IASCLiP FORECAST FORUM (IFF)

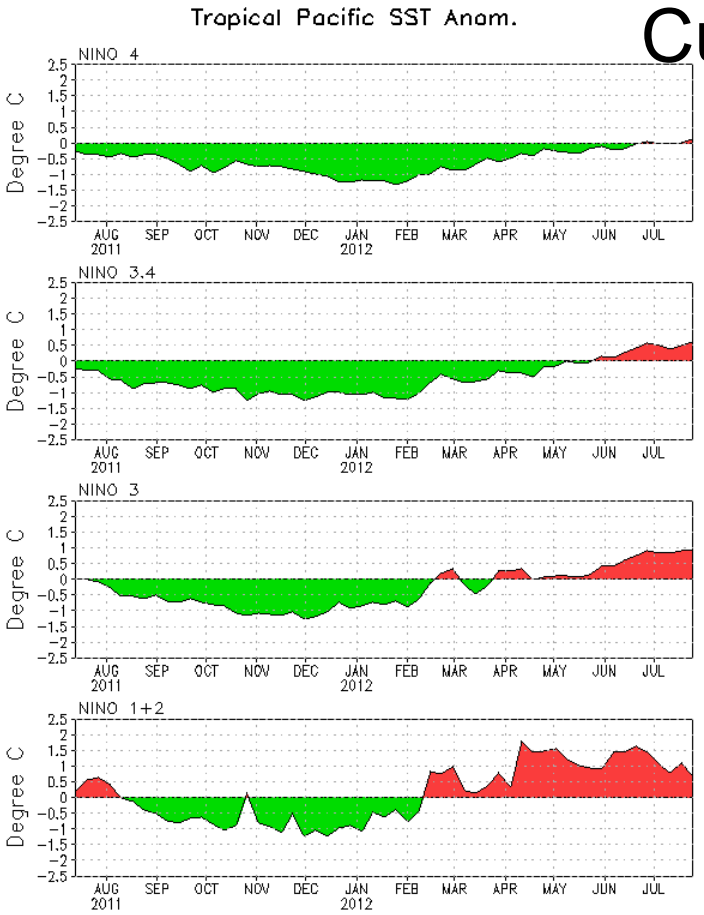
August-September-October 2012

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.

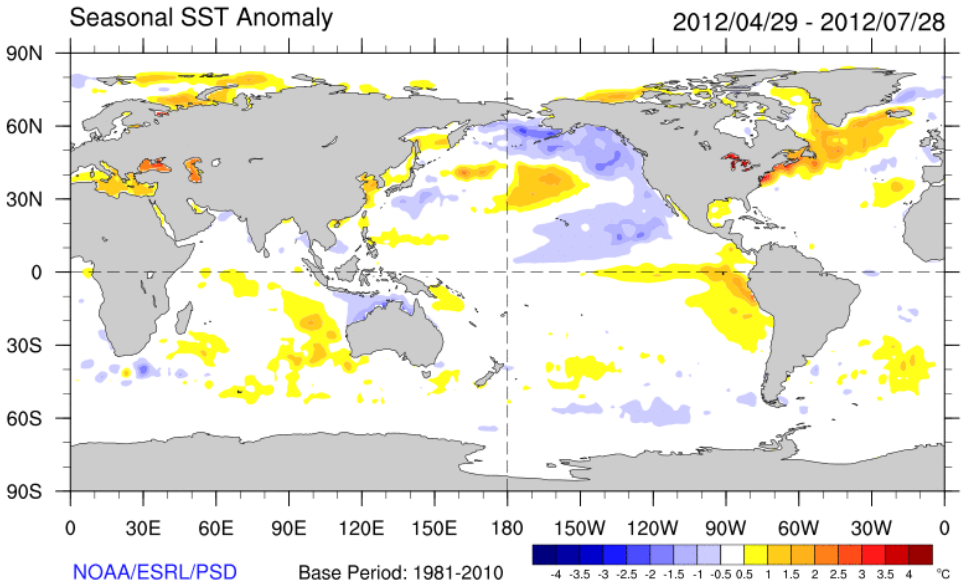
Process: The forecast forum comprises of a coalition of climate scientists working on IASCLiP including the modeling working group of the IASCLiP. We hold discussions analyzing the model forecast and current conditions to come with a "consensus" forecast.

Acknowledgements: We thank NOAA-CPC, Asia Pacific Climate Center (S. Korea), IRI, and the US National Multi-model Ensemble Experiment (NMME) team for making the model forecast data available. We thank Steven DiNapoli of COAPS/ FSU and graduate student Michael Kozar of the Department of Earth, Ocean and Atmospheric Science, FSU for assistance in preparing the figures and the discussion. We also thank the Caribbean Institute for Meteorology and Hydrology (CIMH) for providing their outlook and discussion.

Current conditions



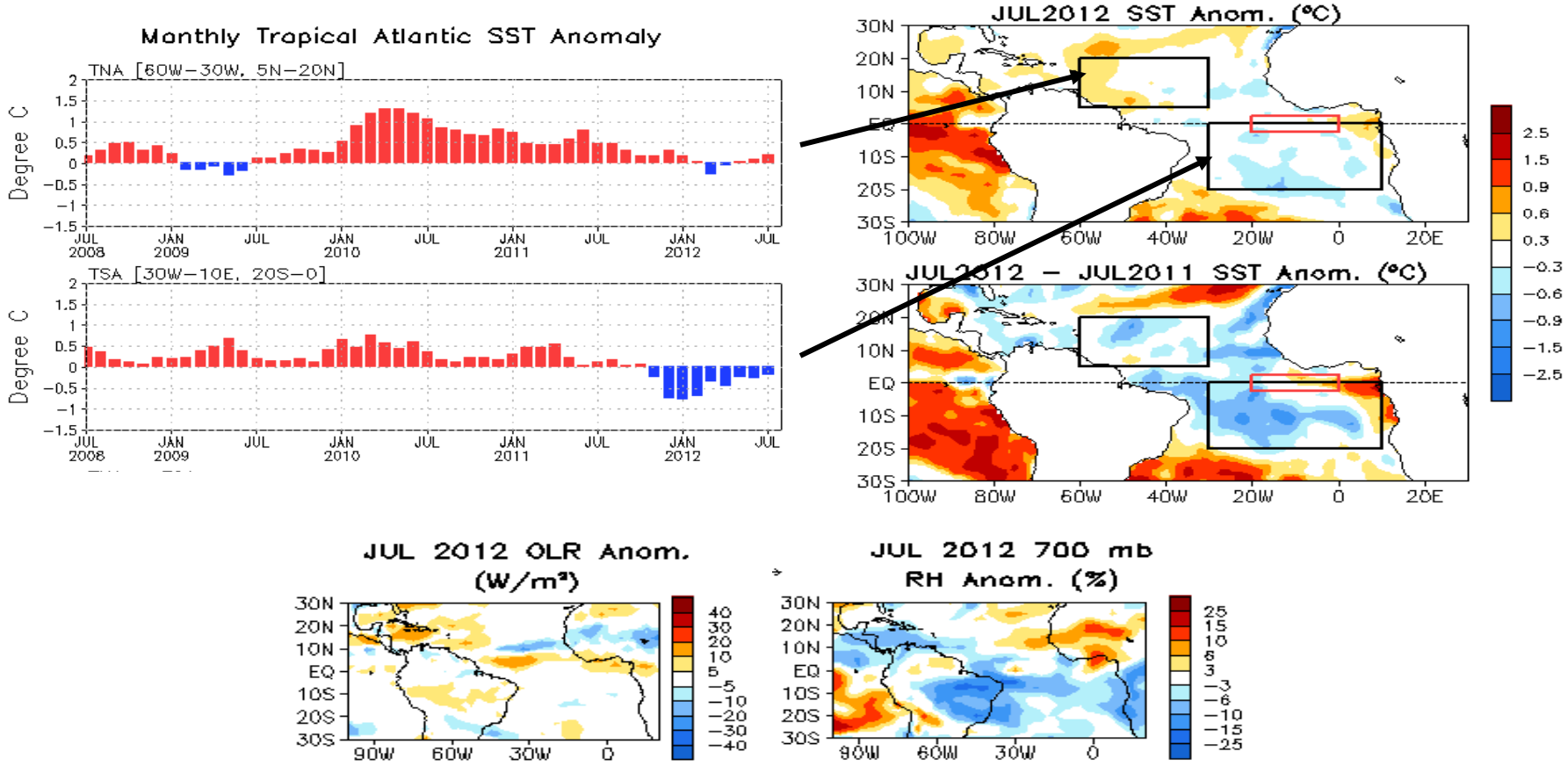
http://www.cpc.ncep.noaa.gov/products/GODAS/ocean_briefing_new/wkly_nino.gif



http://www.esrl.noaa.gov/psd/map/images/sst/sst.anom.seasonal.gif

Positive SST anomalies persist in the Nino 1+2 region, and have expanded into the Nino 3 and Nino 3.4 regions. Now that equatorial SSTs have been more than 0.5°C for more than two months, it is very likely that El Niño will manifest by the end of August (i.e. deviation remains above 0.5°C for at least 3 months). Typically, an El Niño onset results in a quick tropospheric warming across the global tropical belt, without a significant effect upon TNA SSTs. Therefore, an emerging El Niño should initially have a stabilizing effect on the troposphere in the Atlantic region. Furthermore, El Niño tends to strengthen westerly winds aloft, which tends to tear up existing storms, thus further reducing the potential for the development of Atlantic tropical cyclones. However, the warming across the Eastern Pacific is weak to this point, and the overall effects by ENSO on the Atlantic regional climate could very well be small over the next few months.

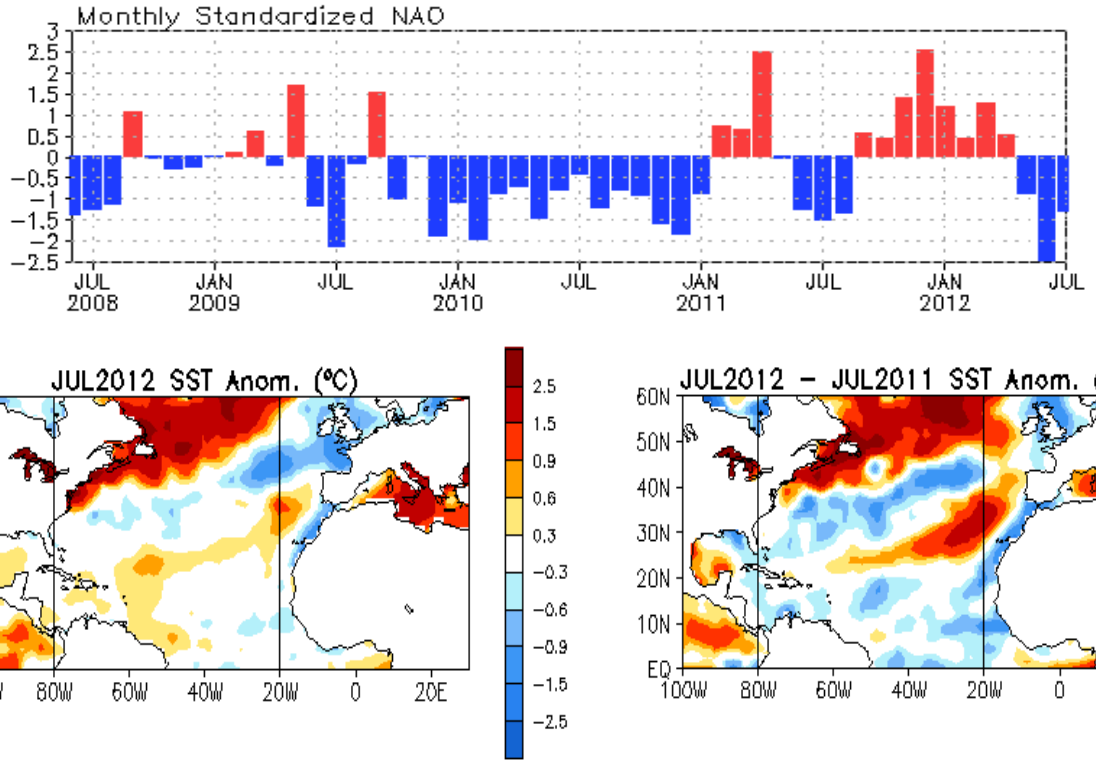
Current conditions



In July, Atlantic Ocean sea surface temperatures were near the climatological average (Top right panel). As a result, SST anomalies in the Tropical North Atlantic and Tropical South Atlantic are currently very weak (left panels). The rather average Atlantic hurricane season that has been observed thus far is consistent with the average SSTs across the main development region (MDR) of the Atlantic. Overall, the tropical Atlantic Ocean is cooler currently than it was at this point in 2011. Furthermore, there convection in the Caribbean was suppressed last month, as evident by high OLR anomalies, and low 700 hPa RH anomalies (bottom panels).

Adapted from: http://www.cpc.ncep.noaa.gov/products/GODAS/ocean_briefing_gif/global_ocean_monitoring_current.ppt

Current conditions



A negative NAO developed in May and has persisted through July, leading to strong warm SST anomalies in the north Atlantic. As a result, SSTs in the North Atlantic are significantly warmer in 2012 than they were at this time in 2011.

Adapted from: http://www.cpc.ncep.noaa.gov/products/GODAS/ocean_briefing_gif/global_ocean_monitoring_current.ppt

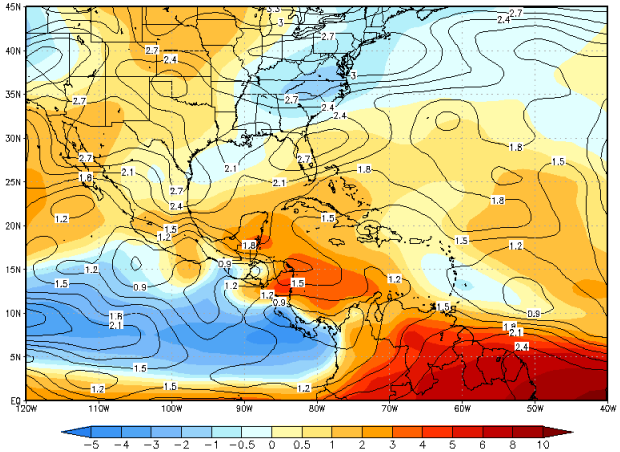
Model Forecasts

Model	Reference	No. of Ensemble members	Coupled to ocean?
NCEP CFS v2	A	15	Yes
COLA-RSMAS-CCSM3	B	6	Yes
POAMA	C	30	Yes
FCI-FSU (previously ECPC)	D	12	No. Prescribed (persisted SST & IRI forecasted SST)
CWB	E	10	No
IRI-ECHAM4p5 (Anom)	F	12	Yes
IRI-ECHAM4p5 (direct)	G	12	Yes

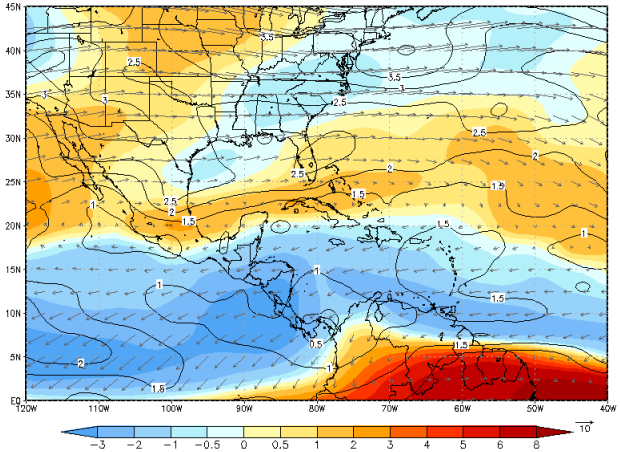
Index	Reference
A	http://cfs.ncep.noaa.gov/menu/doc/
B	http://journals.ametsoc.org/doi/abs/10.1175/2009MWR2672.1
C	http://poama.bom.gov.au/
D	http://ecpc.ucsd.edu/projects/GSM_model.html
E	http://www.cwb.gov.tw/V6/climate/other-subject/WPGM_CWB2tier_CFS.pdf
F	http://iridl.ldeo.columbia.edu/SOURCES/.Models/.NMME/.IRI-ECHAM4p5-AnomalyCoupled/
G	http://iridl.ldeo.columbia.edu/SOURCES/.Models/.NMME/.IRI-ECHAM4p5-DirectCoupled/

NCEP CFS v2

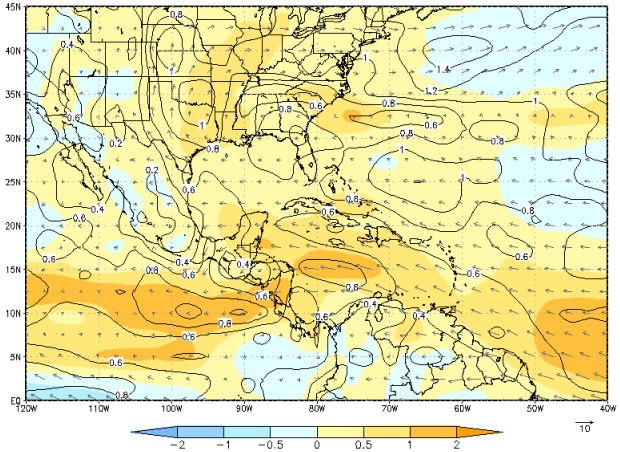
Vertical wind shear (200-850 hpa, in m s^{-1})



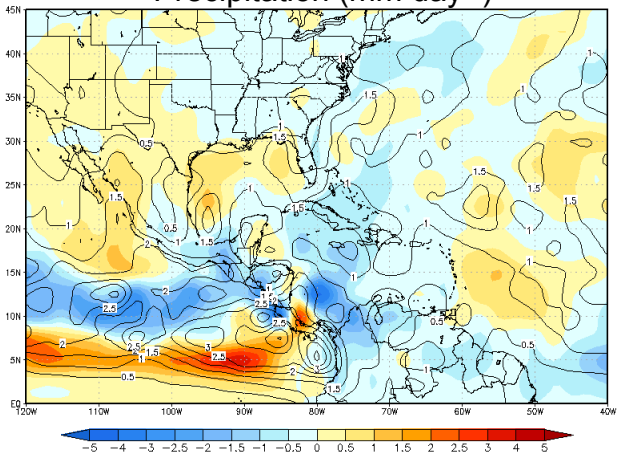
200 hPa winds m s^{-1}



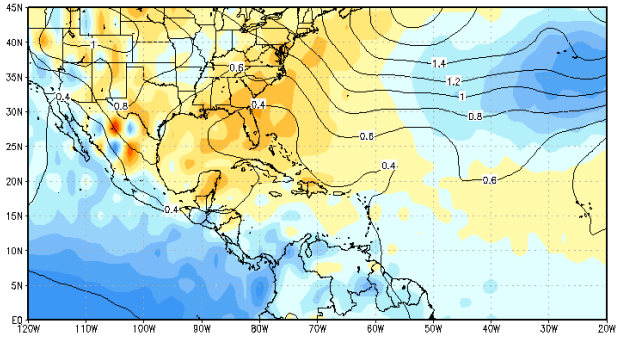
850 hPa winds m s^{-1}



Precipitation (mm day^{-1})



MSLP (hPa)



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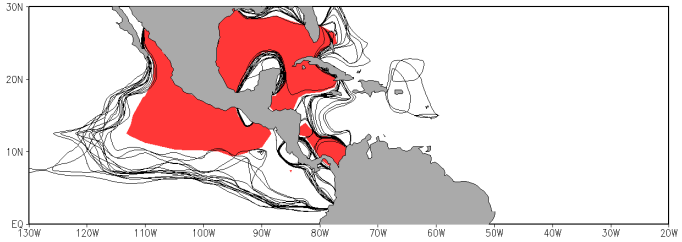
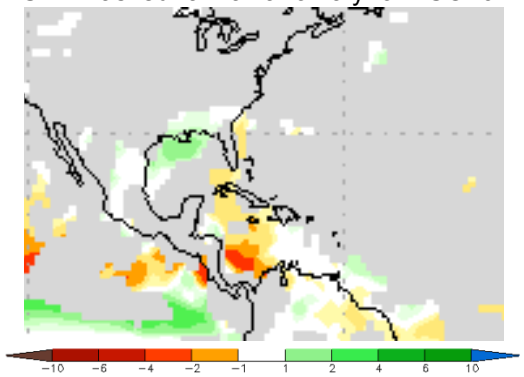
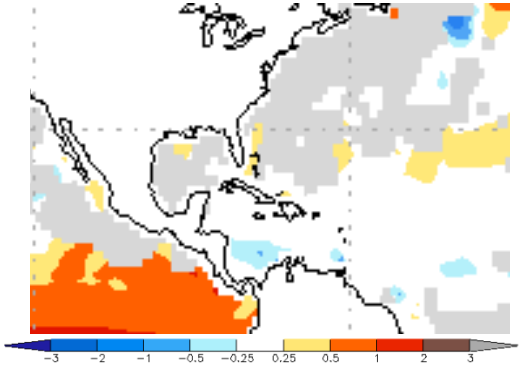
28.5°C isotherm of SST



Skill masked rainfall anomaly for ASO2012

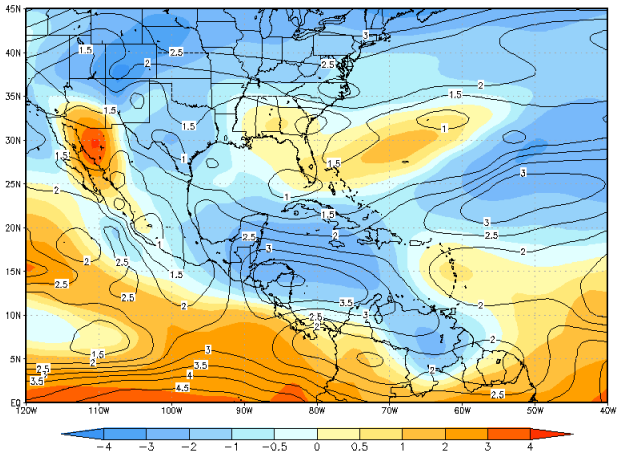


Skill masked SSTA for ASO2012

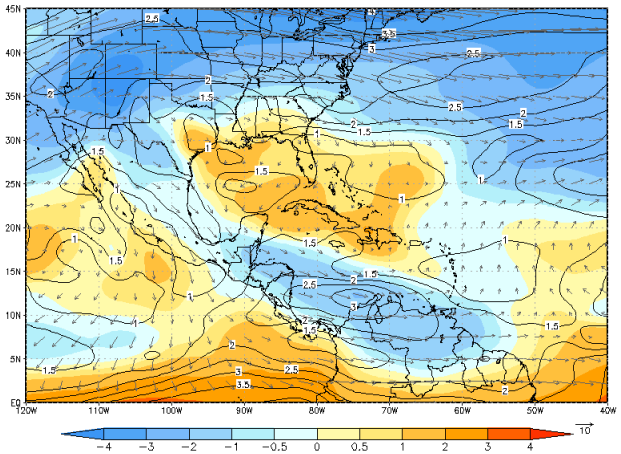


POAMA

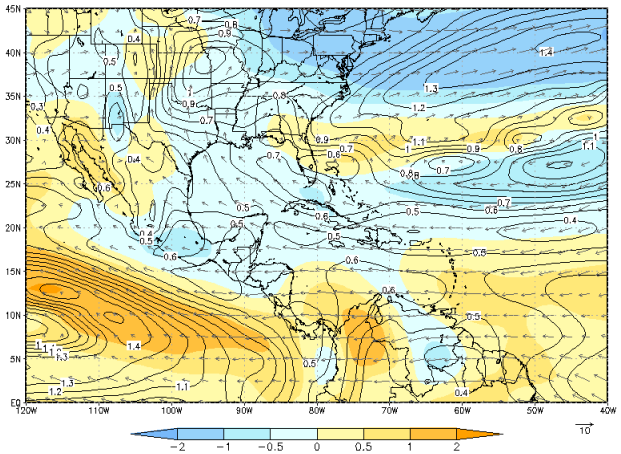
Vertical wind shear (200-850 hpa, in m s^{-1})



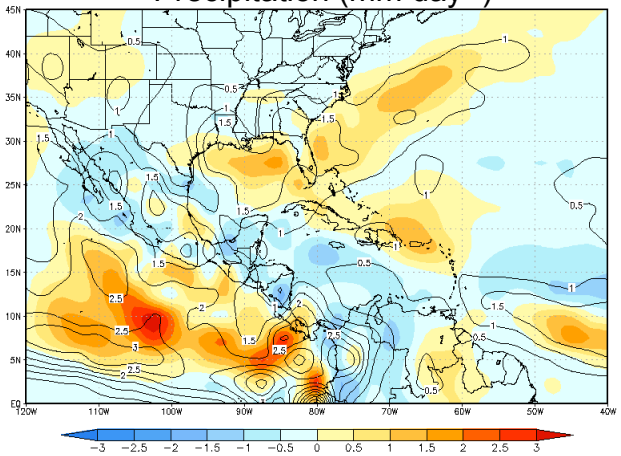
200 hPa winds m s^{-1}



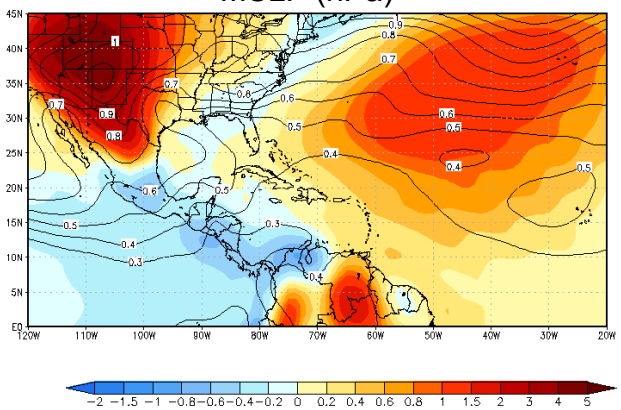
850 hPa winds m s^{-1}



Precipitation (mm day^{-1})



MSLP (hPa)



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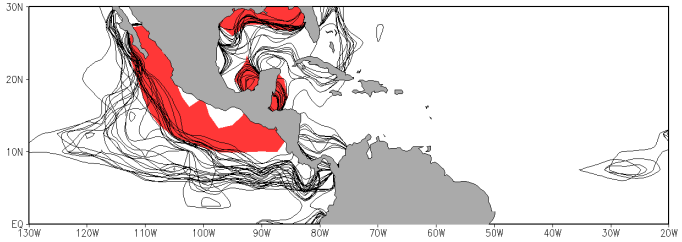
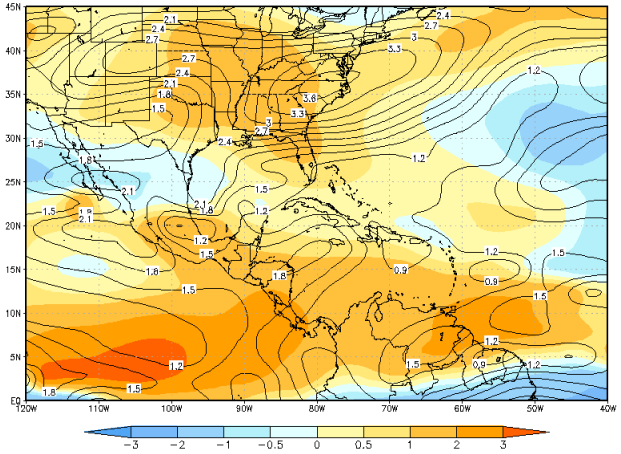
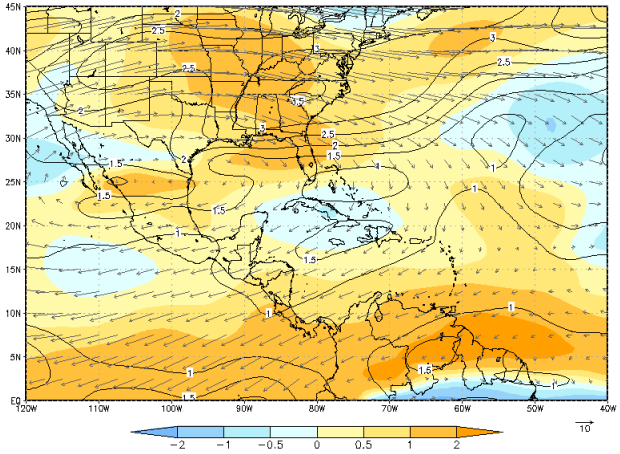


CWB

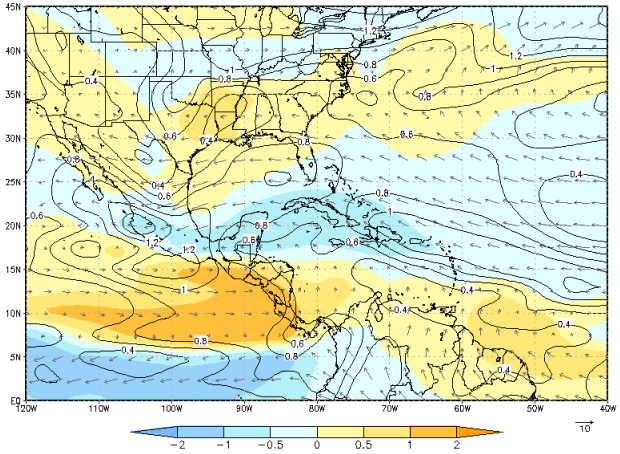
Vertical wind shear (200-850 hpa, in m s^{-1})



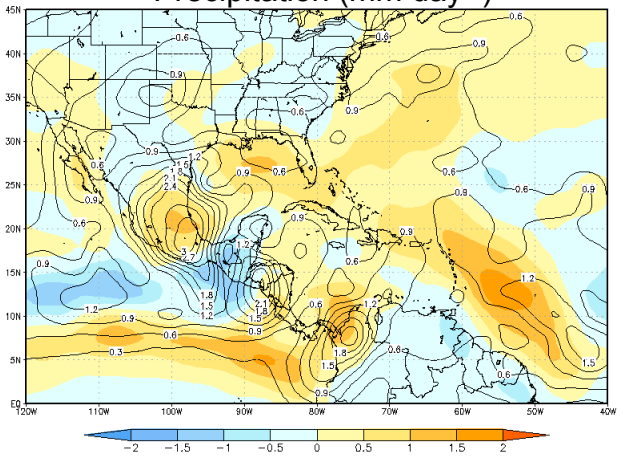
200 hPa winds m s^{-1}



850 hPa winds m s^{-1}



Precipitation (mm day^{-1})



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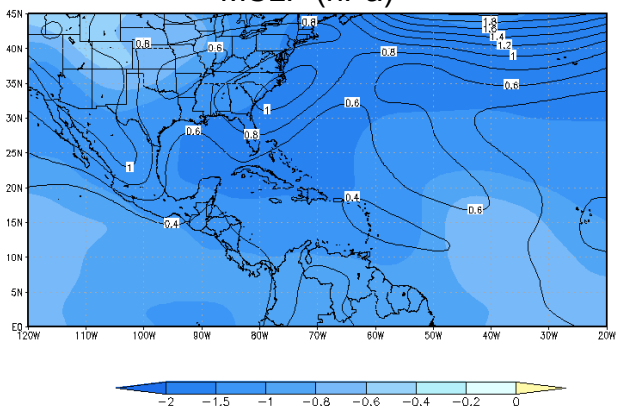

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FCI-FSU

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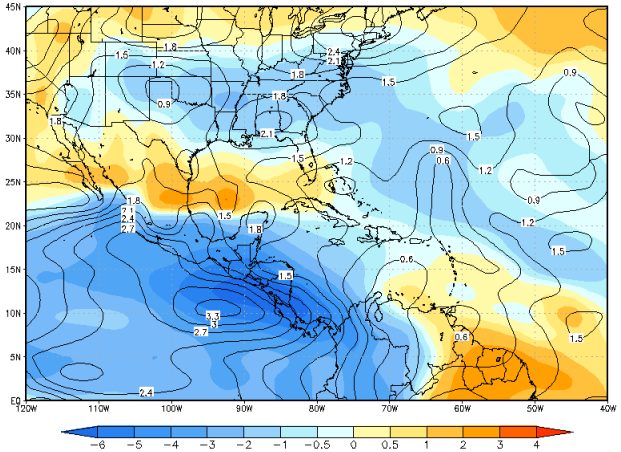
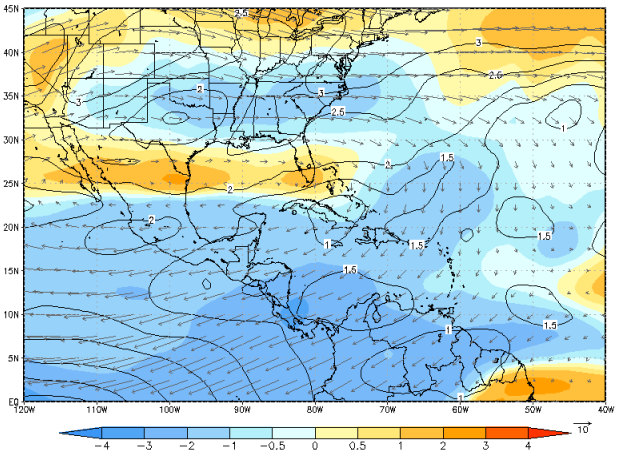
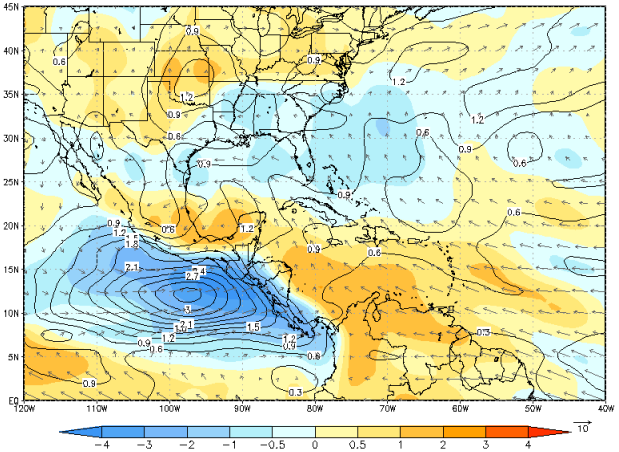


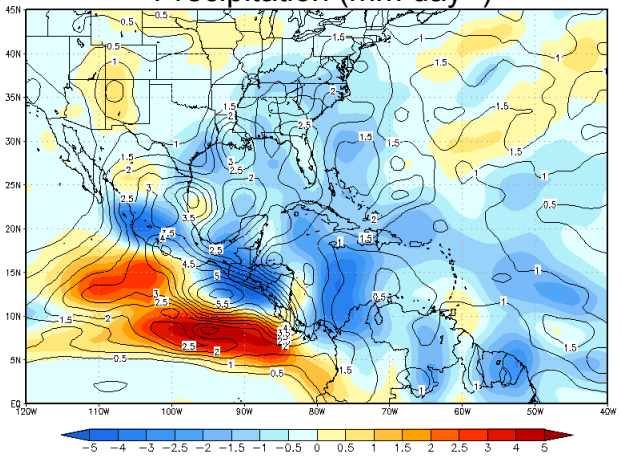
200 hPa winds m s^{-1}



850 hPa winds m s^{-1}



Precipitation (mm day^{-1})



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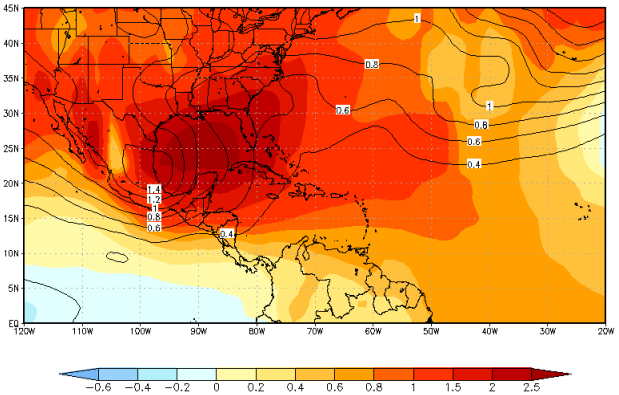

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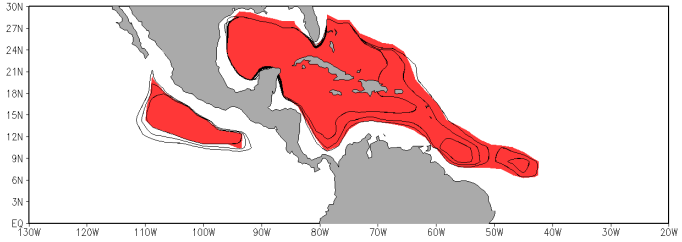
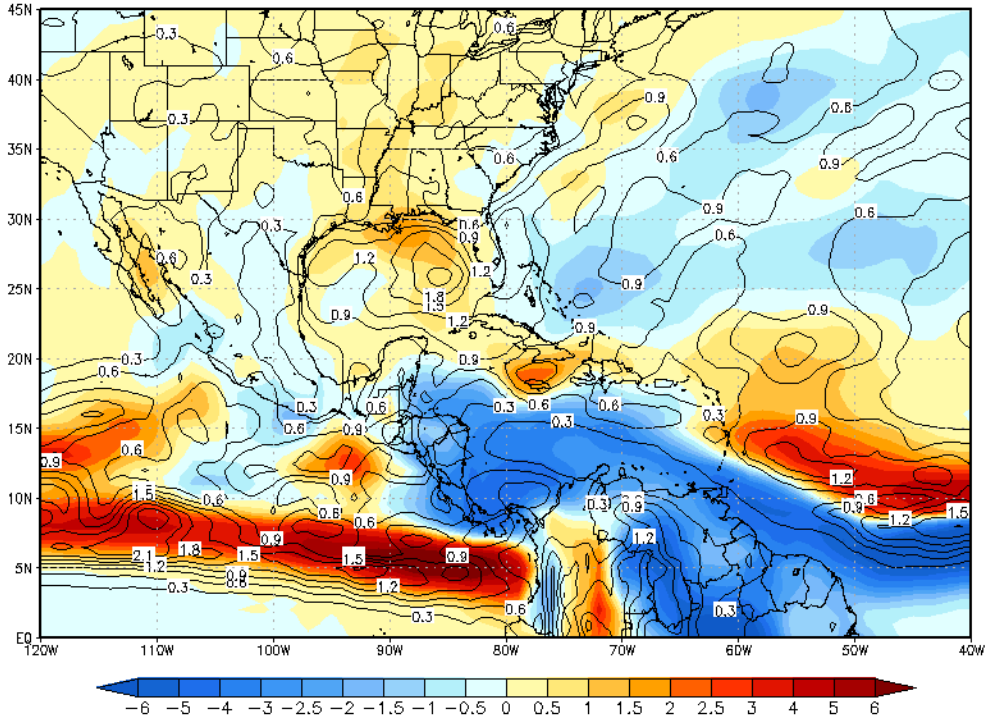
28.5°C isotherm of SST

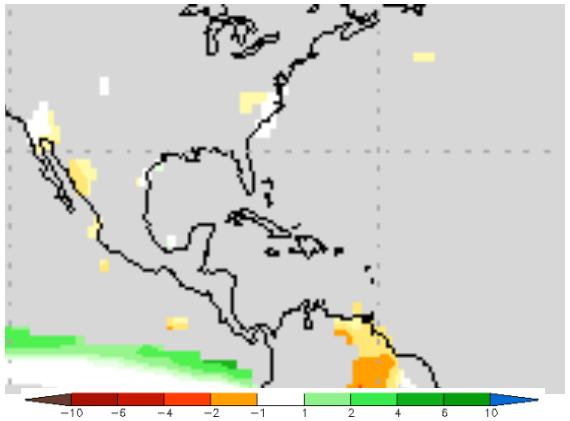


COLA-RSMAS-CCSM3

Precipitation (mm day^{-1})



Skill masked rainfall anomaly for ASO2012



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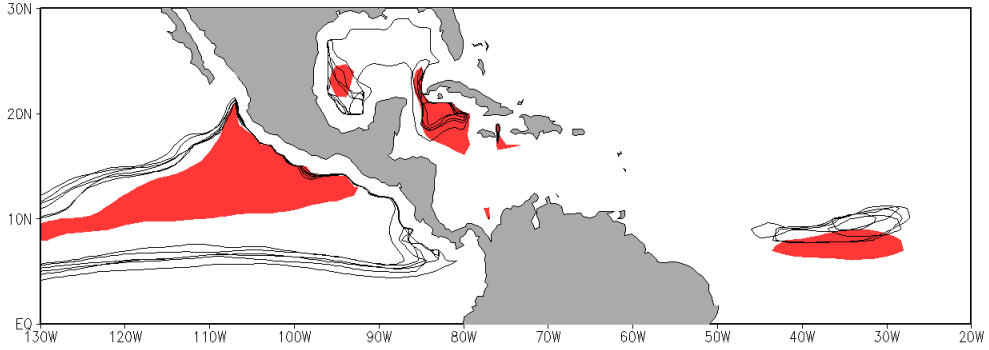
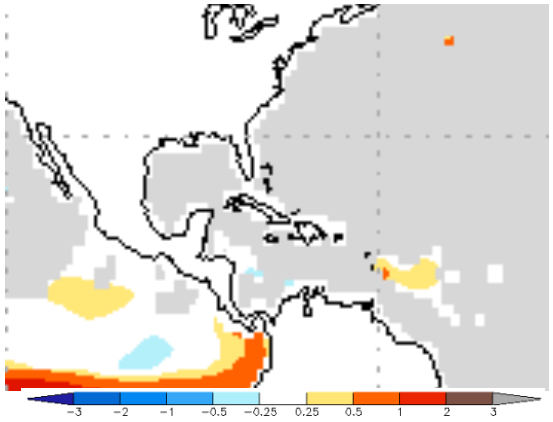
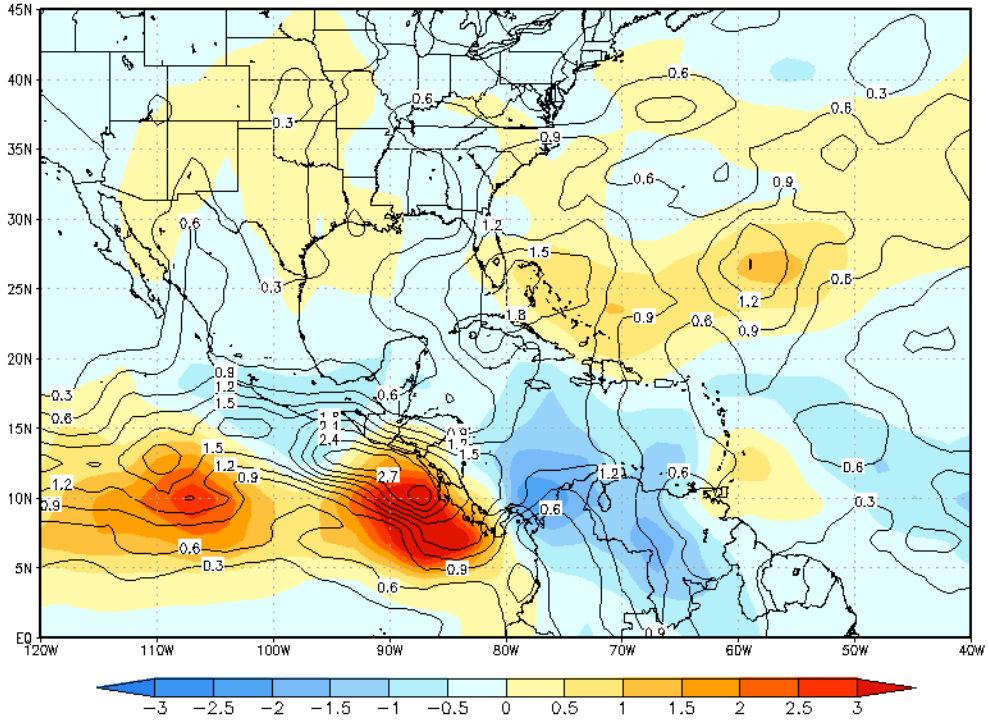


Skill masked SSTA for ASO2012

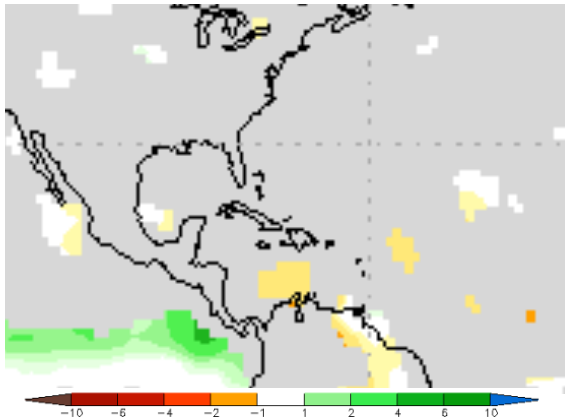


IRI-ECHAM4p5 (Anomaly Coupled)

Precipitation (mm day^{-1})



Skill masked rainfall anomaly for ASO2012



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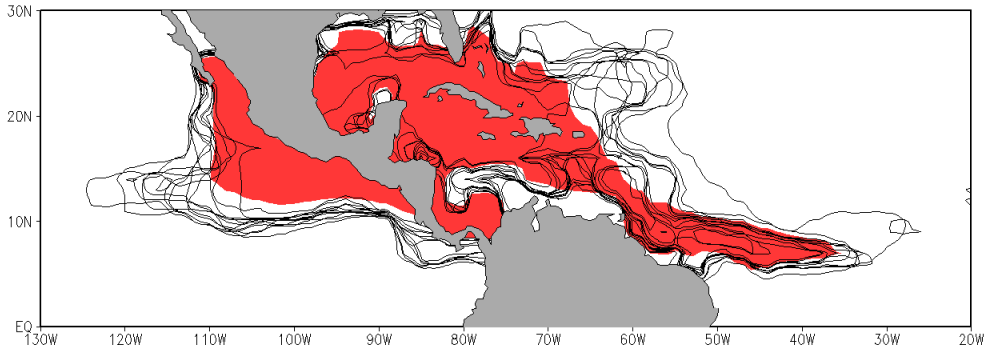
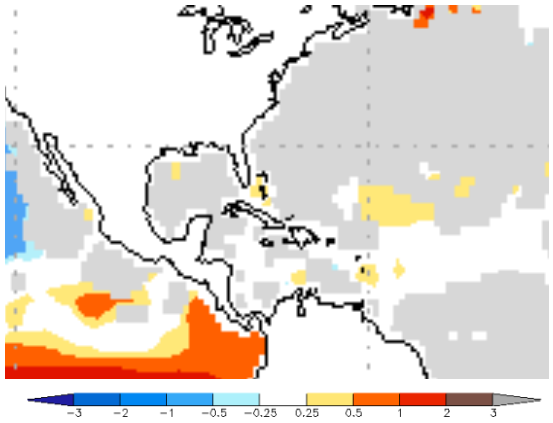
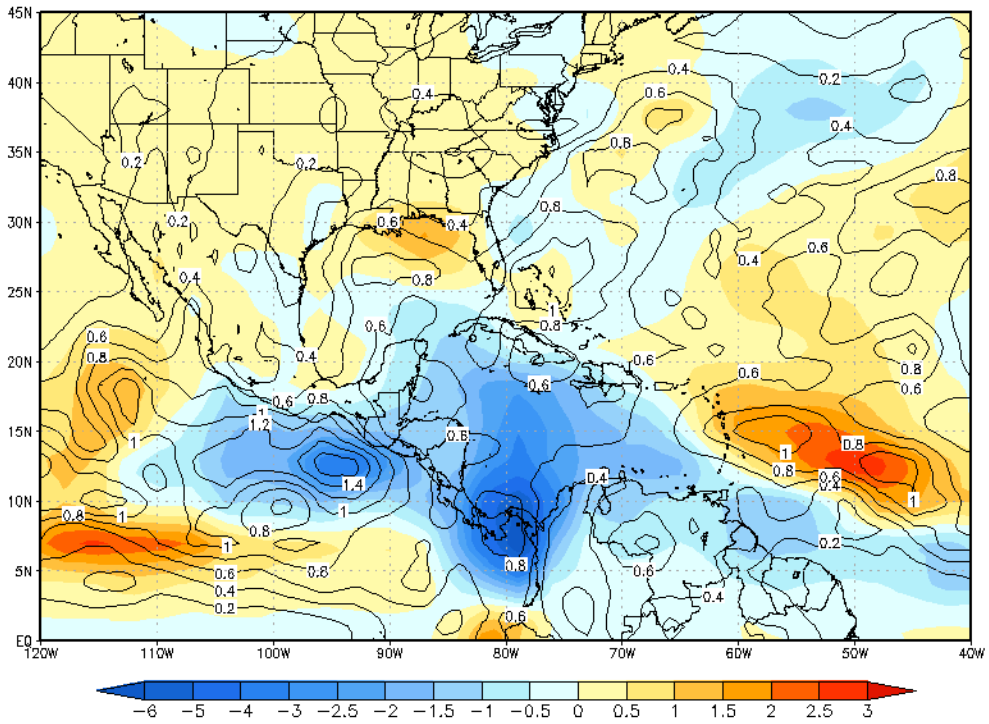


Skill masked SSTA for ASO2012

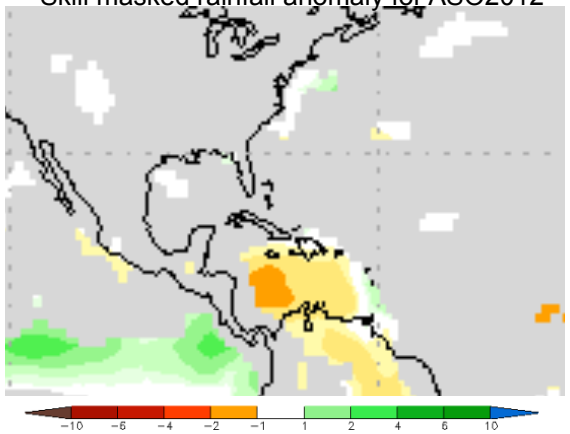


IRI-ECHAM4p5 (Direct Coupled)

Precipitation (mm day^{-1})



Skill masked rainfall anomaly for ASO2012



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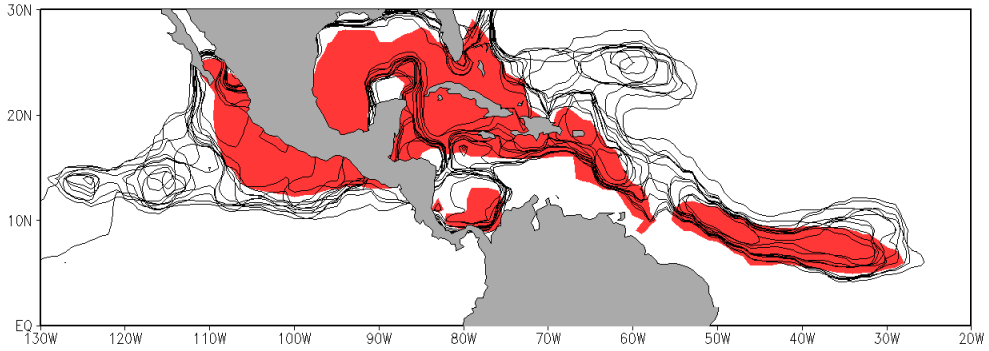

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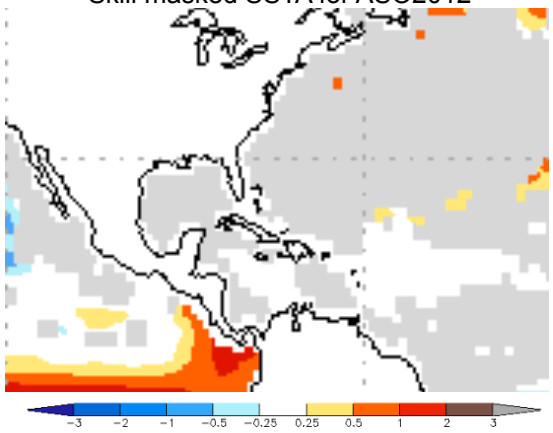


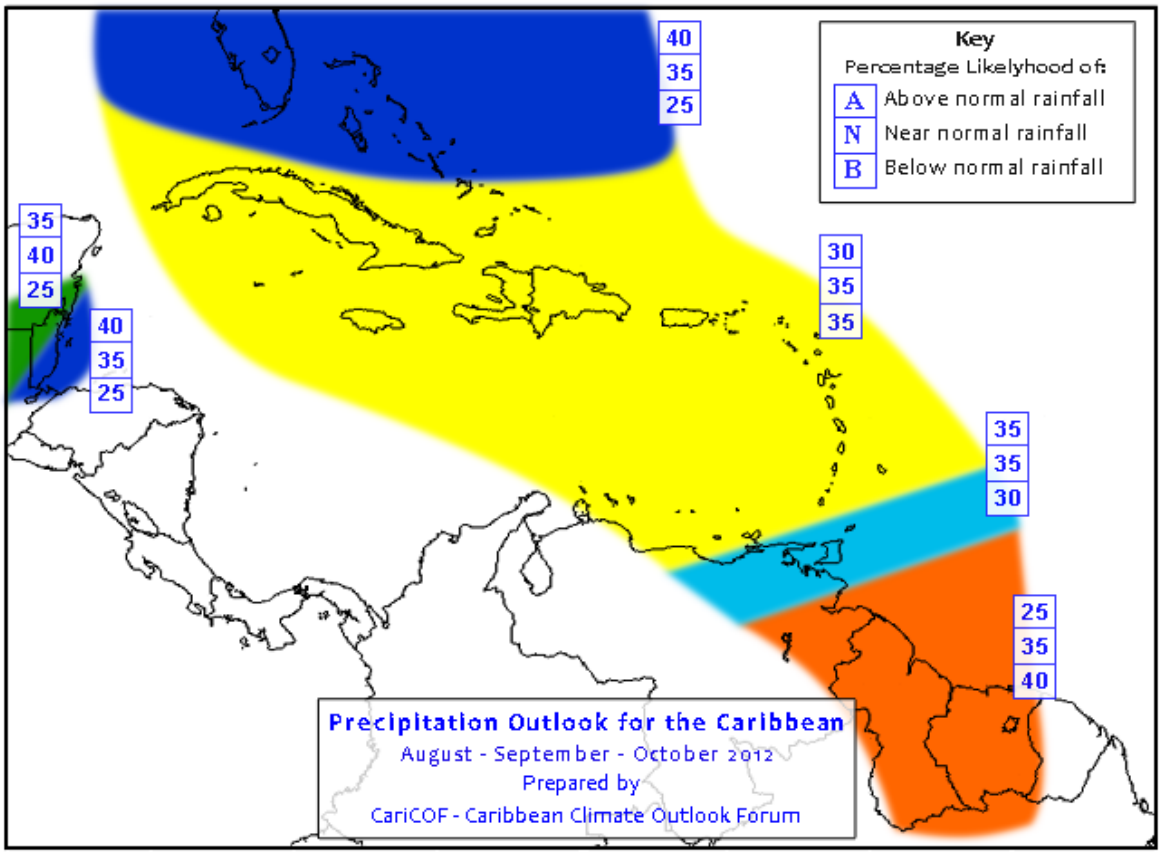
Summary of Model Forecasts

Feature	NCEP CFS v1	CCSM3	CWB	POAMA	FCI-FSU	IRI-ECHAM4p5 (anomaly)	IRI-ECHAM4p5 (direct)	Model's CONSEN.
Atlantic Warm Pool	Average	No AWP[1]		No AWP[1]	Small	Slightly Large	Slightly Large	Slightly Large
East Pac. Warm Pool	Large	Large		Large	Average	Slightly Large	Large	Large
MDR Vertical Shear	Strong		Strong	Weak	Weak			Average
Strength of NASH	Average		Weak	Strong	Strong			Slightly Strong

1: Model climatology does not feature a significantly sized AWP

We are not discussing the rainfall forecast from these models in this discussion because the skill masks show a lack of forecasting skill during ASO.

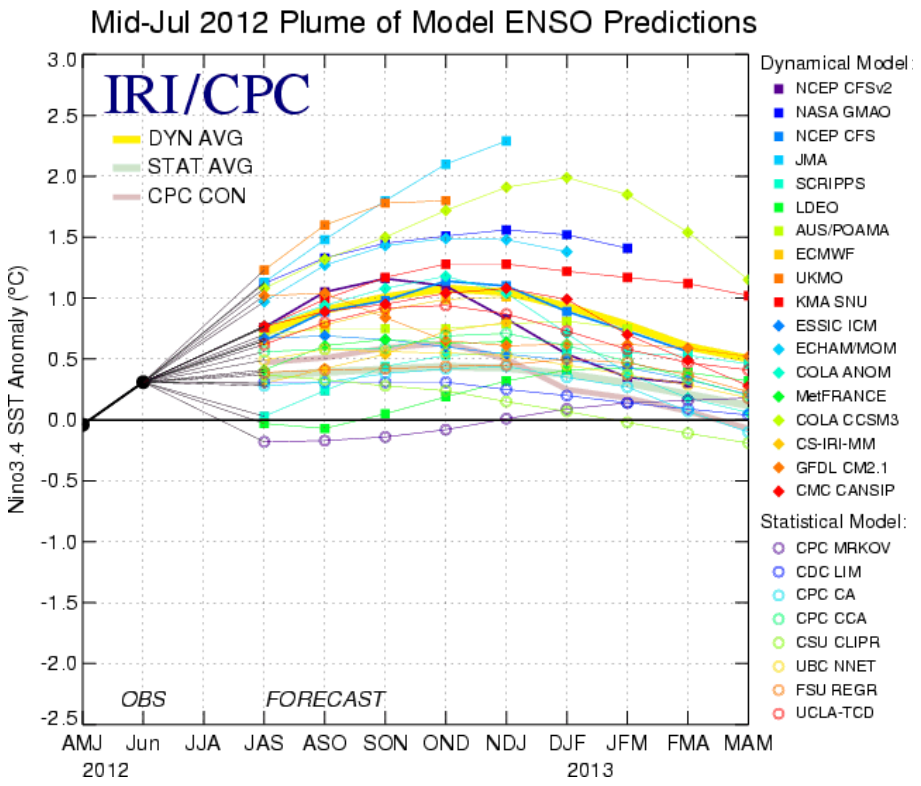
CIMH precipitation forecast

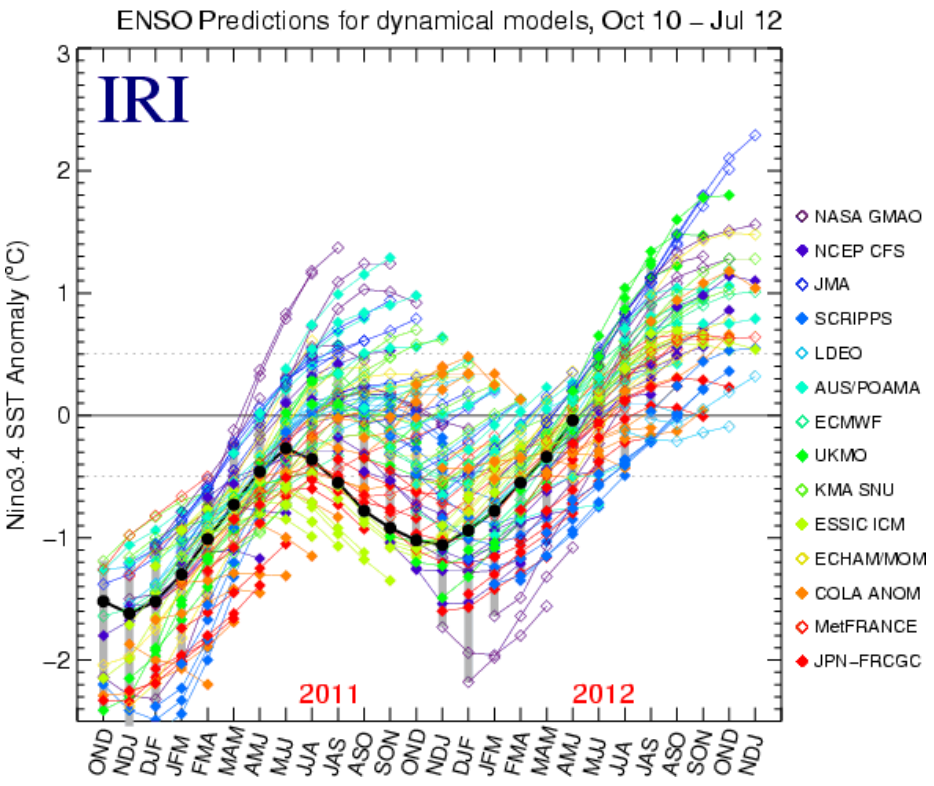


http://www.cimh.edu.bb/?p=precipoutlook

Rainfall in the Caribbean during ASO will likely become generally consistent with typical El Niño conditions. This means an increased likelihood of normal to above normal rainfall over the Bahamas, Belize and (possibly) some portions of the Greater Antilles whereas normal to below normal rainfall may occur in most parts of the Antilles and the Guianas, especially from the onset of the late rainy season in September. The largest uncertainty at this point is the persistence and strength of the El Niño conditions, which now are still relatively weak. As slightly above normal Caribbean SSTs currently somewhat increase chances of above normal rainfall over the Antilles, the counteracting effect an El Niño will either dominate (below normal rainfall) or not (normal rainfall).

Beyond ASO 2012 forecast





Dynamical models continue to forecast warming in the Eastern Pacific Ocean over the next several months, culminating in a weak to moderate El Niño pattern by the end of the boreal fall season. This pattern is forecasted to persist into 2013. Overall, the dynamical model consensus continues to perform well (right panel) . As a result of these forecasts, NOAA/NCEP/CPC's El Niño watch remains in effect.

Adapted from http://iri.columbia.edu/climate/ENSO/currentinfo/SST_table.html

Heuristic model forecasts

If we interpret the model forecasts and the current conditions then we anticipate the likelihood of the following to happen in ASO 2012 based on our understanding (and research) of the AWP impacts on remote and local climate:

a) A slightly stronger than normal Bermuda/North Atlantic subtropical high
b) Continued development of El Niño conditions in the Eastern Pacific
c) Near average vertical wind shear in the Atlantic MDR

Based on a), b), and c) above we anticipate the likelihood of the following to happen in ASO 2012:

a) Above normal rainfall in peninsular Florida and the Bahamas
b) Slightly larger AWP area, with near average Tropical North Atlantic SSTs
c) Near average Atlantic tropical cyclone activity because of the average SSTs and the emerging El Niño conditions.