Updating Climate Normals Impact on NMME Forecast

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Update NMME New Normals (1991-2020) for SST, Tmp2m and Prate

- GFDL_SPEAR - climo (1991-2020) applied in NMME ensemble mean (February 2021)

- NCAR_CCSM4, CanCM4i and GEM_NEMO - new climos calculated, compared with old climos, confirmed by model centers, ops and research lead (March 2021)

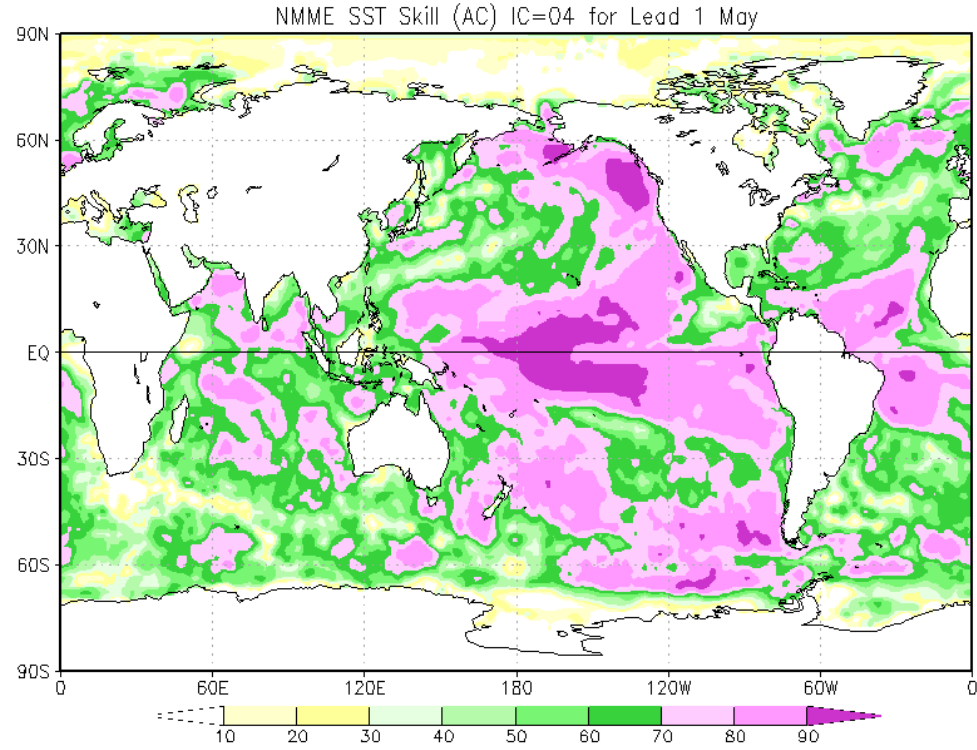- NASA_GEOS5v2, CFSv2 and NMME - new climos calculated, working through comparisons and approved in April, 2021

- New climos of all models have been used in May's IC forecast, 2021
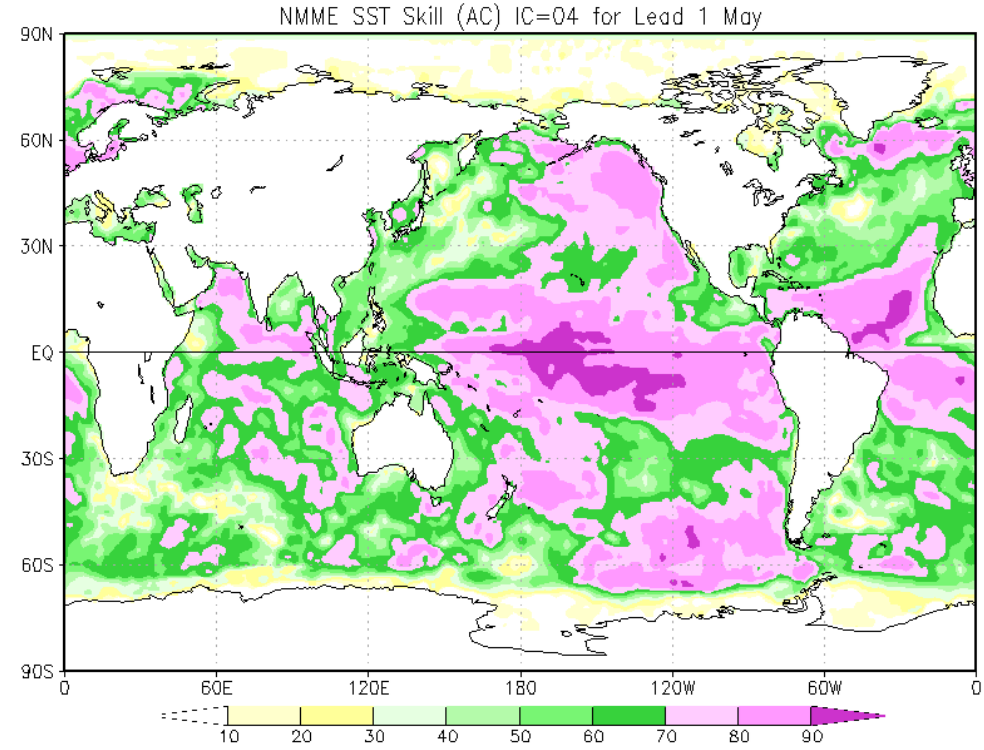
What NMME Recalculated with New Normals

- Each model's climatology (1991-2020) for 7 month forecast

- Monthly and seasonal Standard Deviation (SD) of each model based on 1991-2020 hindcast

- Anomalies of each models for 1991-2020 based on new climos

- Recalculated anomaly correlation coefficients (ACC) of forecast skills (1991-2020) for each model and NMME

- Three categories (above, normal and below) for probabilistic forecast

- Calibilition probability forecast from new adjustment of probability anomaly correlation (PAC) for 1991-2020

- Nino3.4 plumes updated with new normals
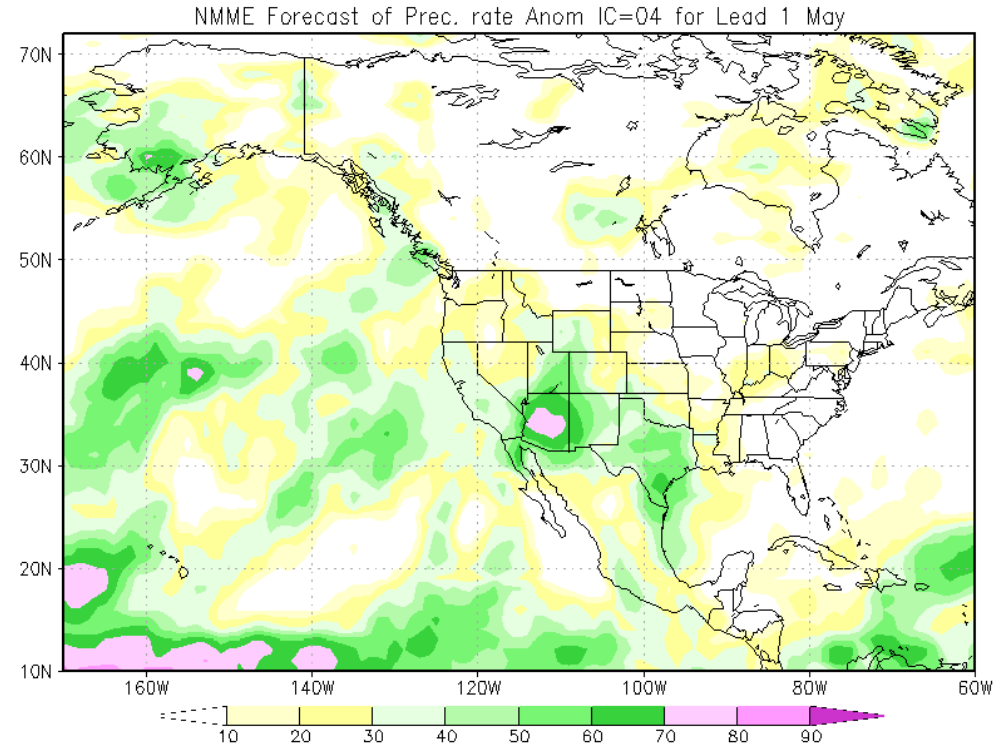
SST Forecast Skills
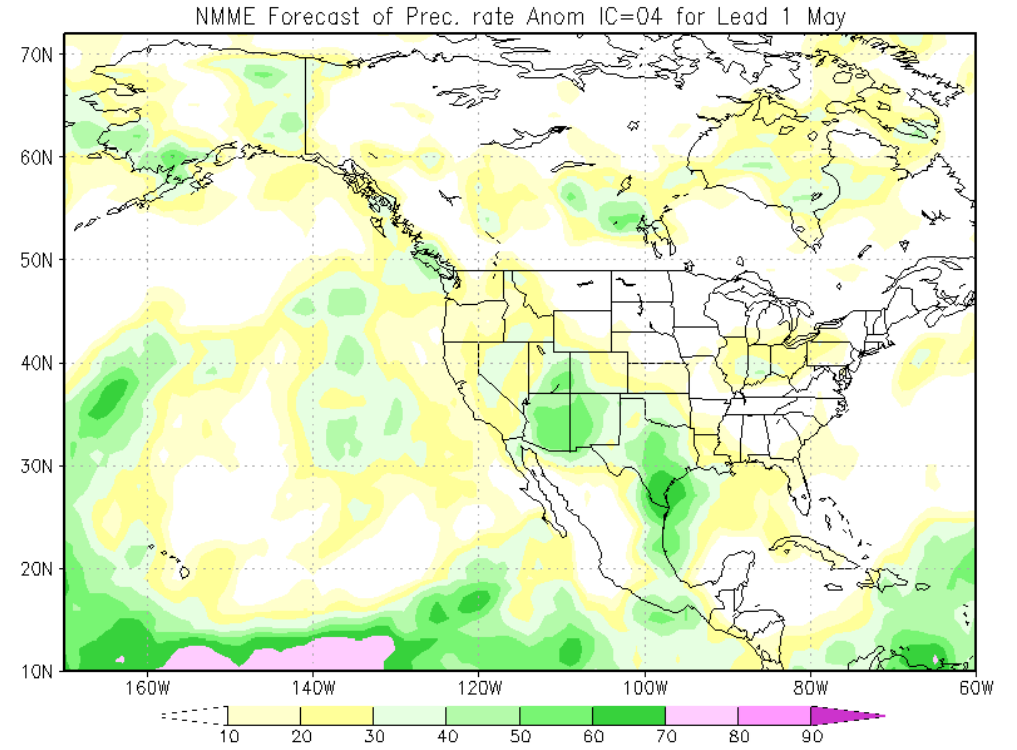
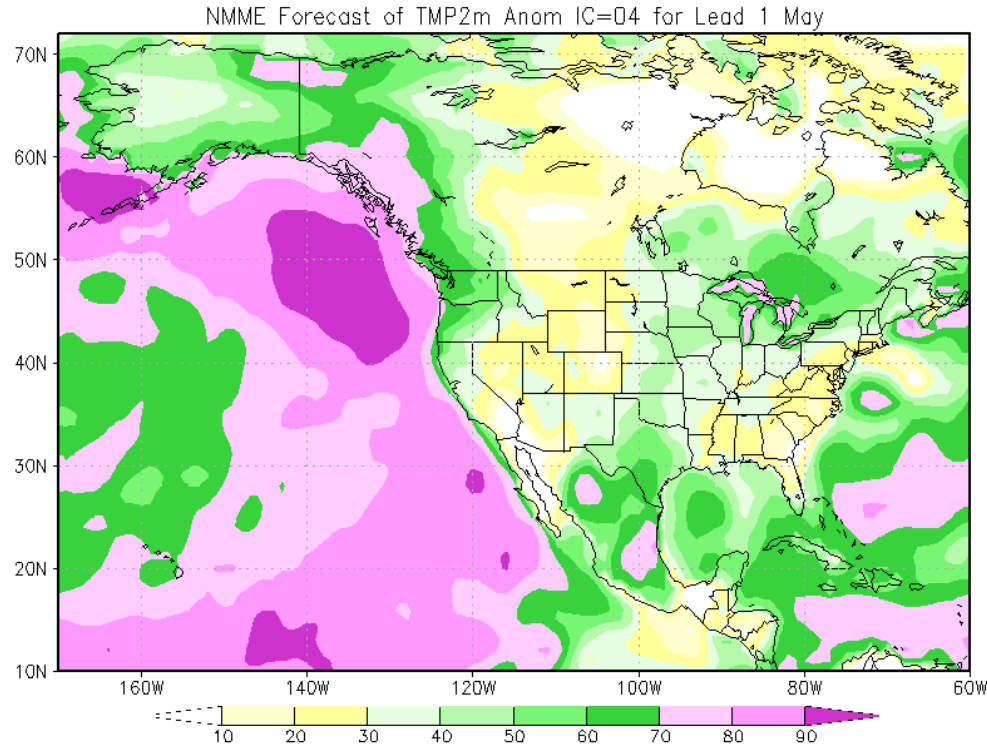**1991-2020 climo**

1982-2010 climo

NMME SST Skill (AC) IC=04 for Lead 1 May

NMME SST Skill (AC) IC=04 for Lead 1 May

Prate Forecast Skill

1991-2020 climo

1982-2010 climo

NMME Forecast of Prec. rate Anom IC=04 for Lead 1 May

NMME Forecast of Prec. rate Anom IC=04 for Lead 1 May

Tmp2m Forecast Skill

1991-2020 climo

NMME Forecast of TMP2m Anom IC=04 for Lead 1 May

1982-2010 climo

NMME Forecast of TMP2m Anom IC=04 for Lead 1 May
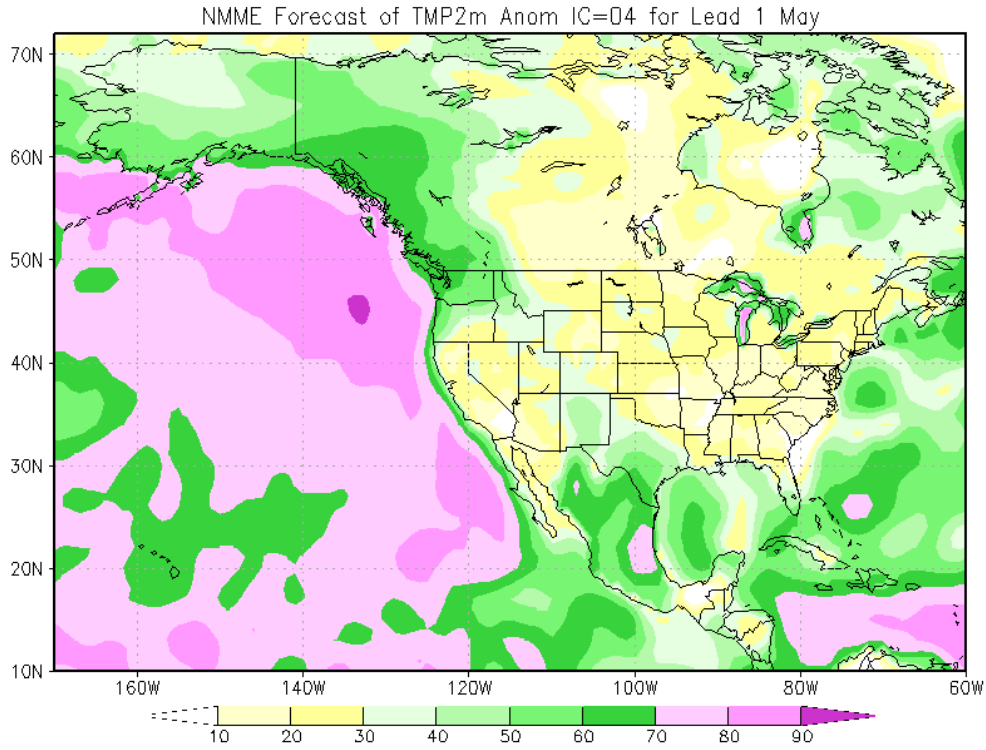
Nino3.4 Forecast

1991-2020 climo

1982-2010 climo

NMME Nino3.4 Fcst, IC=202104

CanCM4i
CFSv2
GEM_NEMO
GFDL_SPEAR
NCAR_CCSM4
NASA_GEOS5v2

NMME Nino3.4 Fcst, IC=202104

CanCM4i
CFSv2
GEM_NEMO
GFDL_SPEAR
NCAR_CCSM4
NASA_GEOS5v2
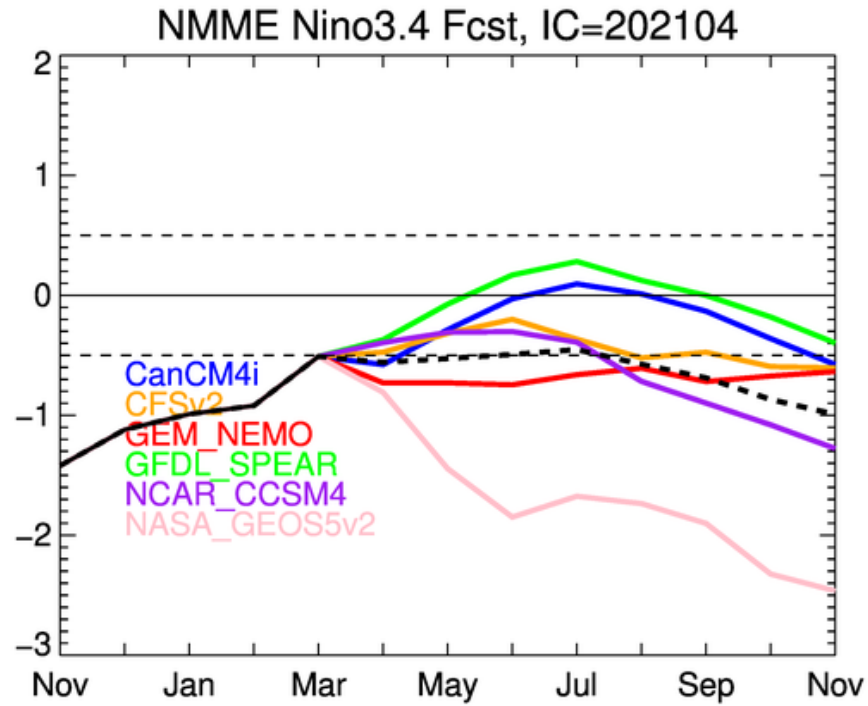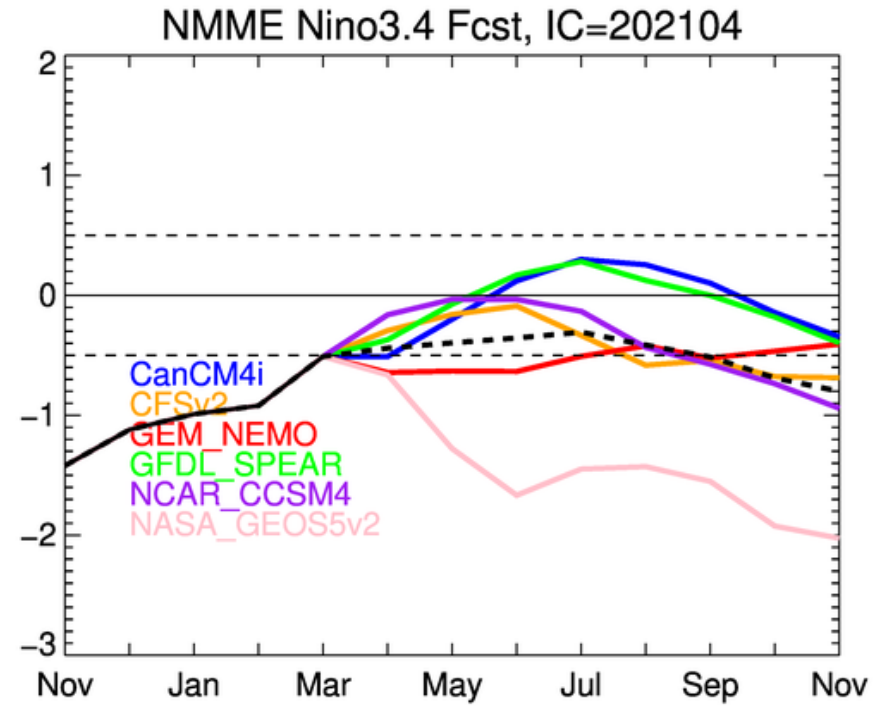
Summary

- Forecast NMME patterns of variables (SST, Tmp2m and Prate) keep similar to difference climos

- The amplitudes over some areas have been impacted by changing new normals to reduce warm and increase cold.

- The NMME forecast skills are increased for some regions for new climos, such as SST in the tropical.