads NH

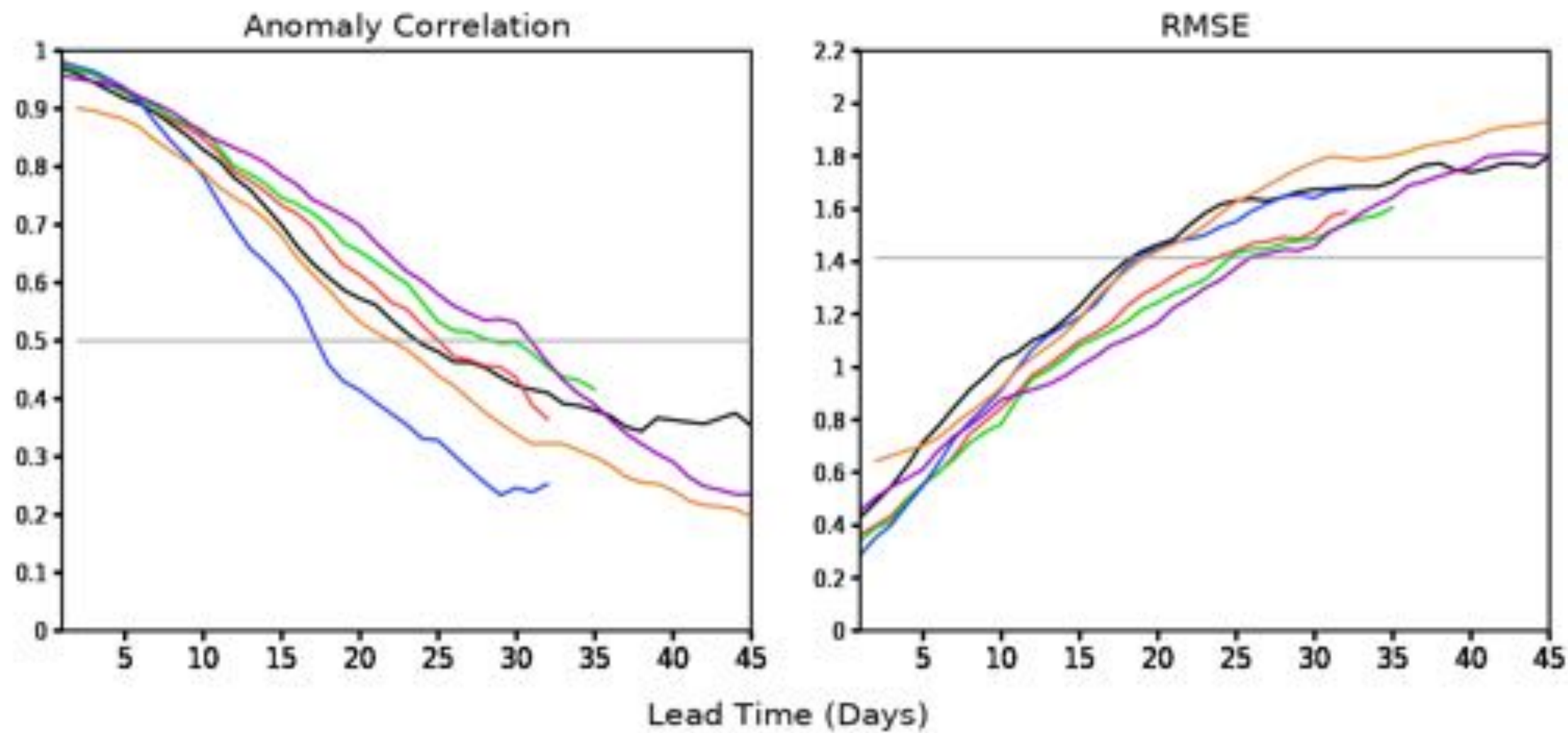"Oranges to Apples:" Ensemble size and Multi-Model

"Apples to Apples" for Ensemble Size Impact

MJO Composites (Nov ICs)   Lead 15

MJO OLR (w/m^2) Longitude-Phase

SubX MJO RMM Skill [Nov-Dec ICs]

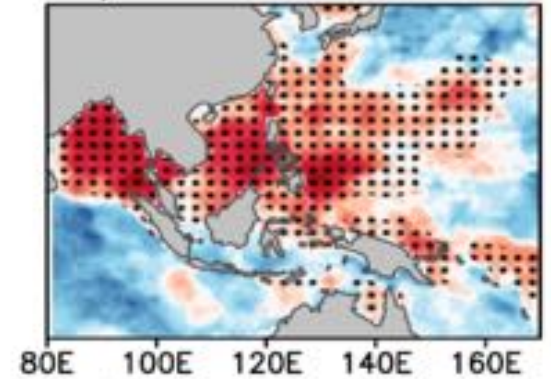**Rank Probability Skill Scores**
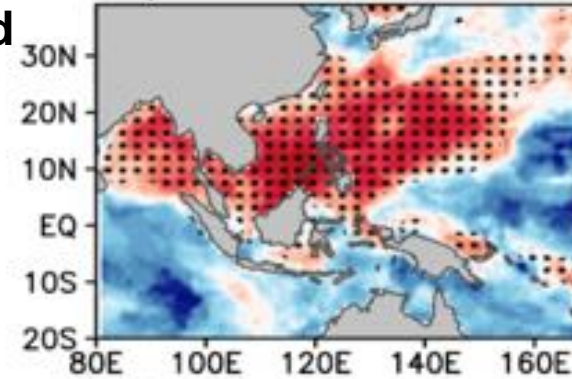**Jun-Jul-Aug Verification Period**

El Nino Years

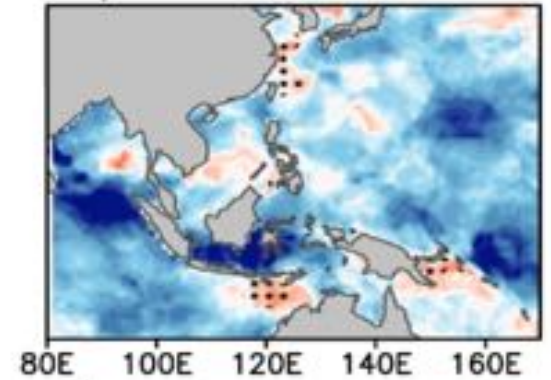**Application Models: Wave Watch III**
Forecasts of Opportunity

Neutral Years

La Nina Years

a)

El Nino $\mu=1.07\pm0.09$
La Nina $\mu=1.32\pm0.12$
Neutral $\mu=1.35\pm0.11$

b)

a) El Nino

$27\pm^3_2$

b) Neutral

$2\pm^1_1$

c) La Nina

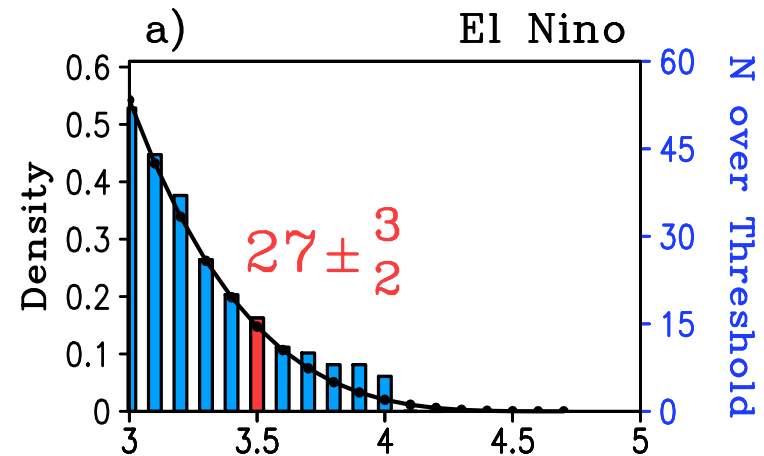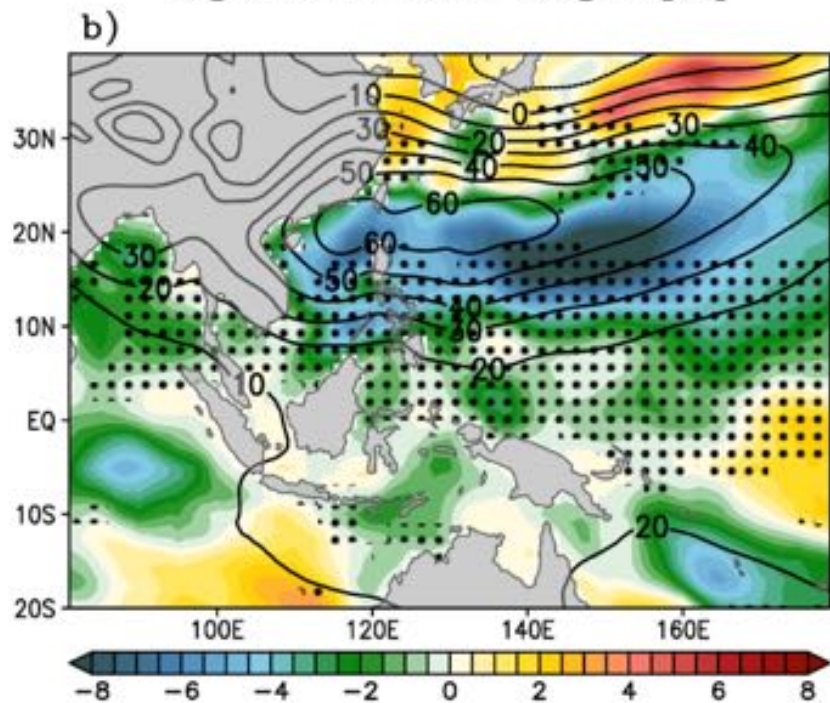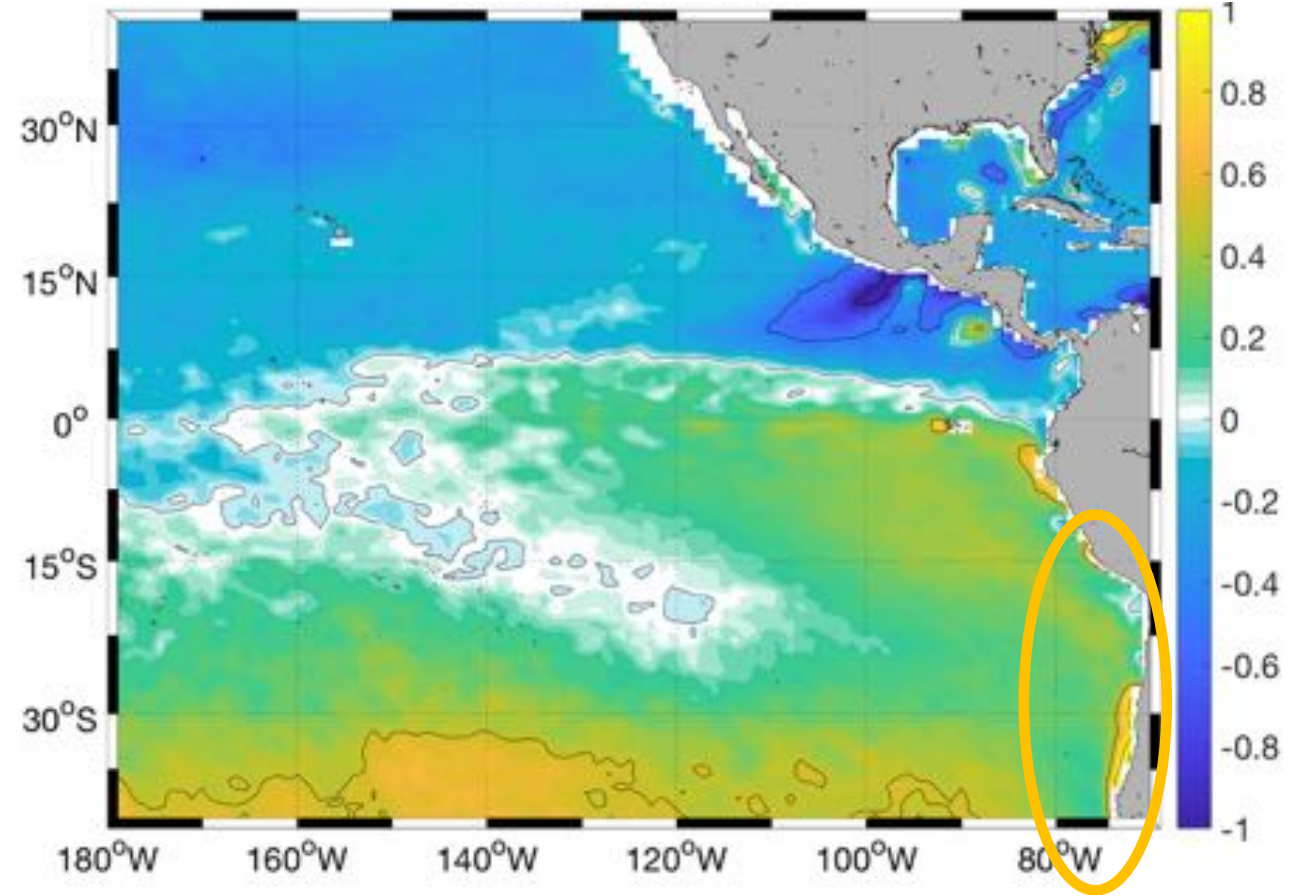$3\pm^1_1$

Threshold u [meters]
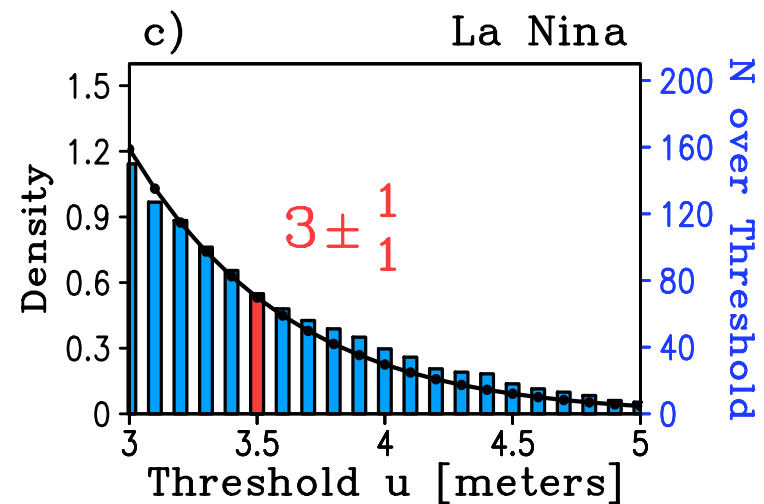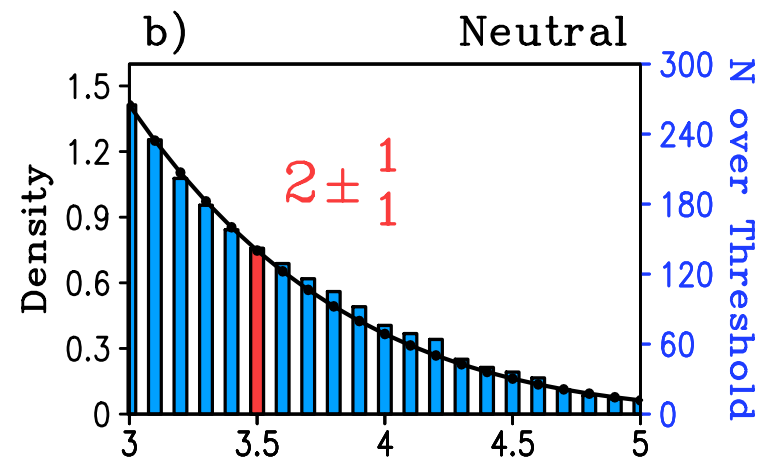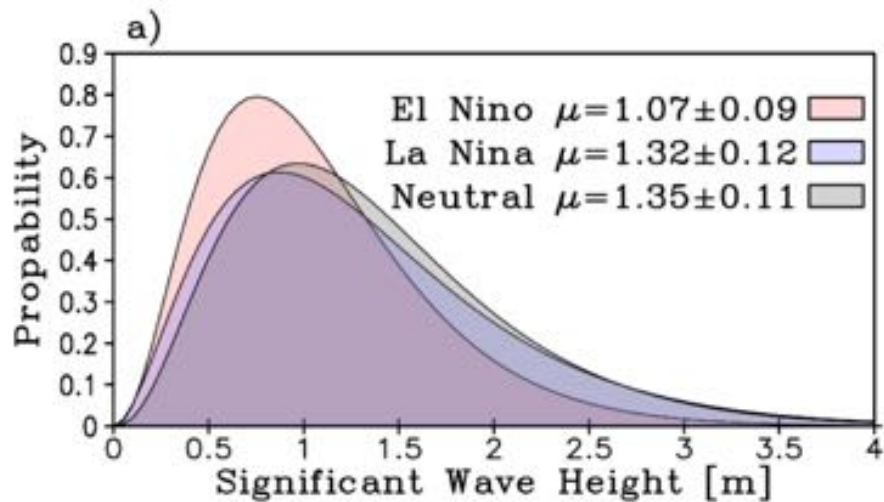
Fast Error Growth

SST FAST ERR HIGH RESOLUTION
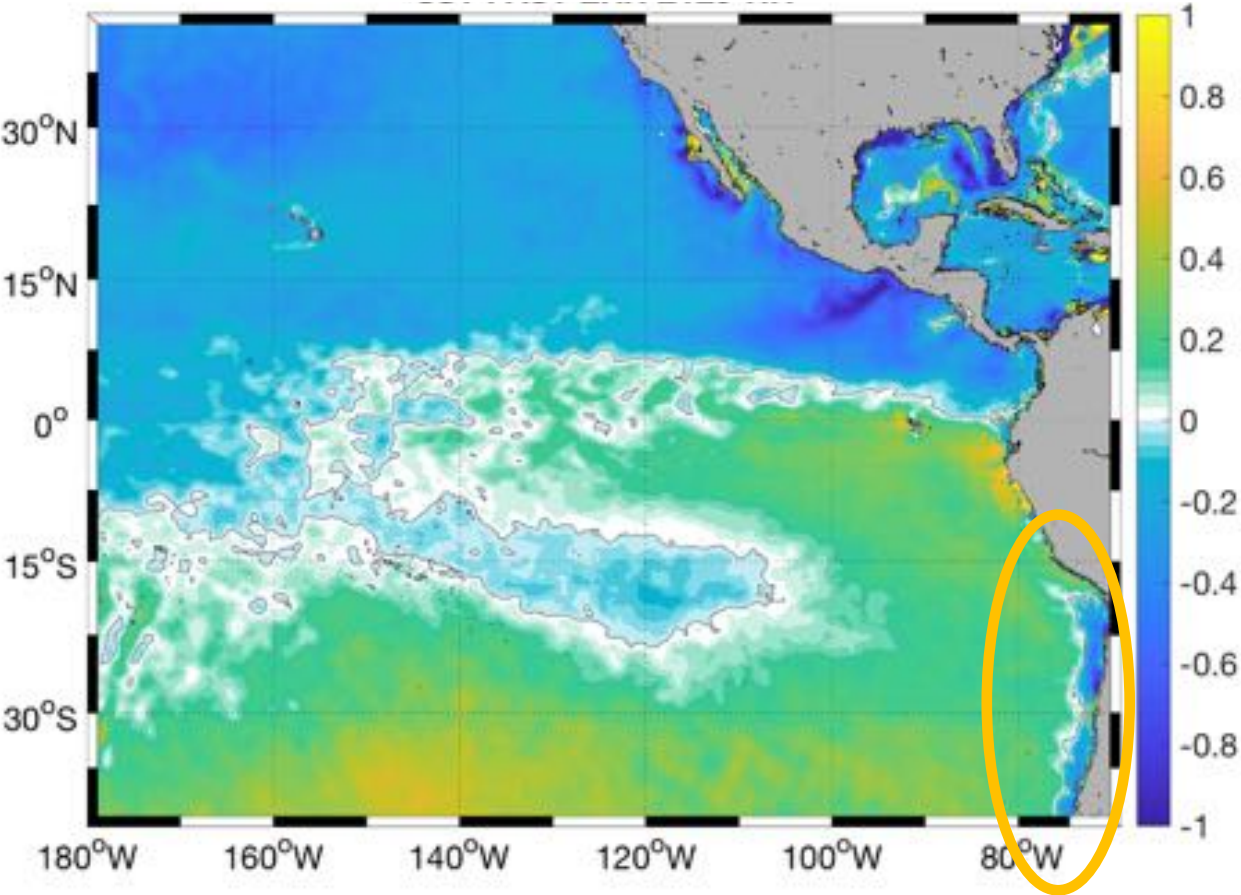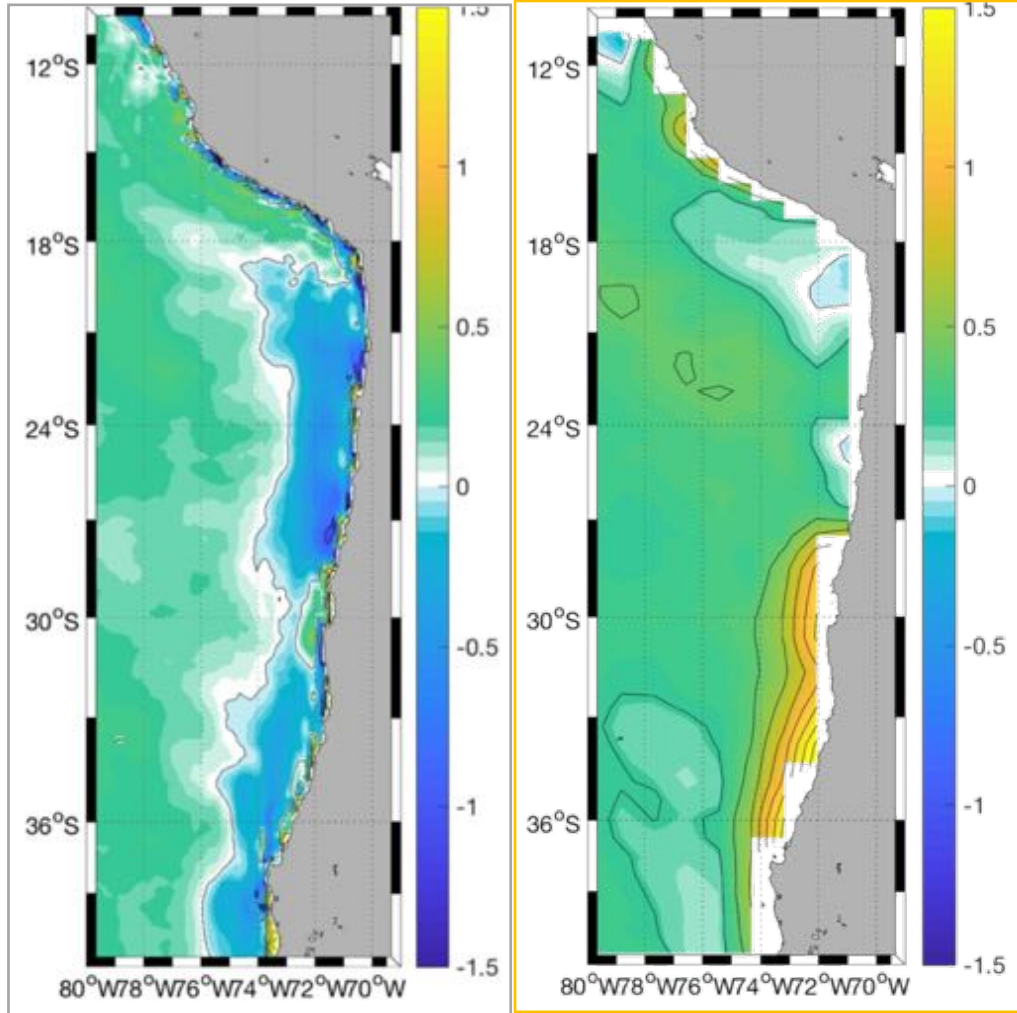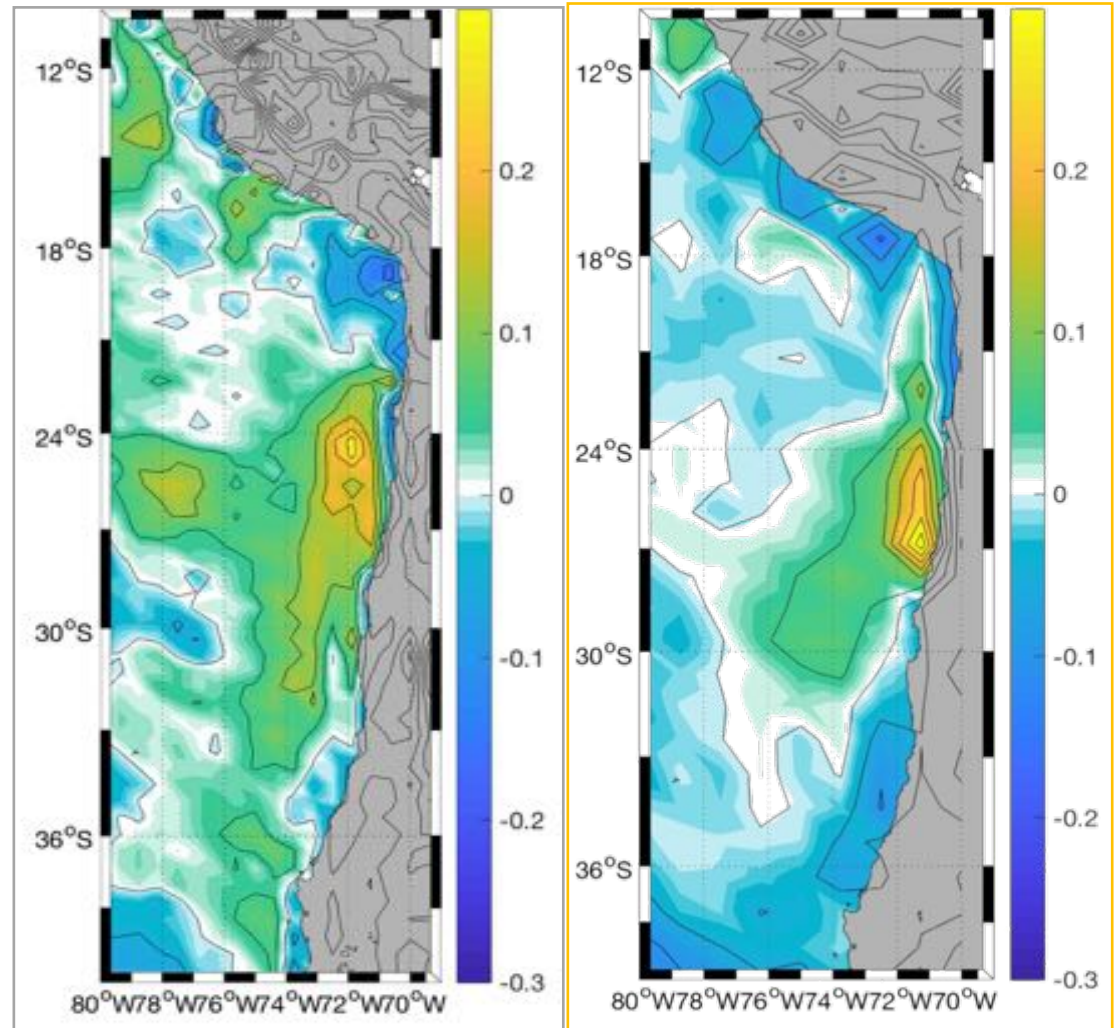
SST FAST ERR LOW RESOLUTION

SST

Clouds

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