

# **Update on the NCEP Climate Forecast System (CFS) Development Activities**

**Jae-Kyung E. Schemm  
Climate Prediction Center  
NCEP/NWS/NOAA**

**APCC Symposium and Working Group Meeting  
August 19-21, 2008, Lima, Peru**

# Outline

- Update on the CFS development activities at NCEP
- CPC global monsoon monitor

## CFS development efforts in 2008

- All activities focused on the upgraded CFS implementation planned for 2010
- Accompanying CFS Reanalysis for 1979 - 2008 to provide improved initial conditions - commenced in May 2008
- Full suite of hindcasts for 1981-2008 with the upgraded CFS planned for 2009

## **For the new CFS implementation**

- |                               |  |
|-------------------------------|--|
| <b>1. Analysis Systems :</b>  | <b>Operational DAS in 2008:<br/>Atmospheric (GSI)<br/>Ocean (GODAS) and<br/>Land (GLDAS)</b> |
| <b>2. Atmospheric Model :</b> | <b>2008 operational GFS in<br/>T126/L64 resolution<br/><br/>New Noah Land Model</b>          |
| <b>3. Ocean Model :</b>       | <b>New MOM4 Ocean Model<br/><br/>New Sea Ice Model</b>                                       |

## **UPGRADES TO THE ATMOSHERIC MODEL**

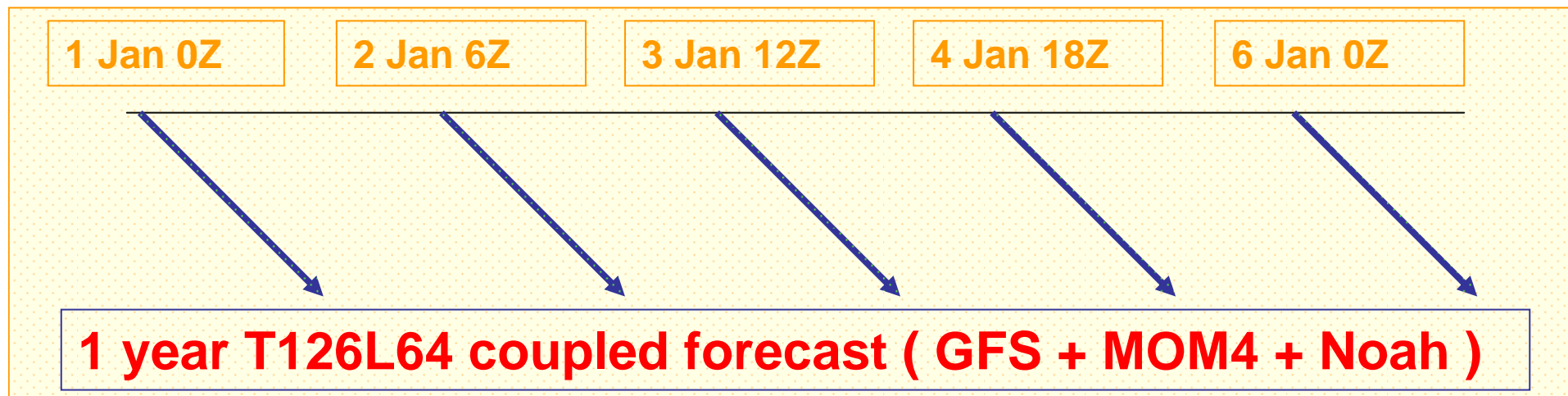
- **Hybrid vertical coordinate (sigma-pressure)**
- **NOAH Land Model : 4 soil levels. Improved treatment of snow and frozen soil**
- **Sea Ice Model : Prediction of ice concentration and ice fraction**
- **Sub grid scale mountain blocking**
- **Reduced vertical diffusion**
- **RRTM long wave radiation**
- **ESMF (3.0)**

## **The CFS Reanalysis for 1979 - 2008:**

- 1. An atmosphere at high horizontal resolution (spectral T382, ~35 km) and high vertical resolution (64 sigma-pressure hybrid levels), coupled to**
- 2. An interactive ocean with 40 levels in the vertical, to a depth of 4737 km, and high horizontal resolution of 0.25 degree at the tropics, tapering to a global resolution of 0.5 degree northwards and southwards of 10N and 10S respectively**
- 3. An interactive sea-ice model**
- 4. An interactive land model with 4 soil levels**

## CFS REFORECASTS

---



**Coupled one-year forecast from initial conditions 30 hours apart will be made with the T126L64 GFS with half-hourly coupling to the ocean (MOM4 at 1/4° equatorial, 1/2° global).**

**For each cycle, there will be approximately 7 members per month, with a total of 210 members over a 30-year period. This ensures stable calibration for forecasts originating from each cycle, for a given initial month**

# CPC Global Monsoon Monitor

- Real-time monitoring and assessment of monsoon season prediction
- Introduced in Fall, 2006
- Focus on four monsoon regions
  - Africa
  - Asian-Australian region
  - North America
  - South America
- Monitoring website established in 2007 at [http://www.cpc.ncep.noaa.gov/products/Global\\_Monsoon/Global\\_Monsoon.shtml](http://www.cpc.ncep.noaa.gov/products/Global_Monsoon/Global_Monsoon.shtml)
- Monthly team briefings with weekly updates - teleconferences and dissemination through the website

- CPC Search
  - CPC search
  - Go
- Global Monsoons
- African Monsoons
- American Monsoons
- Asian-Australian Monsoons
- Other Monsoon Monitoring Links
- About Us
  - Our Mission
  - Who We Are
- Contact Us
  - CPC Information
  - CPC Web Team

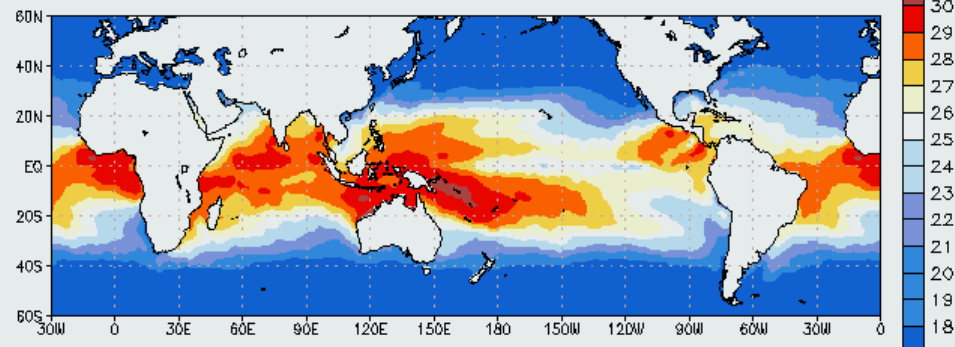
HOME > Global Monsoons

## Global Monsoons

Move cursor over product parameter name to display the graphic.

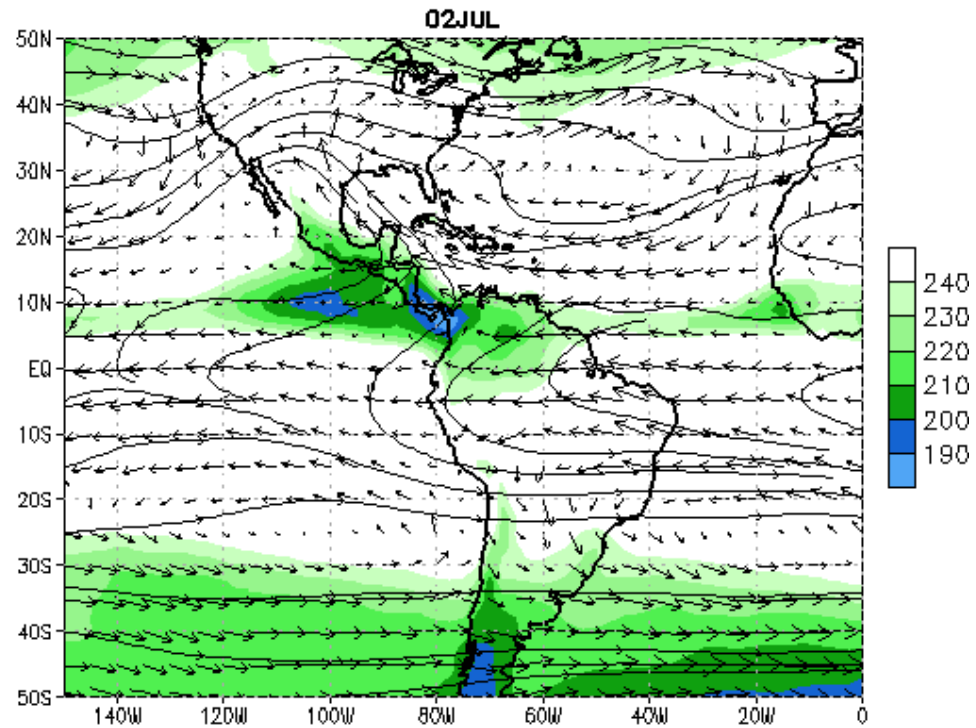
Sea Surface Temperature						Soil Moisture					
Total			Anomaly			Total			Anomaly		
1Week	4Weeks	13Weeks	1Week	4Weeks	13Weeks	---	Monthly	Seasonal	---	Monthly	Seasonal
200-hPa Winds						Precipitation					
Total			Anomaly			Total			Anomaly		
7-day	30-day	90-day	7-Day	30-Day	90-Day	5-Day	30-Day	90-Day	5-Day	30-Day	90-Day
850-hPa Winds						OLR					
Total			Anomaly			Total			Anomaly		
7-day	30-day	90-day	7-Day	30-Day	90-Day	5-Day	30-Day	90-Day	5-Day	30-Day	90-Day
200-hPa Velocity Potential						2m Temperature					
Total			Anomaly			Total			Anomaly		
7-day	30-day	90-day	7-Day	30-Day	90-Day	7-Day	Monthly	Seasonal	7-Day	Monthly	Seasonal

Weekly Ave. Sea Surface Temperatures (°C) 12MAR2008



# Climatological Seasonal Cycle of American Monsoon

QLR, 200-hPa Streamlines and 850-hPa Wind Clim (1979-1995)



Data Sources: QLR - NESDIS/ORR, Winds - NCEP CDAS/ Reanalysis

## North American Monsoon Forecast Forum

- Initiated in 2008 as part of the North American Monsoon Experiment (NAME) Project - one of the CLIVAR VAMOS/GEWEX projects
- Participating institutions - NASA/GMAO, ECPC/UCSD and NCEP/CPC
- Daily accumulation of precipitation over the northern Mexico and the southwestern US from June 1 through September - Series of forecasts initialized in April, May and June
- Plan to include more variable next year and also to expand the forum to Pan American Sector