

# Influence of the Atlantic on Florida Sea Breeze Variations

Vasu Misra &  
COAPS, FCI, & EOAS

Grad student: Lauren  
Moeller



# Anecdote

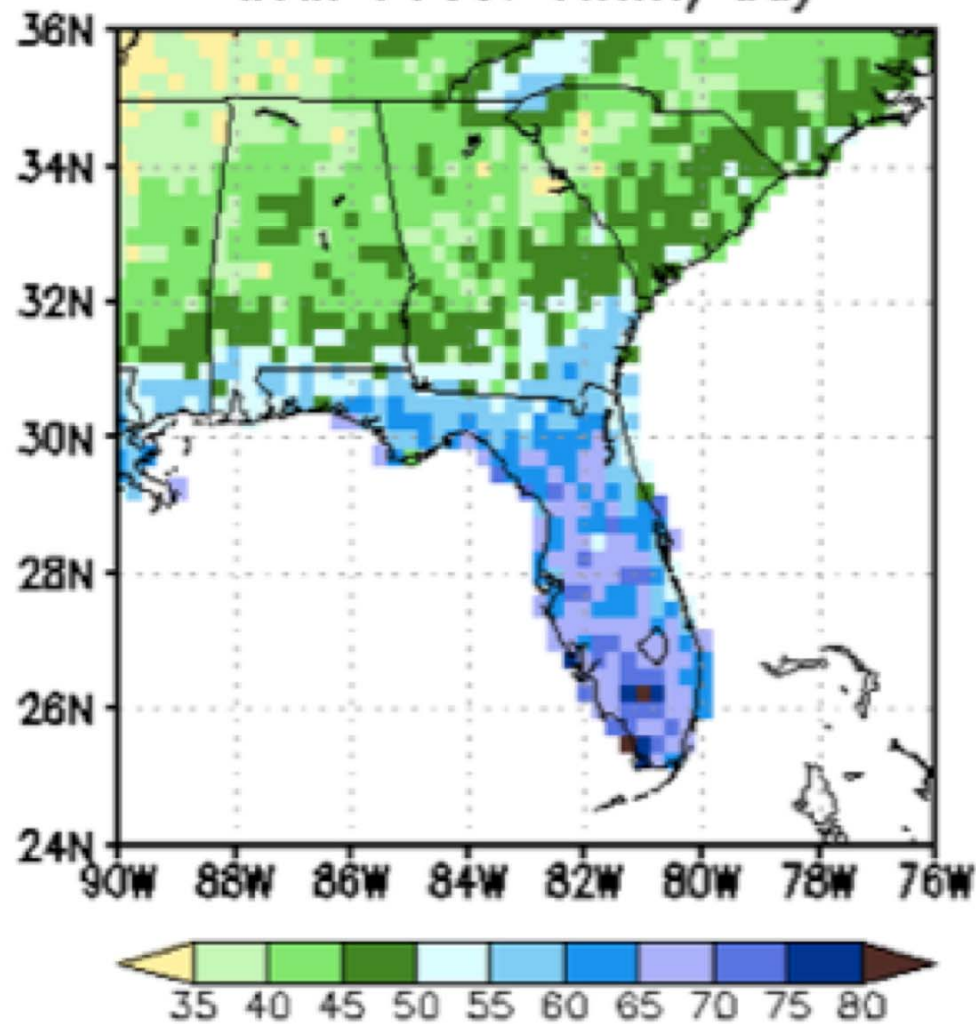
“This year the summer (read seabreeze) rains were far more sporadic, scattered, more localized”

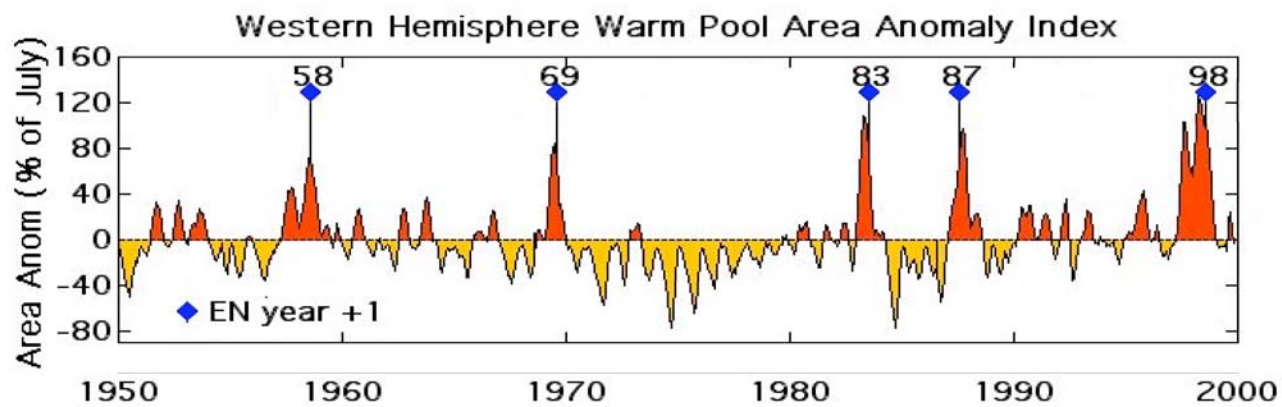
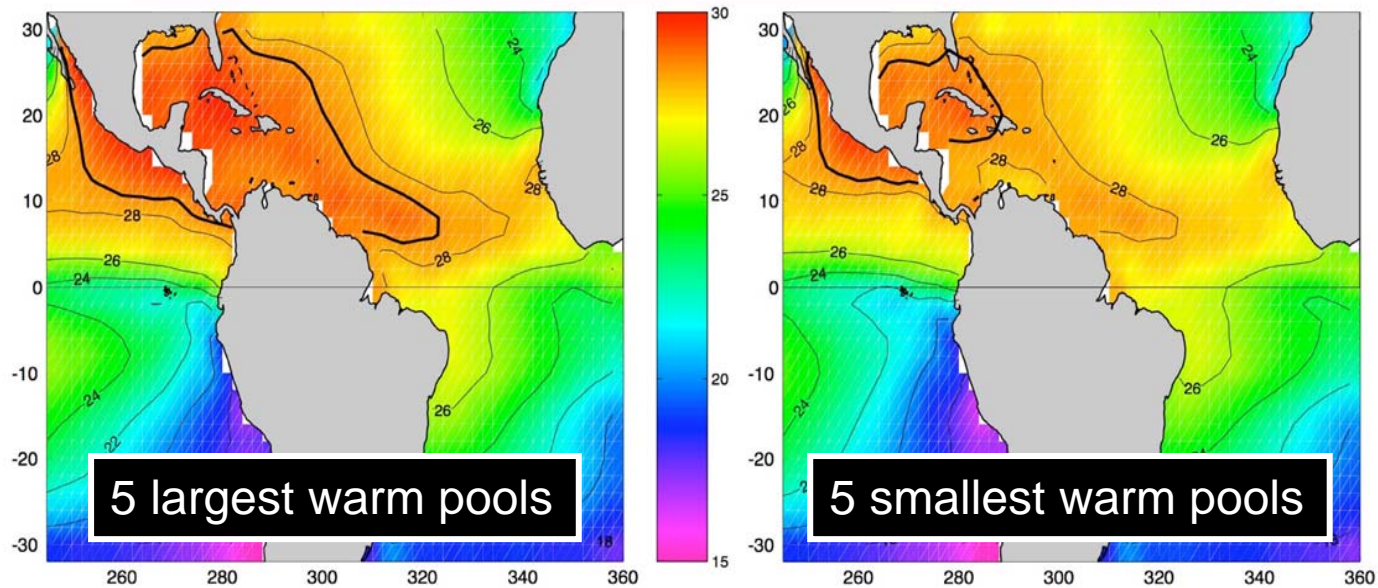
farmers from coastal Alabama, Georgia, and Florida

in the Row Crop Working Group meeting of SECC in Camilla, Georgia, August 30, 2010

CPC\_unified 1979–1998

Average % of days in JJA  
with Prec > 1mm/day

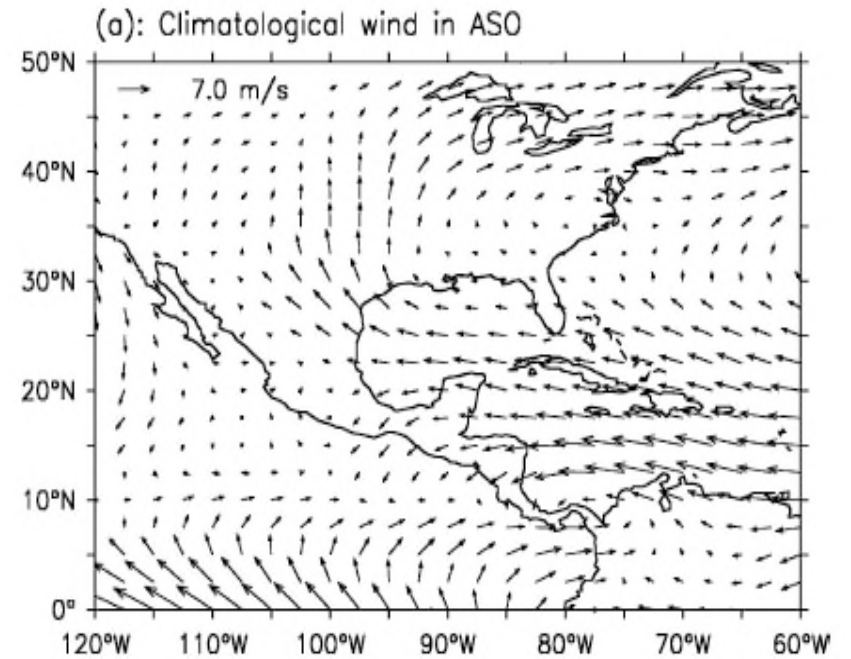
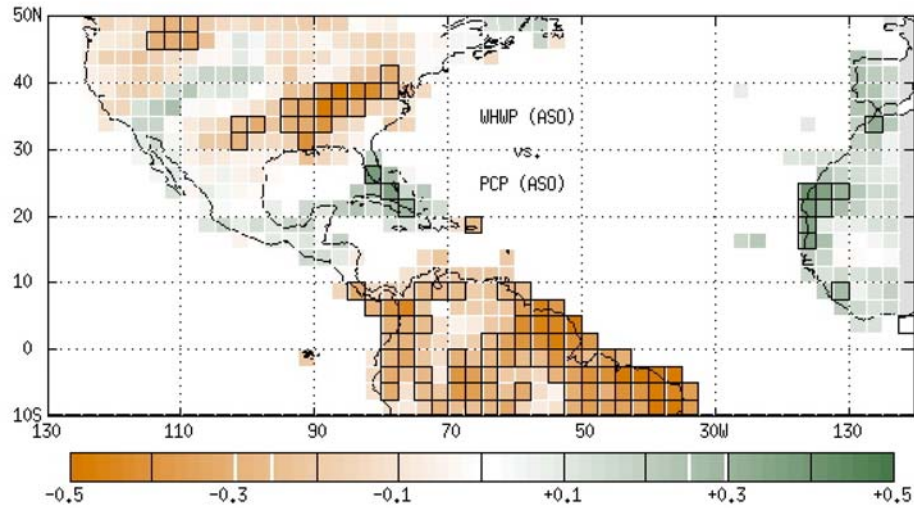




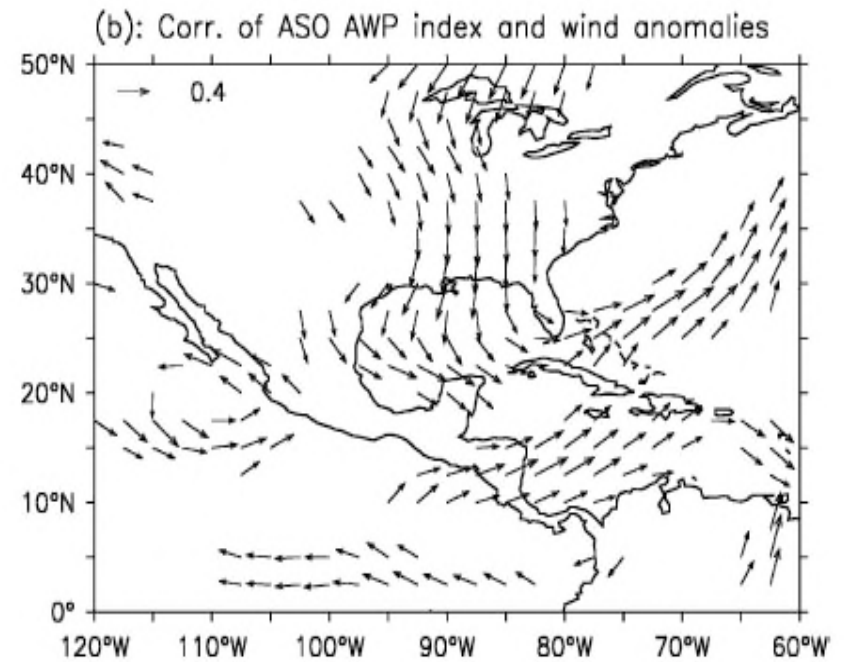
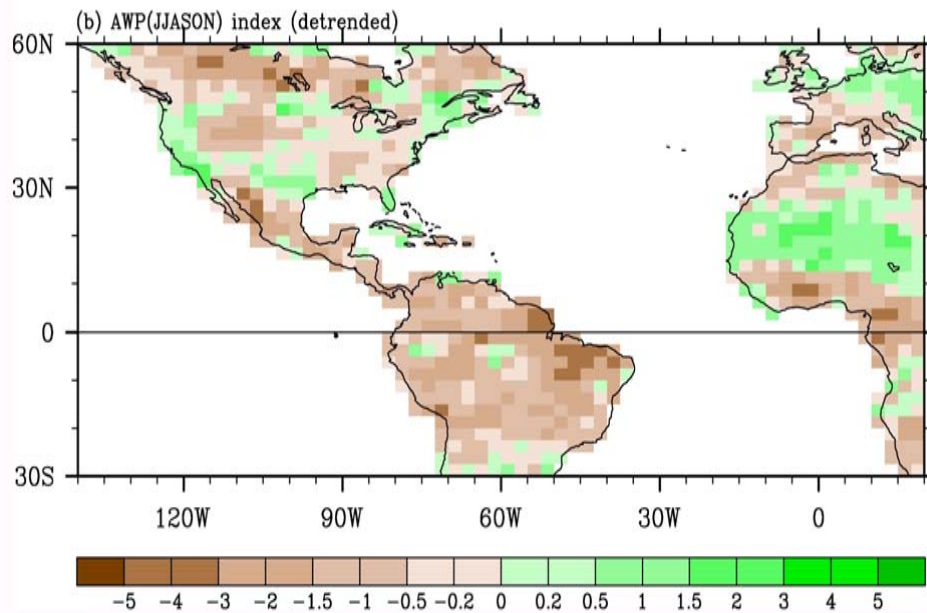
Courtesy: David Enfield, AOML

# Boreal Summer Correlation

## WHWP (ASO) vs. Rainfall (ASO)



## Regression onto Palmer Drought Index (JJASON:1870-2005)



**CLARReS1.0/R2**---COAPS Land Atmosphere Regional Reanalysis at 10km over the Southeast US downscaled from R2 version 1.0; period from 1979-2002---dataset used in this study

**CLARReS1.0/ERA40**---COAPS Land Atmosphere Regional Reanalysis at 10km over the Southeast US downscaled from ERA40 version 1.0; period from 1979-2002

**Lead Author:**

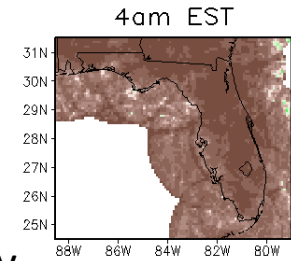
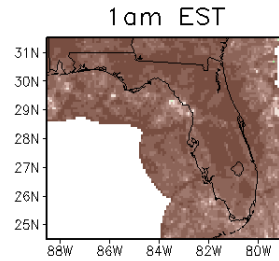
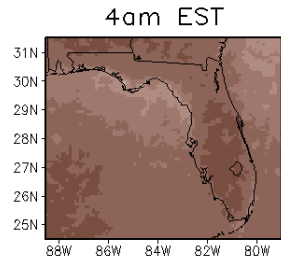
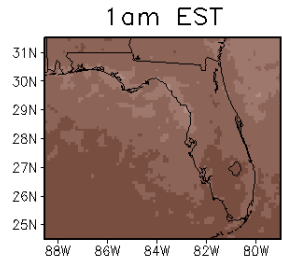


**Dr. Lydia Stefanova**

# Rainfall climatology at 3 hourly interval for June-July-August

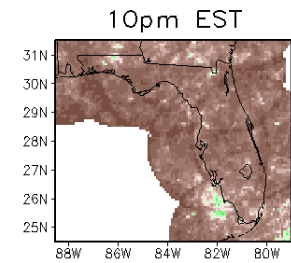
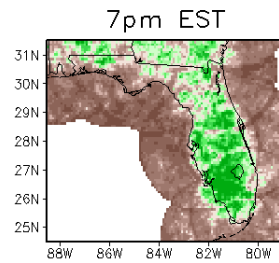
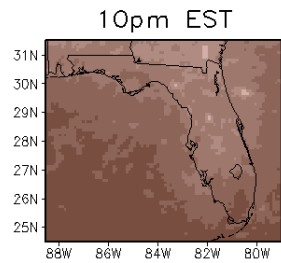
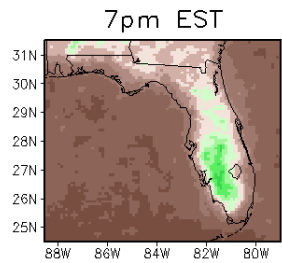
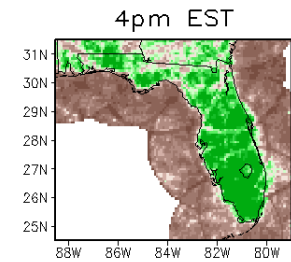
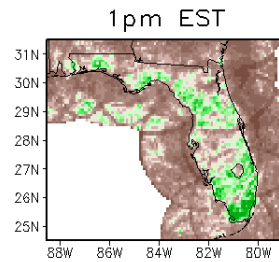
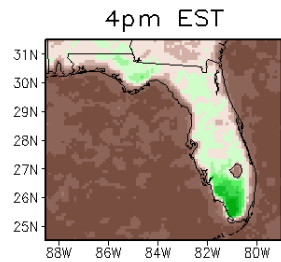
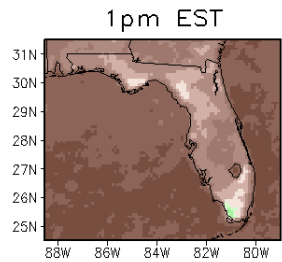
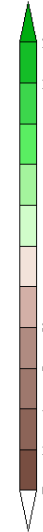
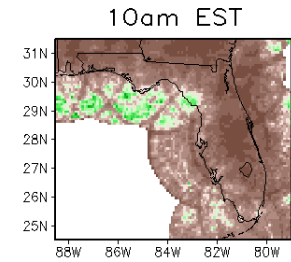
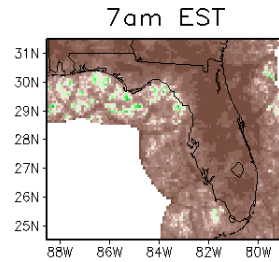
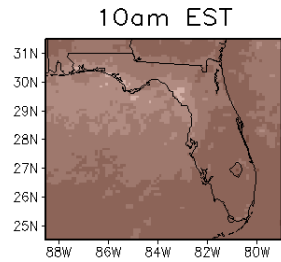
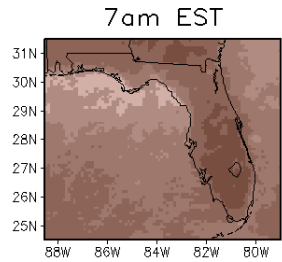
## CLARReSv1.0/R2

## Observations/Radar based



mm/day

mm/day

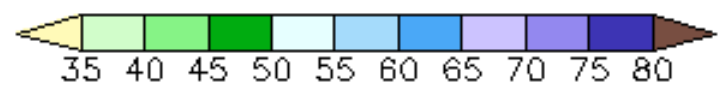
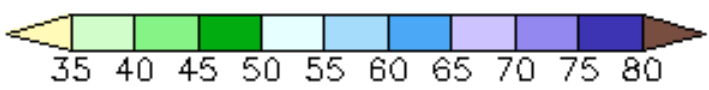
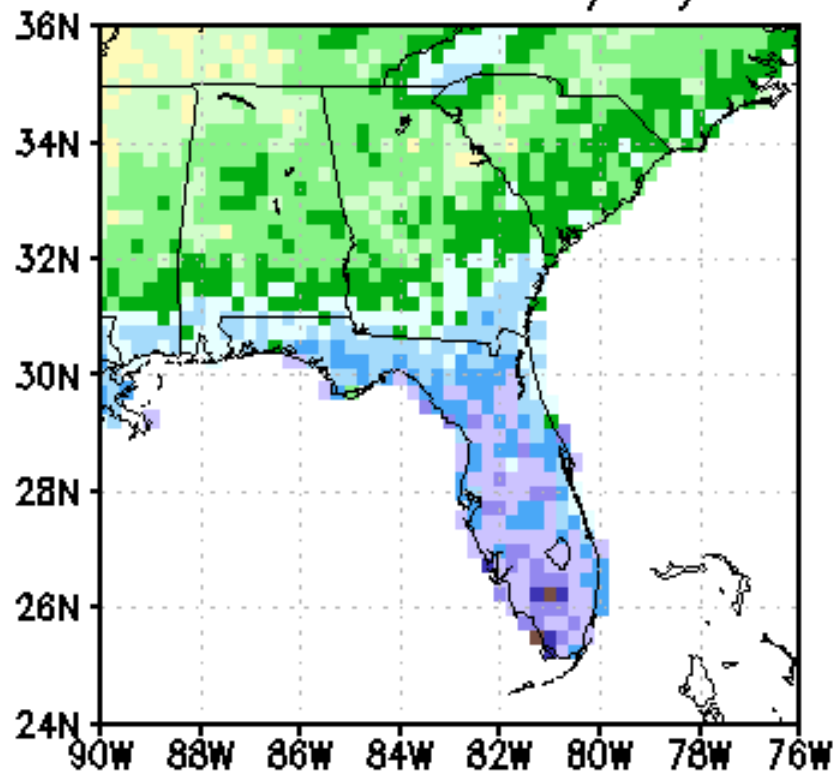
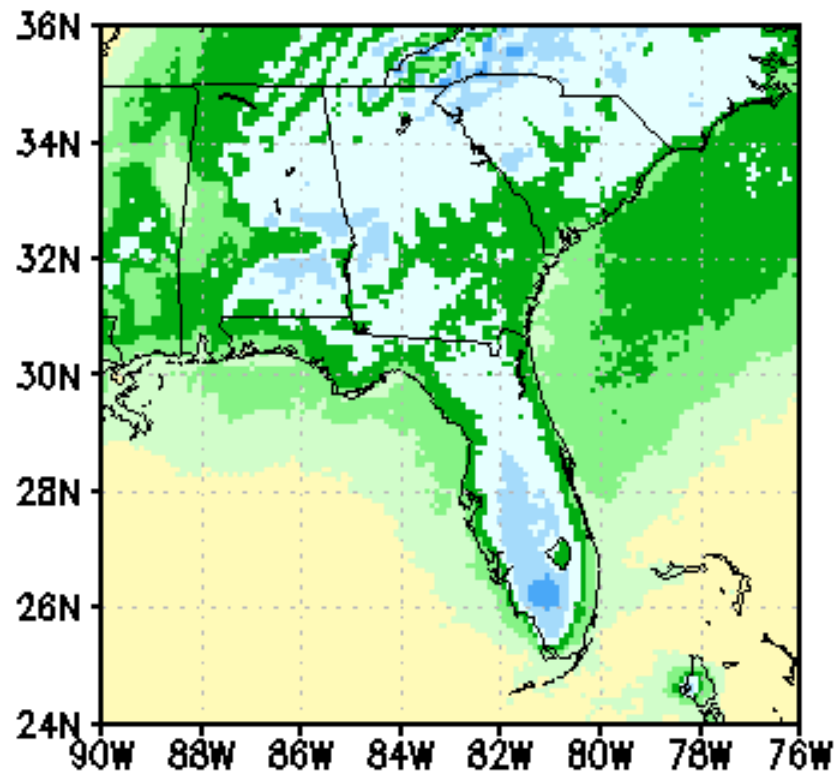


CLARReS10/R2 1979–2000

CPC\_unified 1979–1998

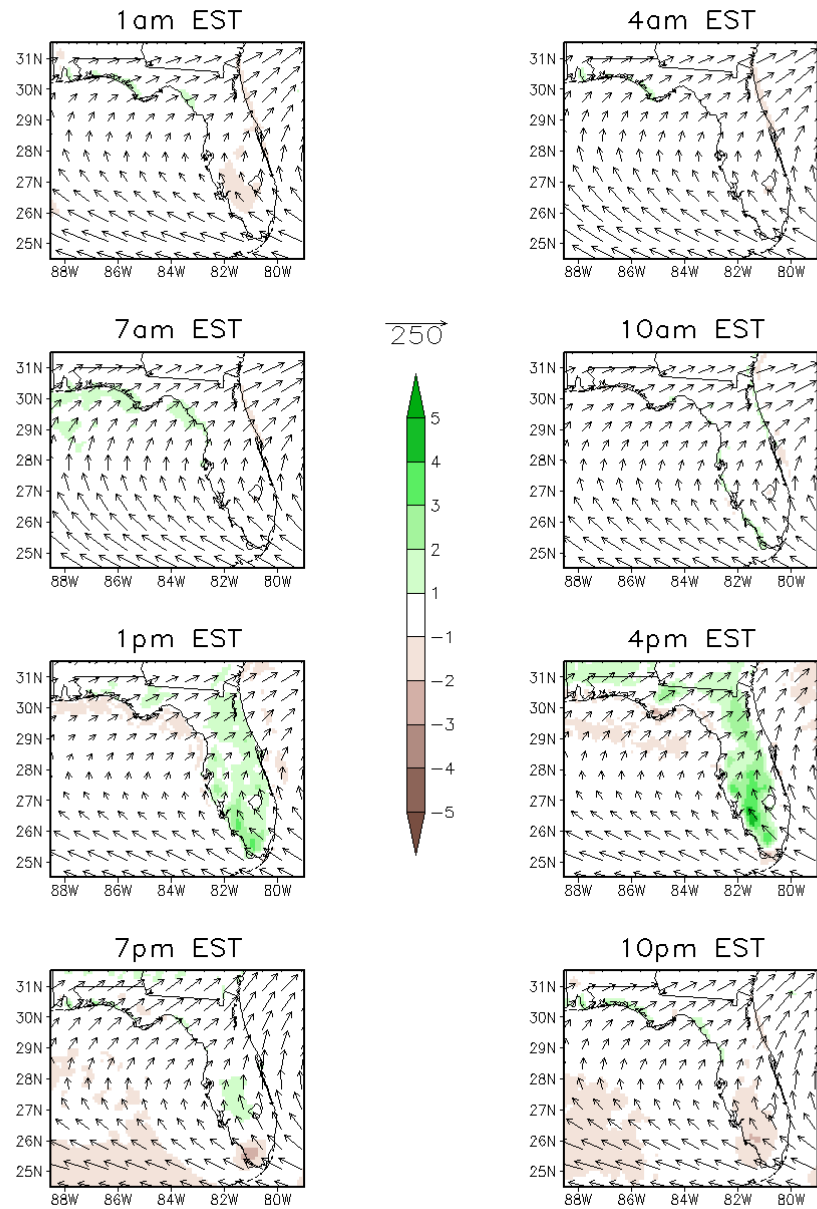
Average % days in JJA  
with Prec>1mm

Average % of days in JJA  
with Prec>1mm/day

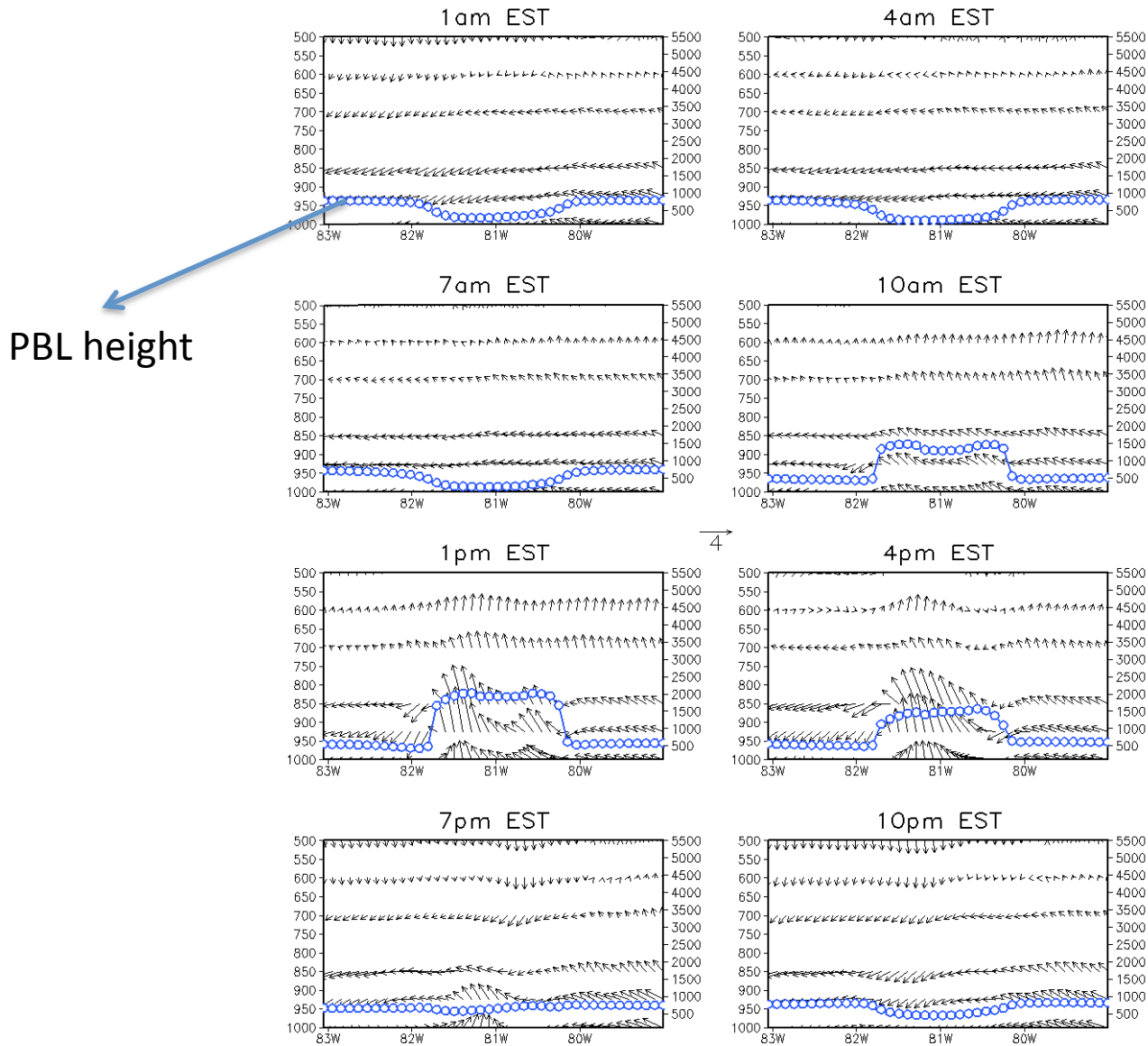




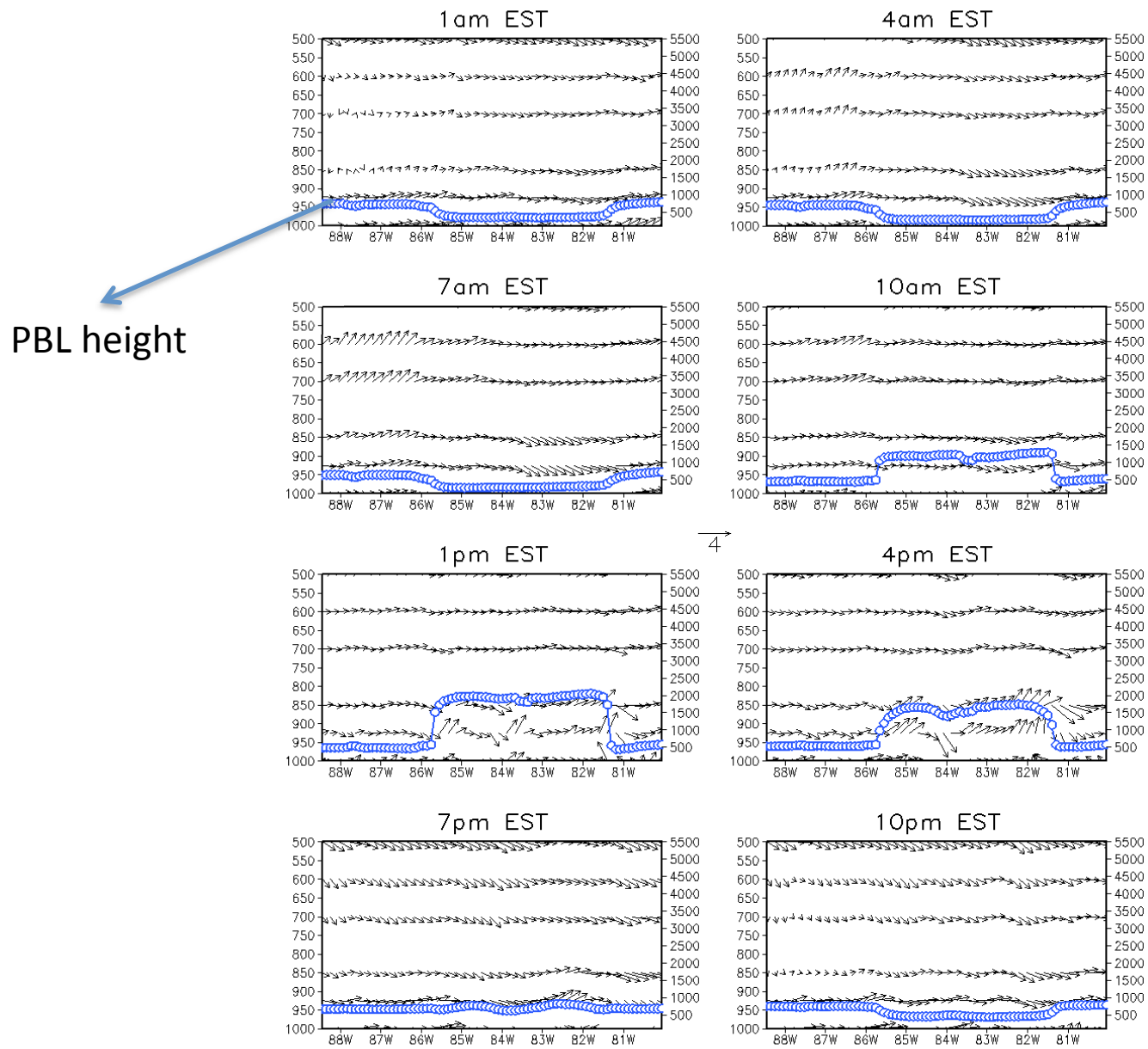
# Vertically integrated climatological moisture flux convergence and moisture flux vectors



# JJA climatological cross-section through 26°N (from Naples through FIU)

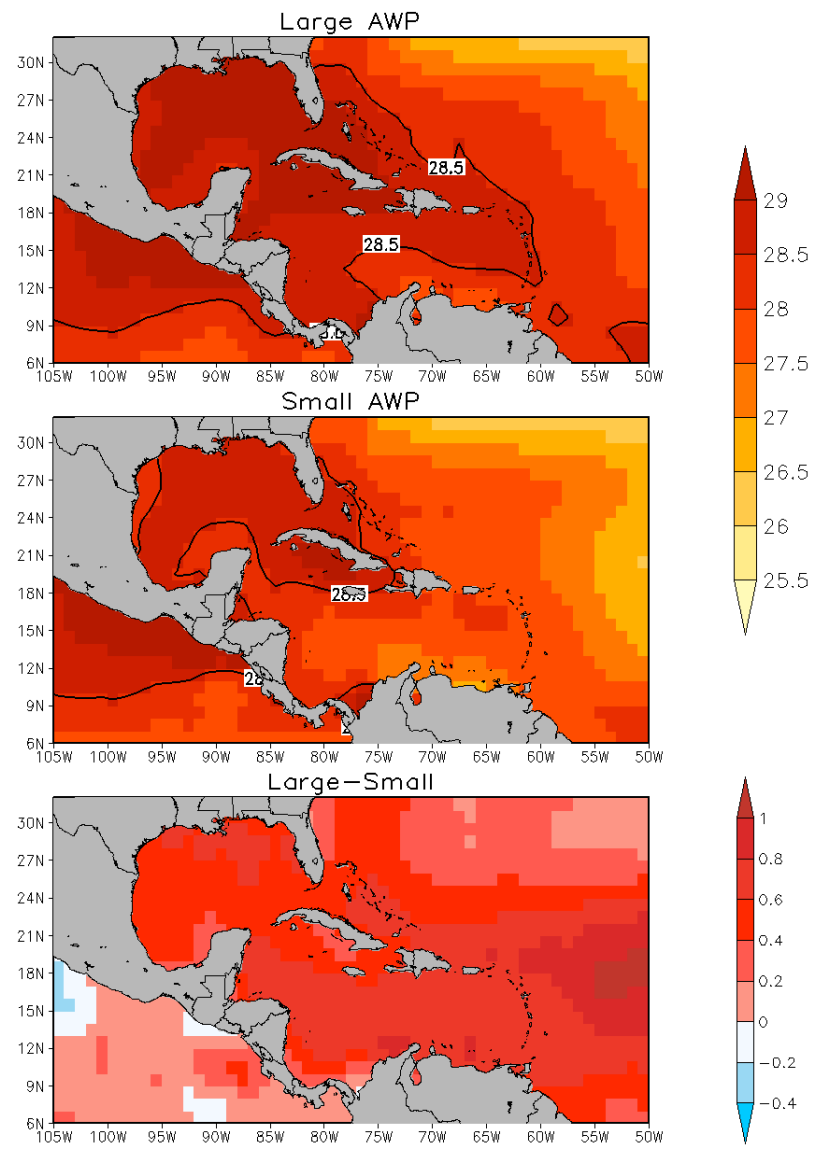


# JJA climatological cross-section through 30°N (through Panama City)

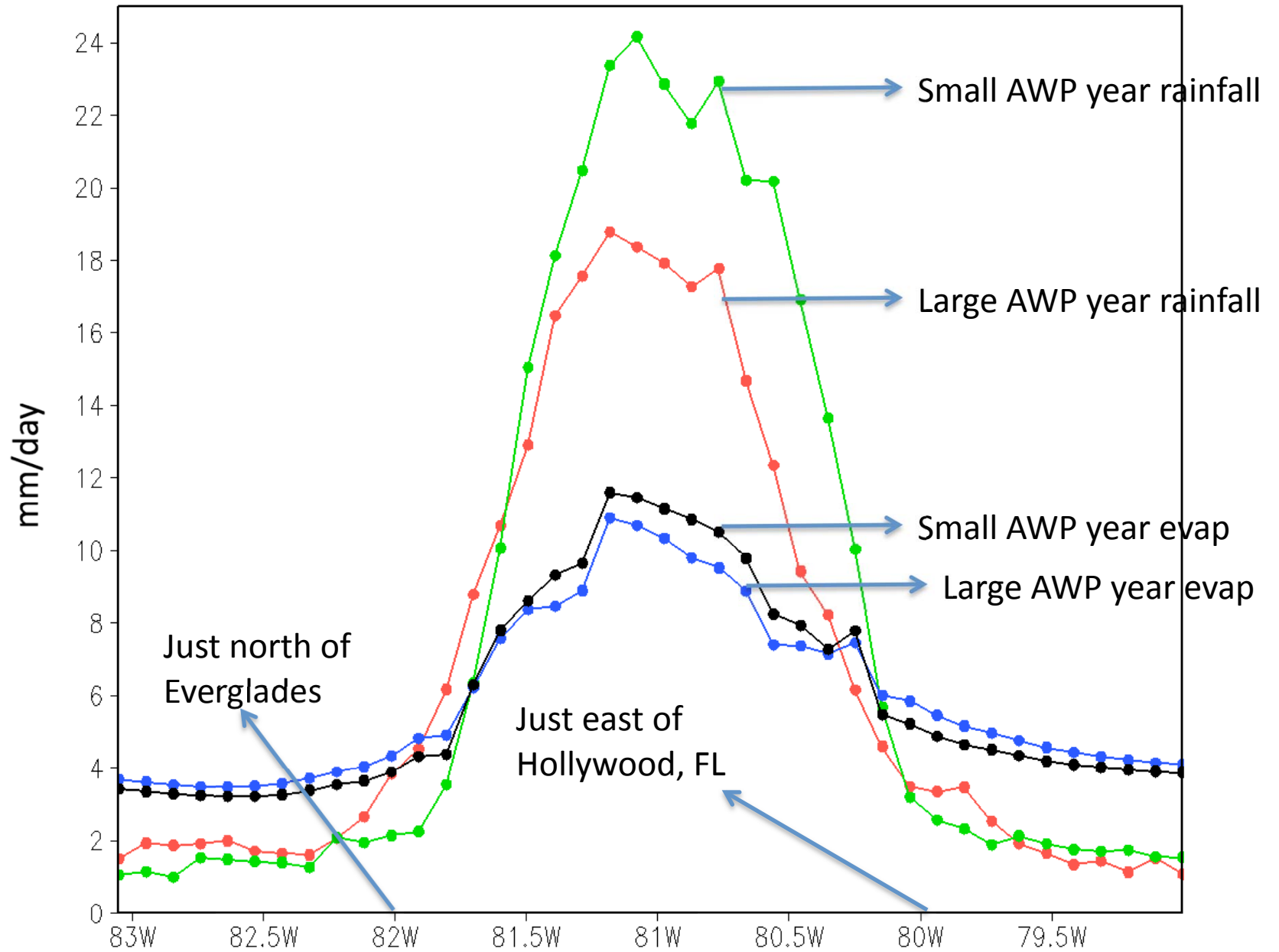


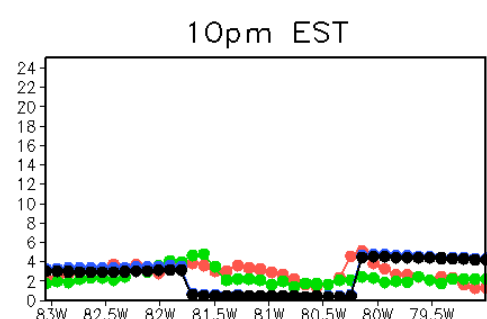
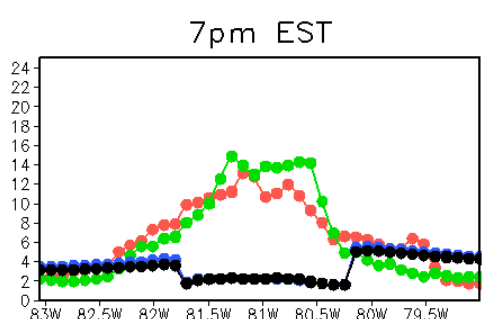
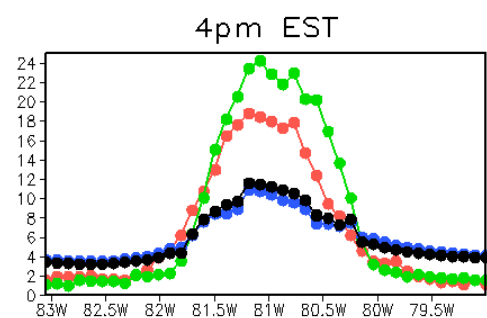
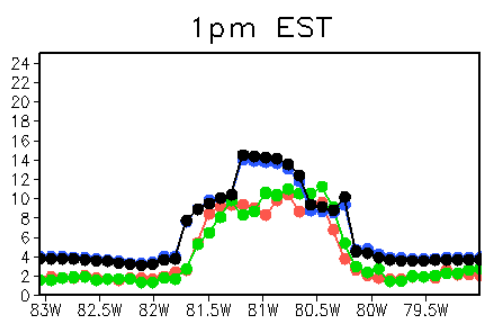
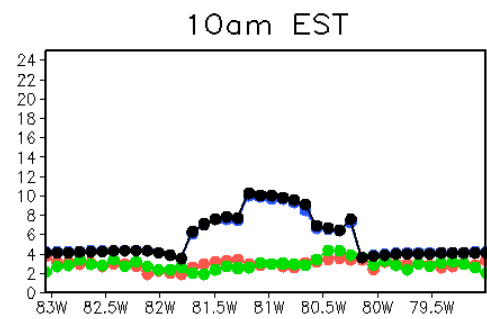
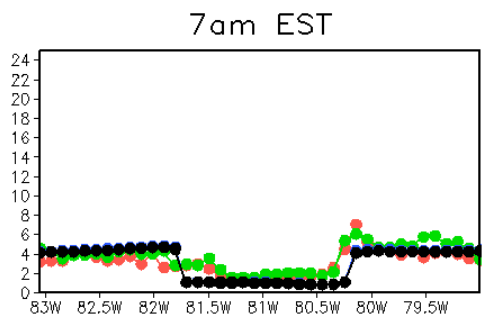
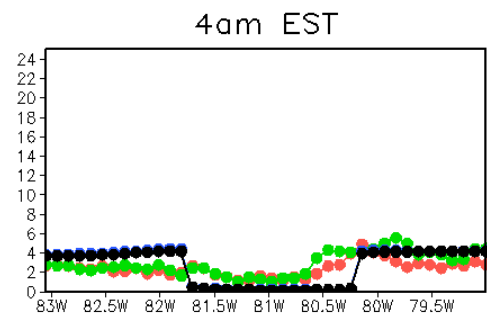
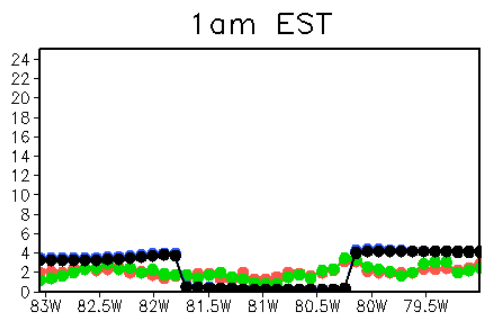
4

# Composite of SST for the 5 largest and 5 smallest AWP years from 1979-2001

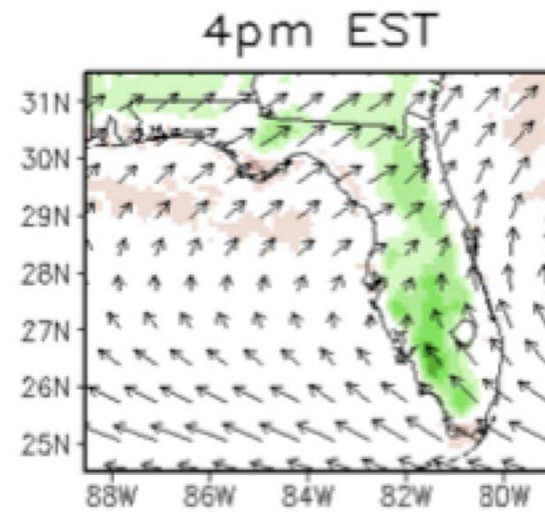
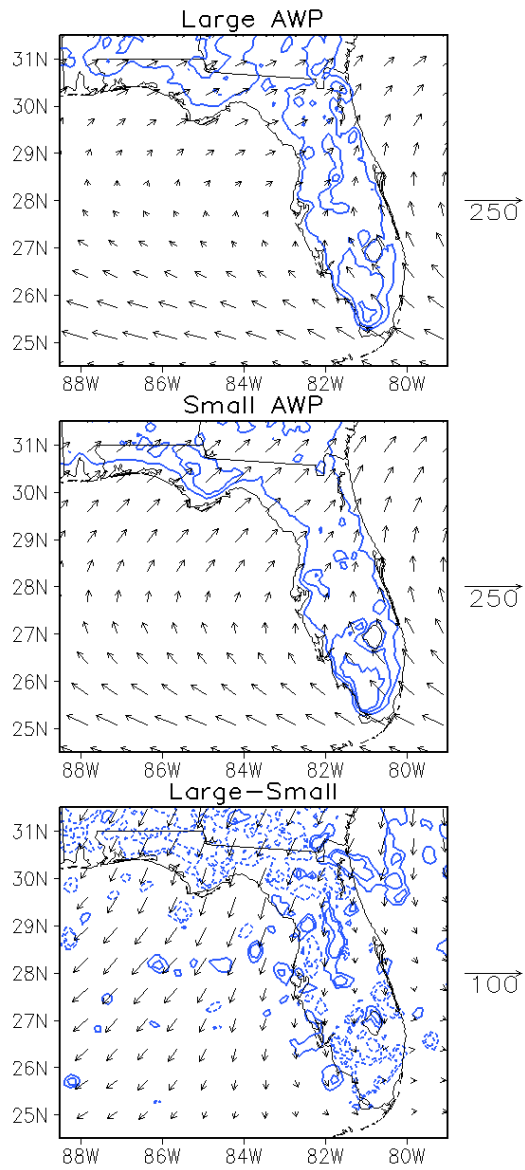


# 4 pm LST CLARReSv1.0/R2





# Composites of moisture flux vectors and rainfall (contoured)



# Warm pool in current season

IASCLIP Forecast Forum 2010

<http://www.coaps.fsu.edu/iasclip/>
Reader ↻ Google

[t-test](#)
[TeraGrid](#)
[Gmail - Inbox](#)
[dict](#)
[Google Maps](#)
[Blackboard @...us.fsu.edu](#)
[coaps](#)
[GrADS Docum...tion Index](#)
[News \(484\) ▾](#)
[Web of Science](#)

**Participating Models:** [NCEP CFSv.2](#), [GMAO CGCMv1](#), [ECPC GSM](#), [CCSM3](#), [COAPSGSM](#)

**Models Coming Soon to this Forum:** HYCOM, CCSM3.5, CM2.1
 **Issued on July 21, 2010**

	Current Conditions	Upcoming Forecast	Consensus Forecast			
August-September-October 2010						
Feature	NCEP CFS	COAPS GSM	CCSM3	GMAO CGCMv1	ECPC GSM	Consensus
AWP area anomaly	Large	N/A (uncoupled)	Large	Large	Large	Large
Strength of the Caribbean Low level Jet	Weakened	-	Weakened	Weakened	Weakened	Weakened
Mexican Rainfall	Weak	-	Weak	Weak	Weak	Weak
Strength of the North Atlantic Subtropical High	Weak	-	Weak	Weak	Weakened	Weak
Mid-west dry or wet?	Dry	-	Dry	Dry	Dry	Dry
North American Seasonal rainfall anomaly?	Dry	-	Dry	Dry	Dry	Dry
Tornadic activity in the Tornado alley	-	-	-	-	-	-
Vertical shear in the MDR	Weak	-	Weak	Weak	Weak	Weak
Atlantic tropical cyclone activity	-	Strong	-	-	-	-

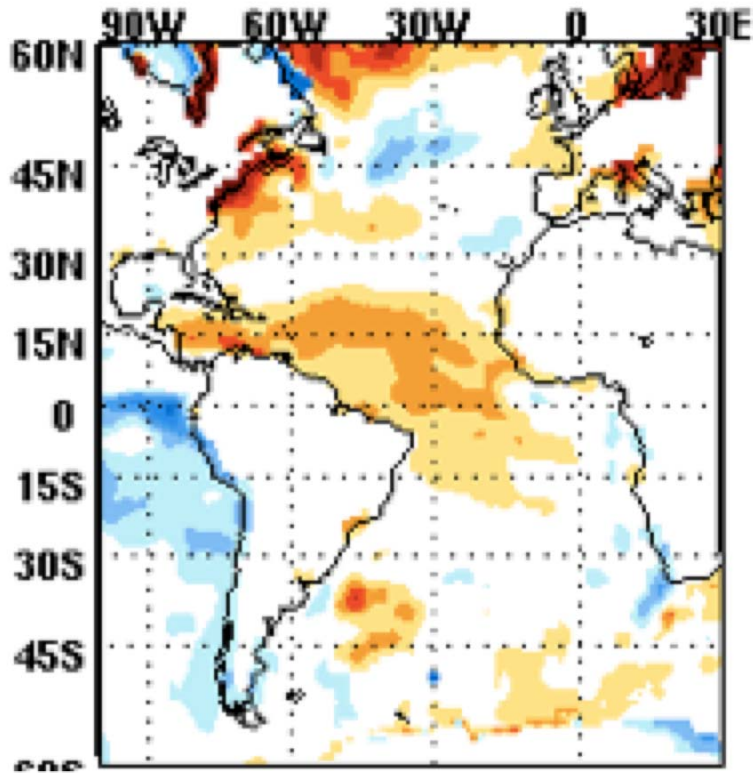
There is a consensus that ASO 2010 will be a season of large AWP, weak Caribbean low level jet, weak southerlies from the Gulf of Mexico\* and weak North Atlantic Sub-tropical high. As a consequence of these changes in the circulation features and the anomalous large AWP we expect a higher probability of the following:



Source: NASA

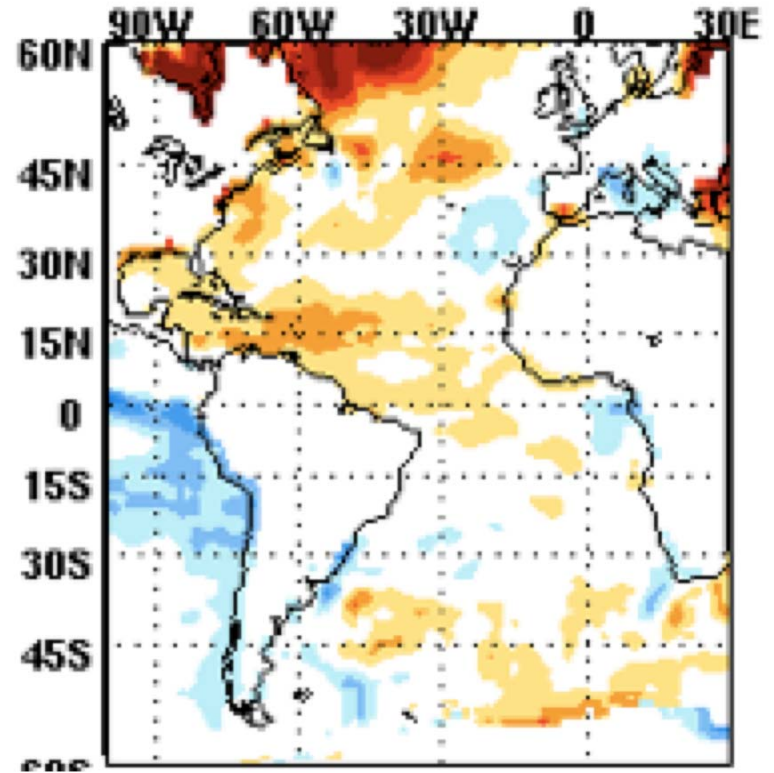
# SST ANOMALIES

REYNOLDS



July 2010

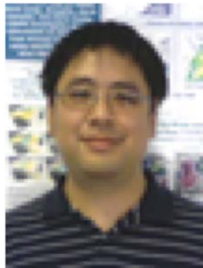
REYNOLDS



August 2010

## *Conclusions*

- The farmers experience of sea breeze being scattered and less reliable this year seems to confirm our theory of the AWP influence.
- Atlantic warm pool variations and the vacillations of the large-scale winds do indeed influence the sea breeze in peninsular Florida with a possibility of its influence also over panhandle Florida, and other southeastern coasts.
- My additional thanks to:



Dr. Steven Chan



Grad student: Ashley Stroman