

# **Sub-seasonal and Seasonal Forecast Activities at NCEP**

Arun Kumar

Climate Prediction Center

NCEP, NOAA

# **Current Real-time Extended-Range Forecast Configuration**

- **Implemented April, 2011 – Climate Forecast System version 2 (CFS.v2)**
- **Part of the EUROSIP**
- **Old system**
  - **Climate Forecast System version 1 (CFS.v1) – implemented September, 2004**
  - **Now discontinued**

## CFS Version 1 vs. Version 2

	<b>CFS.v1</b>	<b>CFS.v2</b>
Atmosphere	GFS 2003 (T62/L64)	GFS2009 (T126/L64)
Land	OSU 2-L	NOAH 4-L
Ocean	MOM3	MOM4
Sea ice	Climatology	Predicted
CO <sub>2</sub>	Fixed at 1988 level	Evolving with time
Initial conditions	R2/GODAS	CFSR
Hindcast	15/month	~24/month (4 runs / 5 days)
Forecast	4 runs/day	4 runs/day (seasonal) 16 runs/day (45 days)

# CFS.v2 Real-time Forecast Configuration

- **Coupled model**
  - T126/L64
  - MOM4
  - MOM4- Sea-ice
- **Seasonal**: 4 runs/day; 9-month predictions
- **Monthly**: 16 runs/day; 45-day predictions
- Initial conditions for the ocean, atmosphere, land are from the Climate Forecast System Reanalysis (CFSR)
- Real-time forecast products are calibrated based on the hindcasts climatology

# **CFS.v2 Hindcasts : Seasonal**

- **Period : 1982 - 2010**
- **4 runs/day; every 5<sup>th</sup> day**
- **Hindcasts are used for**
  - **Lead time dependent climatology**
  - **Calibration (mean; standard deviation)**
  - **Skill assessments and skill masks**

# **CFS.v2 Hindcasts : Monthly**

- **Period : 1999- 2010**
- **4 runs/day; 45 day**
- **Hindcasts are used for**
  - **Calibration (mean; standard deviation)**
  - **Skill assessments and skill masks**

# Seasonal Forecasts

**CFSv2 Seasonal Climate Forecasts - Mozilla Firefox**

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CFSv2 Seasonal Climate Forecasts +

origin.cpc.ncep.noaa.gov/products/people/wwang/cfsv2fcst/ Google

## Seasonal climate forecast from CFSv2

*Apr 2012 to Dec 2012* (Updated: Mon Mar 26 13:25:35 EDT 2012)

This page displays seasonal climate anomalies from the [NCEP coupled forecast system model version 2](#) (CFSv2). Forecasts are from initial conditions of the last 30 days, with 4 runs from each day. Forecast ensembles consist of 40 members from initial a period of 10 days. The 1st ensemble (E1) is from the earliest 10 days, the 2nd ensemble (E2) from the second earliest 10 days, and 3rd ensemble (E3) from the latest 10 days. Anomalies are with respect to 1999-2010 hindcast climatology. Temporal correlations between hindcasts and observations are used as skill mask for spatial anomalies. Standard deviation to normalize anomalies is the average standard deviation of individual hindcast members. For SSTs, anomalies with respect to 1982-2010 climatology are available [here](#). You may also want to check the [parallel forecast display for CFS version 1](#).

**CAUTION:** Seasonal climate anomalies shown here are not the official NCEP seasonal forecast outlooks. The NCEP seasonal forecast outlooks can be found at [CPC](#) website. Model based seasonal climate anomalies are one factor based on which NCEP seasonal forecast outlook is issued.

### Nino SSTs

Monthly				Seasonal			
Nino1+2	Nino3	Nino3.4	Nino4	Nino1+2	Nino3	Nino3.4	Nino4
<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>

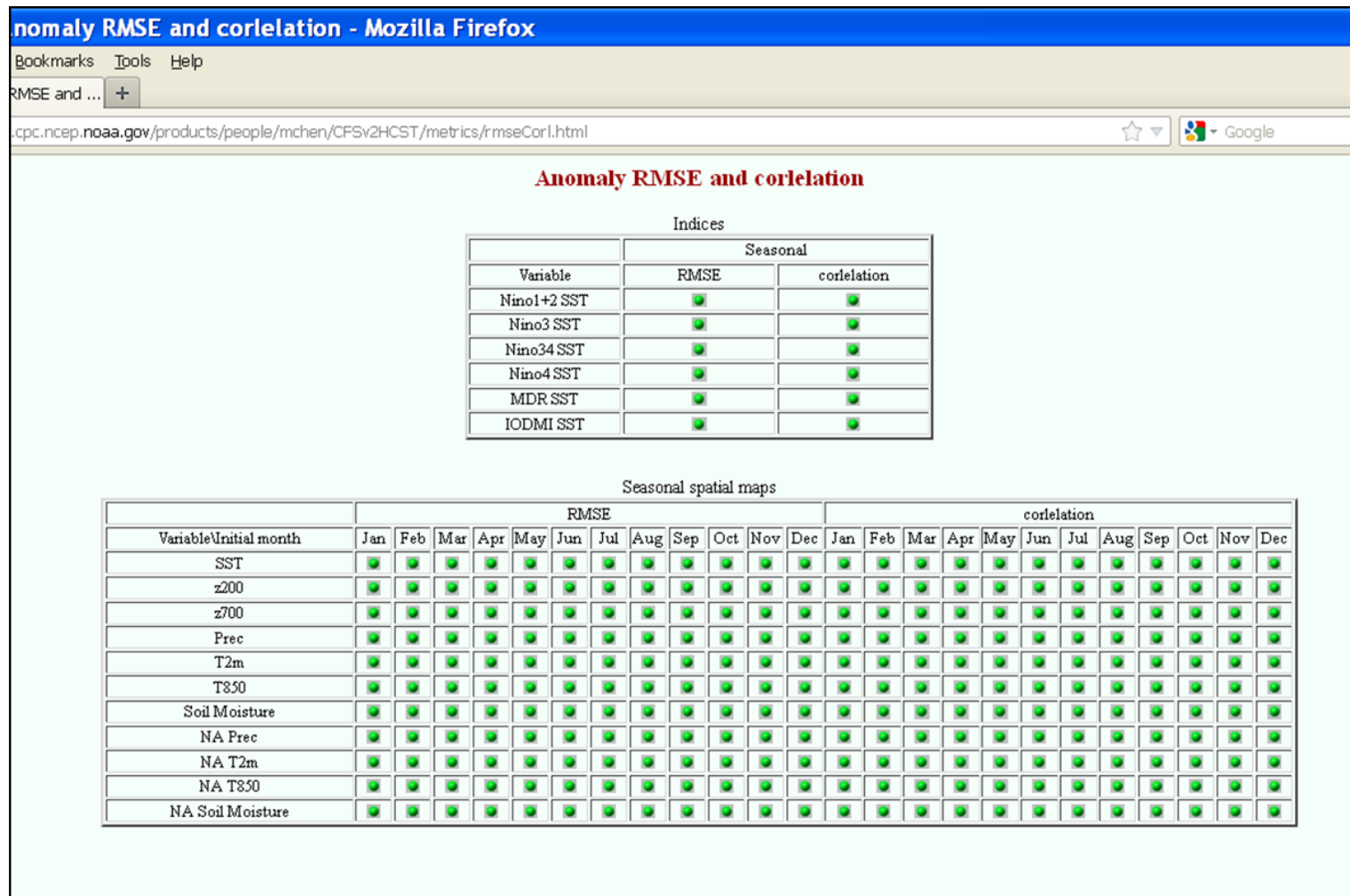
### Sea surface height and equatorial temperature

Sea surface height (x-y)	Equatorial temperature (x-z)
<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>

### Three-month-mean spatial anomalies

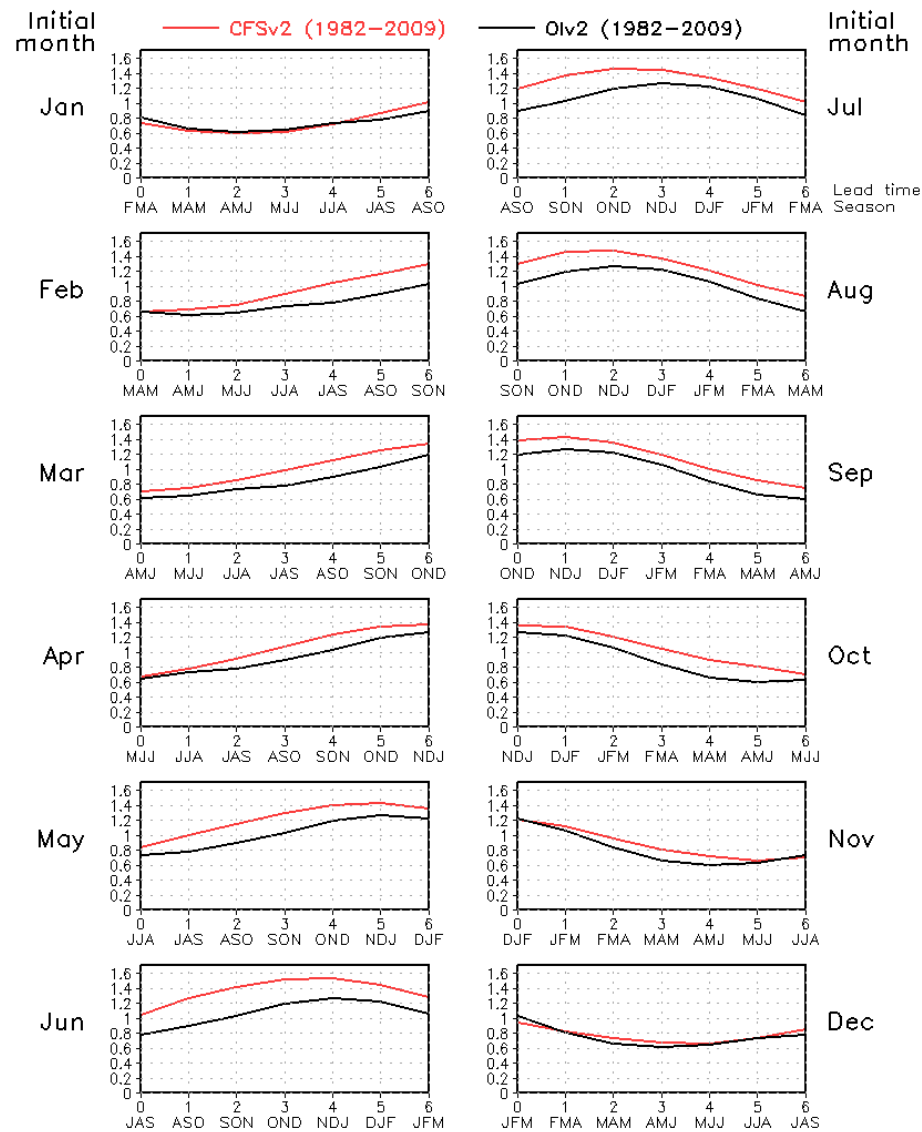
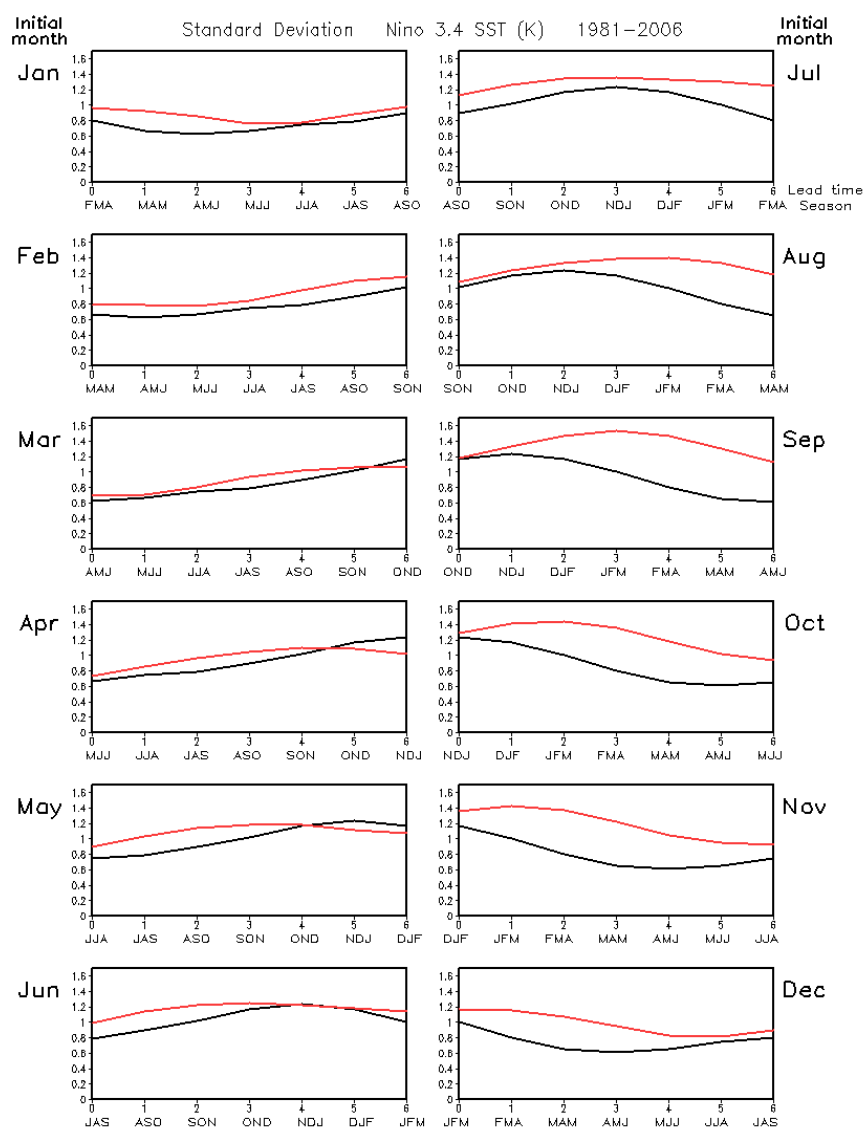
Variable	Anomaly	Anomaly with skill mask	Normalized	Normalized with skill mask
SST	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
Prec	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
T2m	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
T850	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
z200	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
z700	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
NA Prec	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>
NA T2m	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>	<a href="#">E1 E2 E3</a>

# Seasonal Forecasts : Hindcast Verification

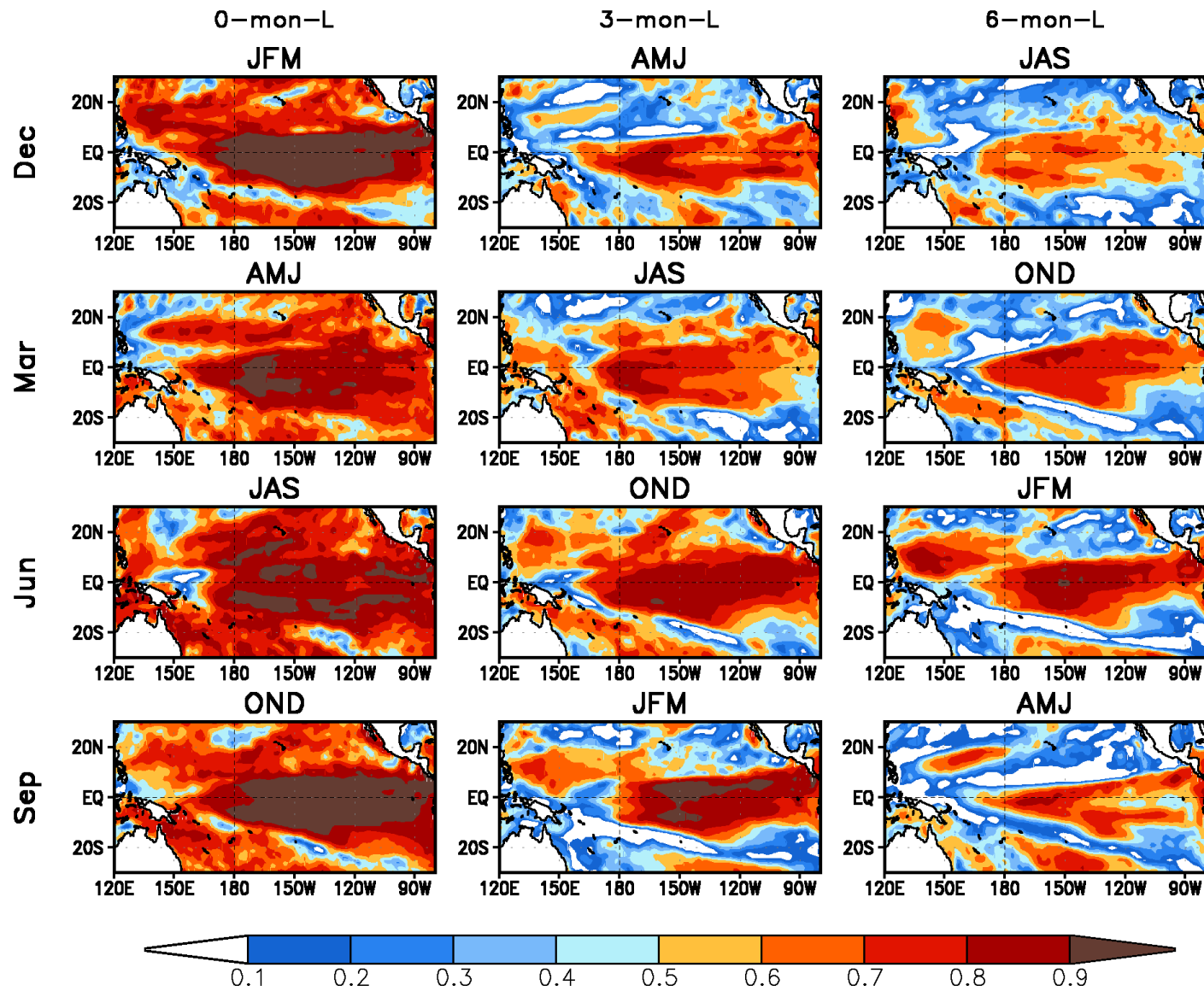


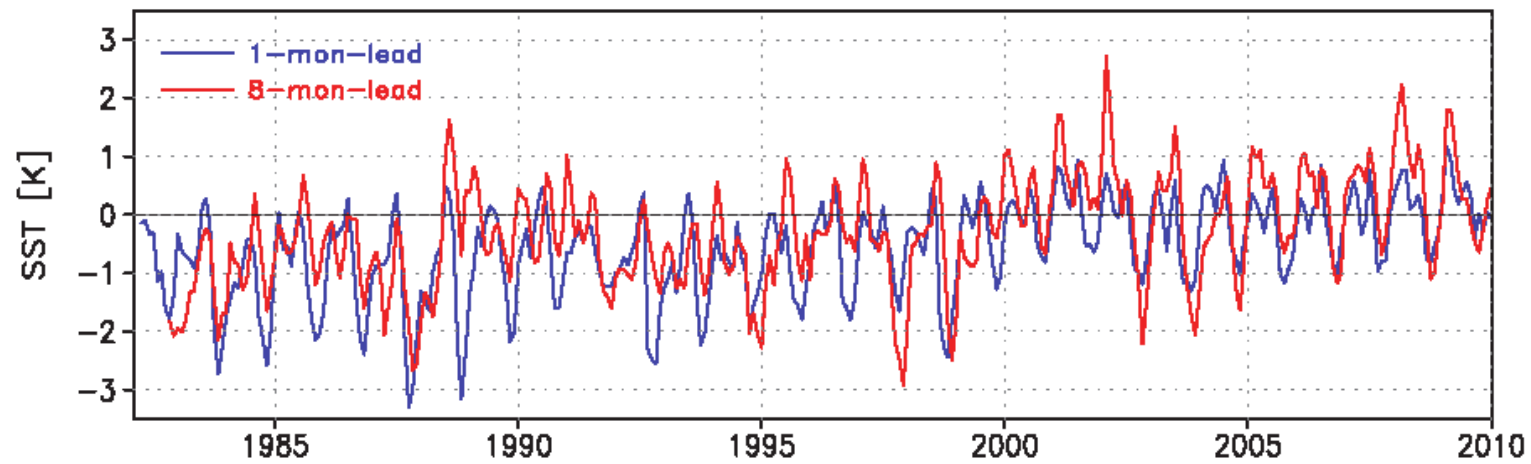


# CFS.v1 vs. CFS.v2

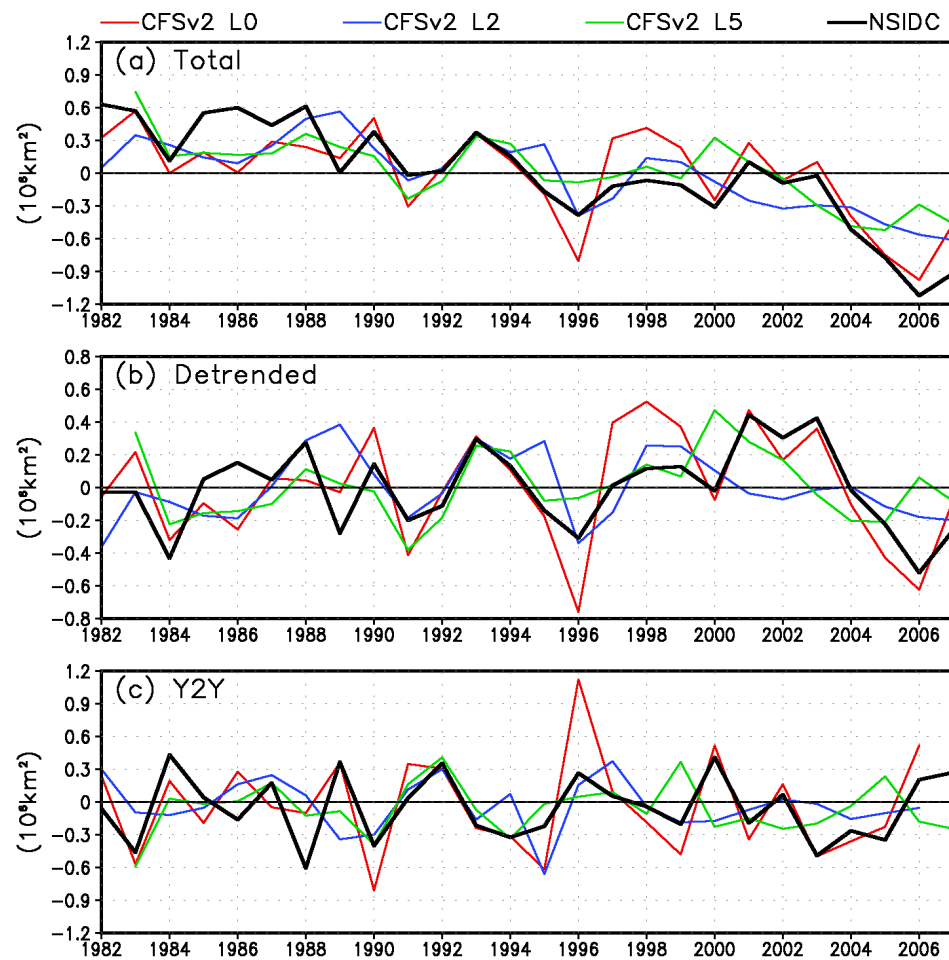


# CFSv2 SST AC





Nino3.4 SST Index



## Sea-Ice Extent

# National MME (NMME)

**NMME forecasts - Mozilla Firefox**

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CFS diagnoses - Anomaly RMSE a... NMME forecasts

origin.cpc.ncep.noaa.gov/products/people/wd51yf/NMME/

Google

## NMME Forecasts of Monthly Climate Anomalies for

### Apr 2012 to Oct 2012

Go to the [Archive](#)

Go to the [Skill Maps](#)

Go to the [International MME](#)

This page displays seasonal climate anomalies from the National Multi-Model Ensemble (NMME). Models: [NCEP coupled forecast system model \(CFSv1\)](#), [NCEP coupled forecast system model 2 \(CFSv2\)](#), [ECHAMA](#), [ECHAMF](#), [GFDL](#), [NCAR](#), [NASA](#)

**Check out the [Nino3.4 plumes!](#)**

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### Three-month-mean spatial anomalies by model

Variable	CFSv1	CFSv2	ECHAMA	ECHAMF	GFDL	NCAR	NASA	NMME
SST	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>
prate	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>
tmp2m	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>
US prate	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>
US tmp2m	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>	<a href="#">Anomaly</a> <a href="#">Masked Anomaly</a>

# Questions?