

# IASCLiP FORECAST FORUM (IFF)

March-April-May 2011

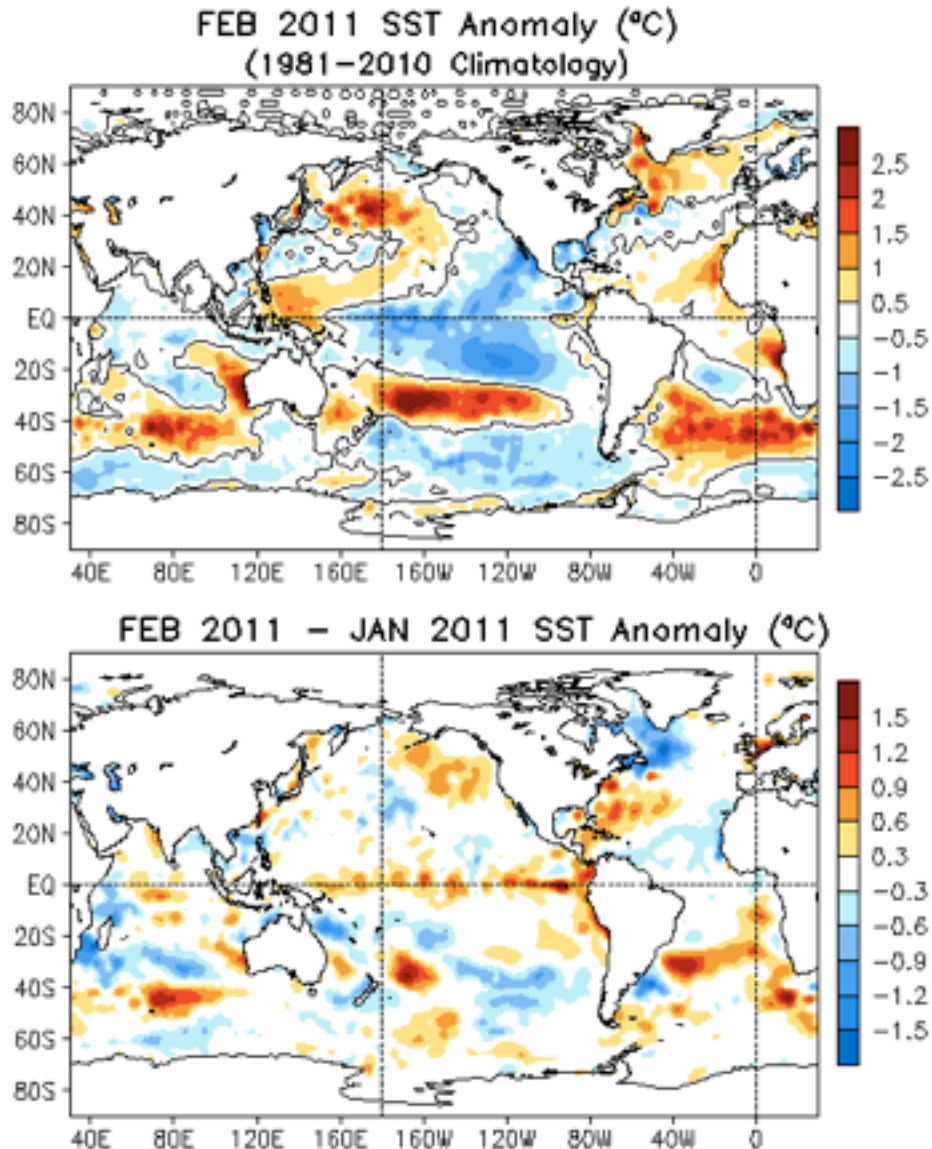
**Disclaimer:** The forecast and the discussions in this forum in no way reflect the opinion of the contributing personnel's institutions and organizations. These forecasts are experimental with voluntary contributions from ECPC/SIO, RSMAS/UM and NCEP-CFS forecasts downloaded from their website.

**Process:** The forecast forum comprises of a coalition of climate scientists working on IASCLiP including the modeling working group of the IASCLiP. We hold discussions analyzing the model forecast and current conditions to come with a "consensus" forecast. We expect to include more model forecasts for the forthcoming seasons of June-July-August and August-September-October.

## Some Caveats

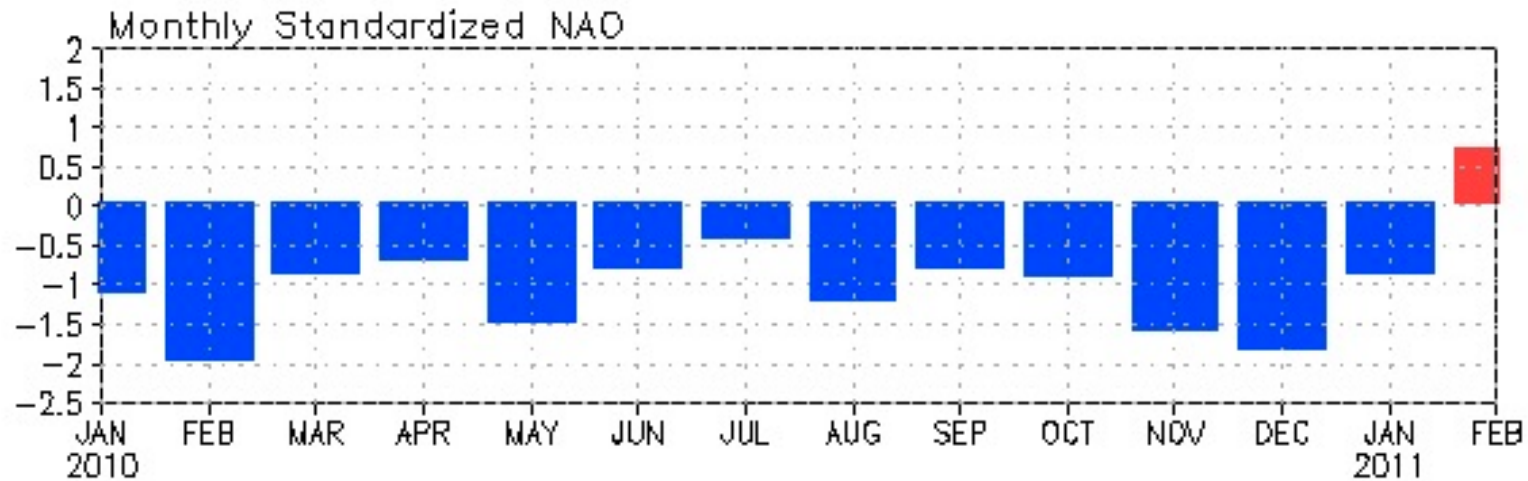
- Forecasts from dynamical models in boreal spring, initialized in late Winter or early Spring have traditionally been the least skillful compared to seasonal forecasts initialized in other seasons of the year. This is primarily owed to the so-called Spring predictability barrier, wherein the SST gradients in the equatorial Pacific are extremely weak and the persistence of the SST anomalies is also at its minimum.
- Most coupled ocean atmosphere models have comparatively far less seasonal prediction skill over the tropical Atlantic Ocean compared to other tropical Oceans. This stems from some large systematic errors displayed by these models in the slope of the thermocline in the equatorial Atlantic, precipitation over the tropical South America and Africa, bias in trade winds, complemented with relatively much smaller interannual variability of tropical Atlantic SST compared with equatorial Pacific SST.
- While it was shown that models display some skill over the AWP region in boreal Summer and Fall seasons at zero lead time, it is unclear in the absence of any systematic study to know if these models show similar behavior in boreal Spring.

## Current conditions



Historically, El Nino affects the Atlantic SST in the following year, not during the onset summer. It would be a factor affecting vertical wind shear and hurricanes in 2011, however. In all probability the La Nina will continue to wane as the SST tendency shows it is doing. The question is, will it linger long enough and strongly enough to affect SSTA in the Atlantic over the next few months? This La Nina event has been strong and the anomalies still appear considerable (is now well below  $-1.0^{\circ}\text{C}$ ), and they may last at least through March, so our experience would indicate it will be a **cooling influence** on the SST over the AWP region.

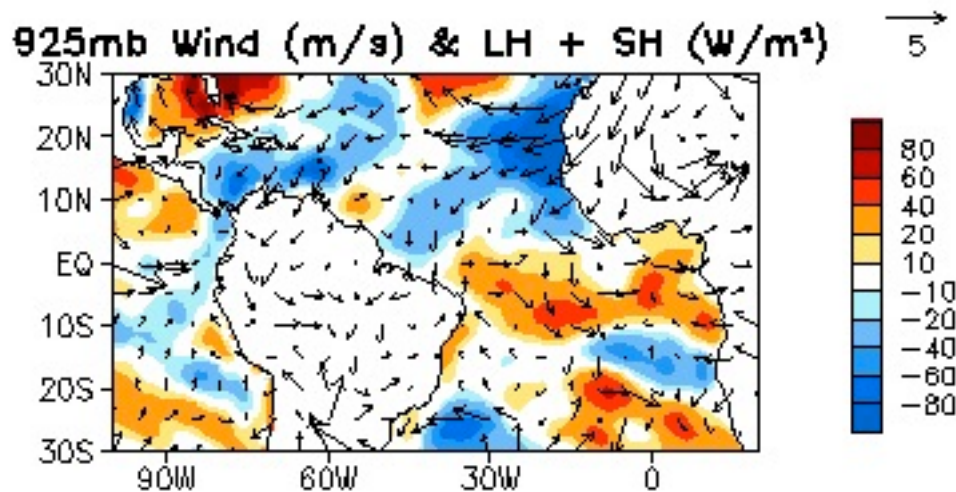
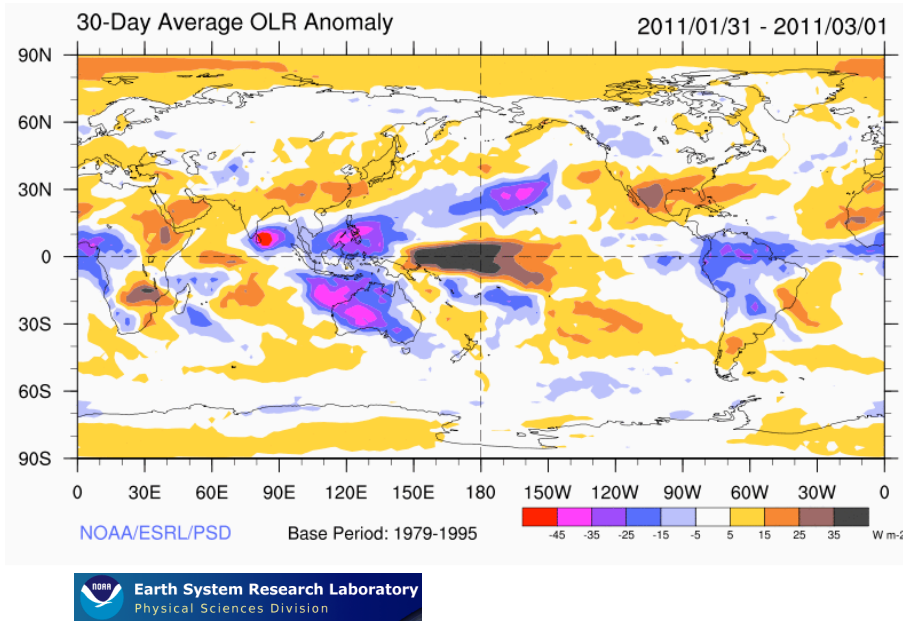
## Current conditions



The Tropical North Atlantic (TNA) region is still warm but is cooling. Our belief is it has been warm due to the negative AO/NAO that has been persisting since late 2008 and was responsible for the severe winter weather in the eastern US. But this is no longer a factor and the NAO has turned positive, so if anything, it is now **a cooling influence**.

[http://www.cpc.ncep.noaa.gov/products/GODAS/ocean\\_briefing\\_gif/global\\_ocean\\_monitoring\\_current.ppt](http://www.cpc.ncep.noaa.gov/products/GODAS/ocean_briefing_gif/global_ocean_monitoring_current.ppt)

## Current conditions

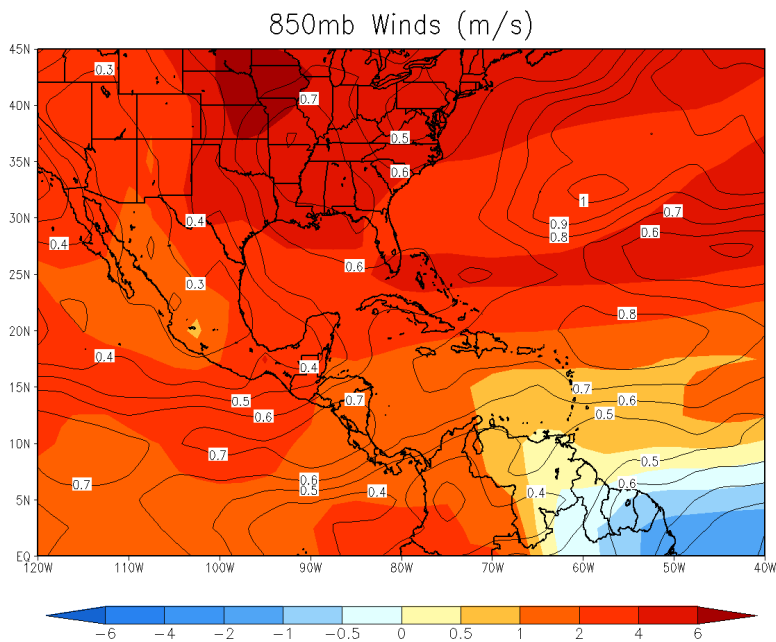
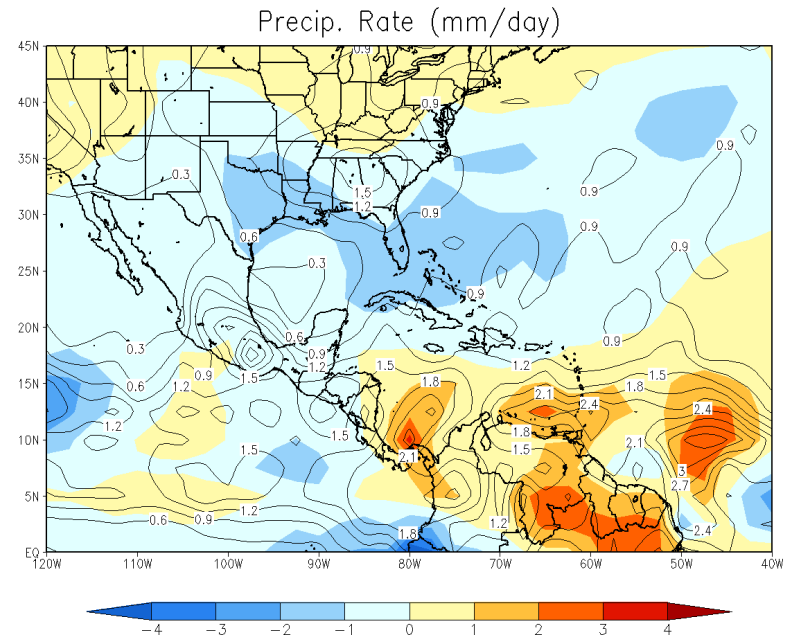
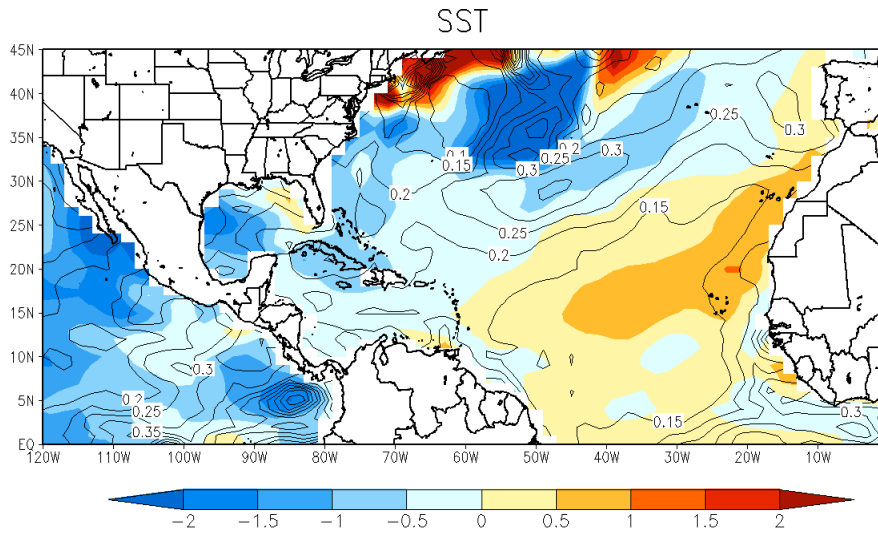


Feb 2011 anomalies



There is an impressive negative OLR anomaly over northern South America, which means that there is greater than normal convection that should be energizing the regional Hadley circulation northward. This should be strengthening the NASH and NE trades, a **Cooling influence**. In agreement with these current influencing conditions, the 925 mb wind anomalies are easterly and the SST tendency in the TNA region is negative. So a persistence forecast tells us the TNA would continue to cool into the summer. Except in the far east the SSTA is already only a couple tenths C above normal, so a nowcast is for a **normal or slightly below normal AWP** by May. The only contra-indicator is a warm tropical Atlantic and cool Pacific is associated with westerly anomalies in Atlantic NE trades. That is not the case, which suggests that the other cooling factors discussed earlier are prevailing.

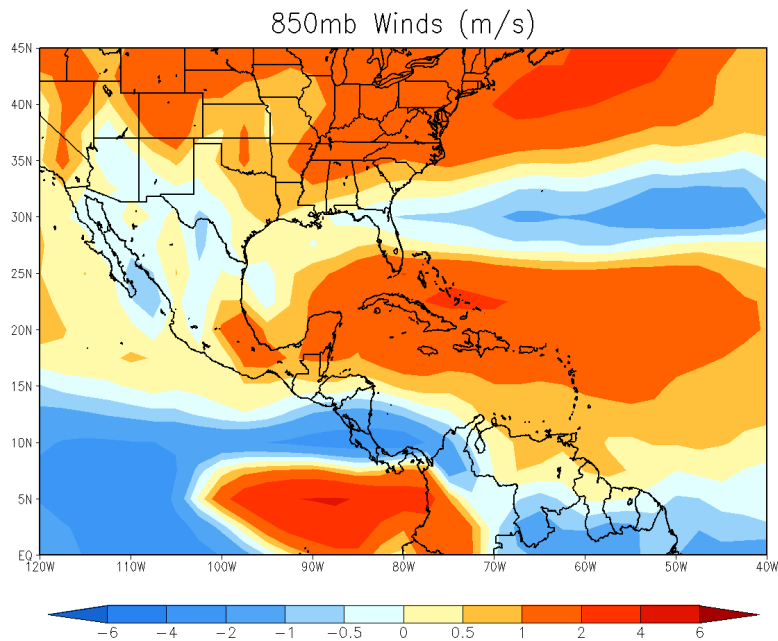
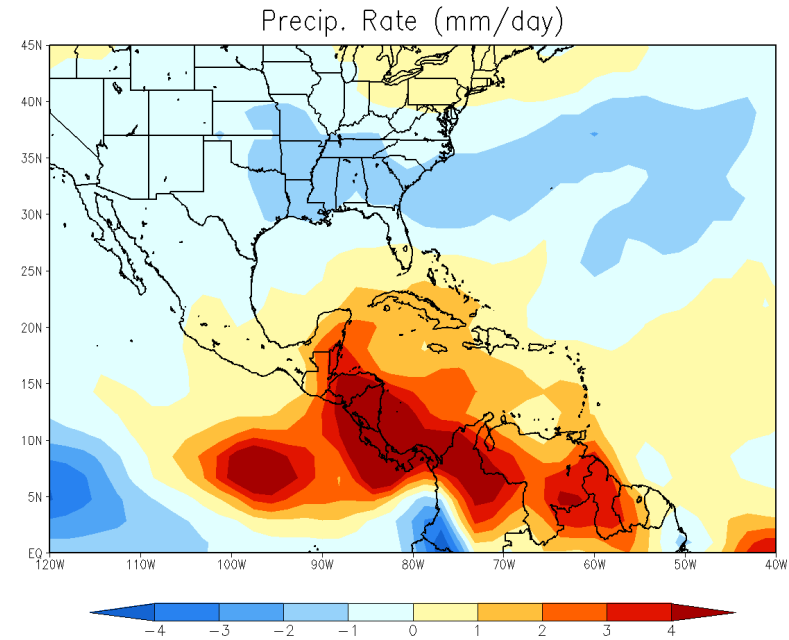
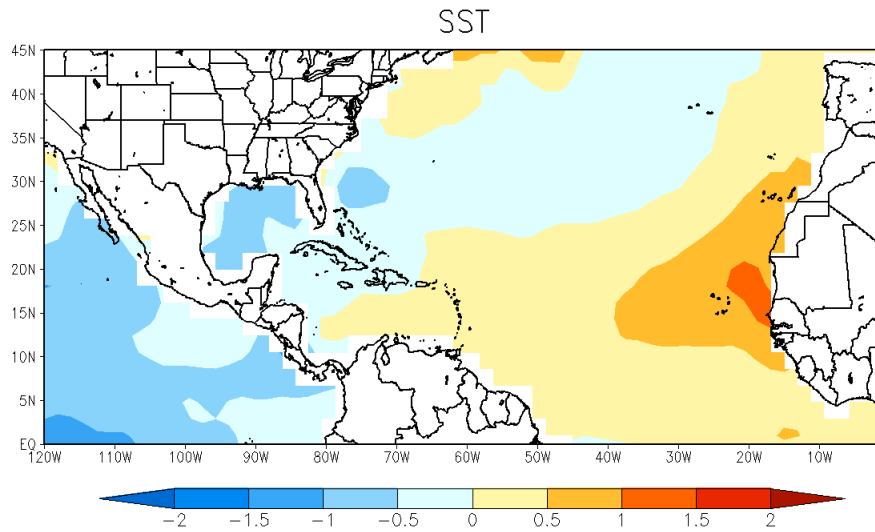
# NCEP CFS model forecasts: Anomalies for MAM2011 (NOAA)



This is a coupled ocean-atmosphere model. There are 28 ensemble members initialized 4 times daily between Feb. 15-21. The climatology is computed from seasonal hindcasts. The contours show one standard deviation of the ensemble spread while the shaded values are the ensemble mean.

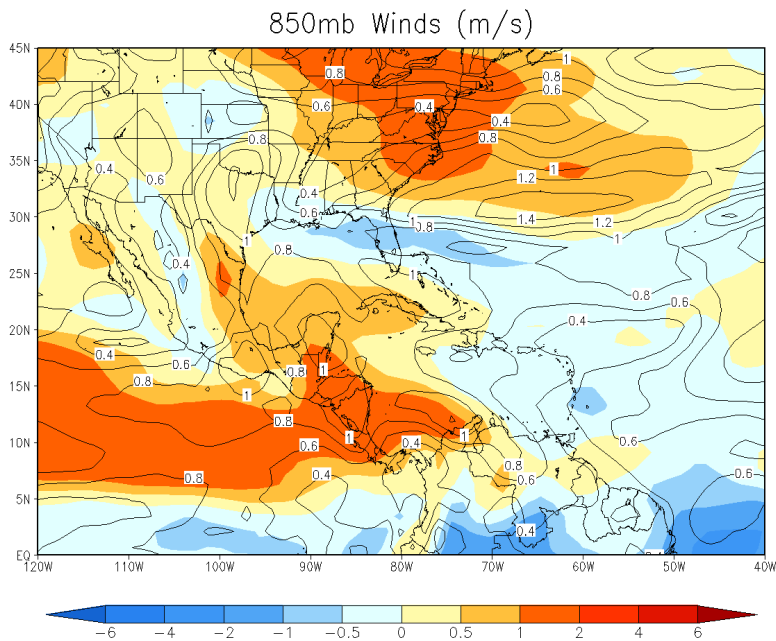
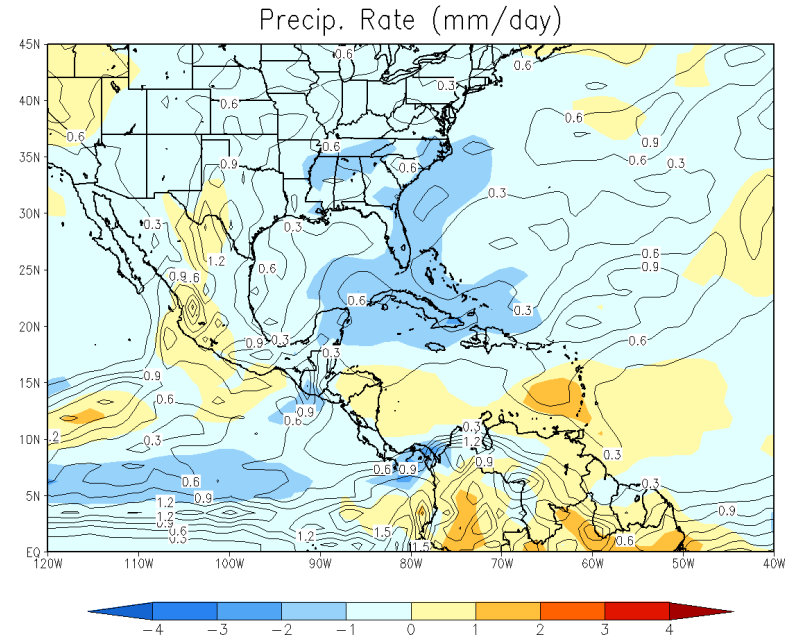
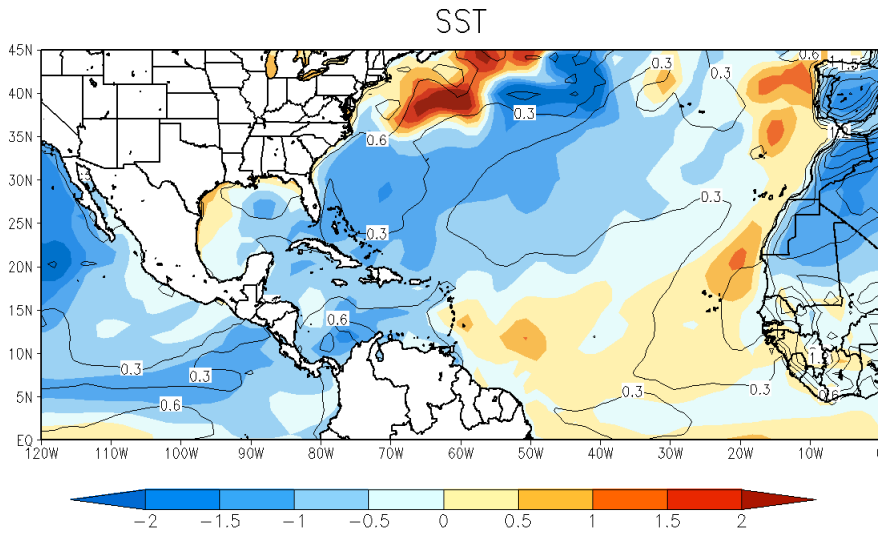


# ECPC model forecasts: Anomalies for MAM2011 (Scripps Institute of Oceanography)



This is an AGCM forecast, forced with 3 different estimates of forecasted SST from IRI. There are sets of 4 ensemble members forced by each of the 3 forecasted SST's to provide a total of 12 ensemble members. The climatology is computed from a 50 year AMIP integration. Ensemble spread is not plotted.

# CCSM3.0 model forecasts: Anomalies for MAM2011 (RSMAS, University of Miami)



This is a coupled ocean-atmosphere forecast from CCSM3.0 initialized in January 2011. There are 4 ensemble members. The climatology is based on similar seasonal hindcasts for the period from 1981-1998. The contours show one standard deviation of the ensemble spread while the shaded values are the ensemble mean. There are 6 ensemble members.



# Summary of model forecasts for MAM 2011

- All models indicate a wet anomaly over equatorial east Amazon
- All models indicate cool anomalies of the Caribbean Sea and northwest tropical Atlantic SST, while warm anomalies of the far eastern Atlantic SST.
- All models indicate a westerly anomaly in the subtropical Atlantic suggesting a weakening of the trade winds. This is contrary to the persistence forecast of the current observed low level easterly anomaly conditions. Could these dynamical forecast models be overtly/erroneously responding to the gradients from the cool Pacific and warm tropical Atlantic SST conditions prevailing in both the forecasted SST of these models as well as in the persistence of current/initial conditions?

# Conclusions

- Given the current conditions and the model forecasted anomalies for MAM 2011 there is an **increased probability** for the boreal summer season to experience the effects of a small to near normal AWP year.
- If Pacific SSTA's warm soon enough and strongly enough, then with that added to all the factors we see now, there is increased probability to expect for a normal or below normal hurricane season.