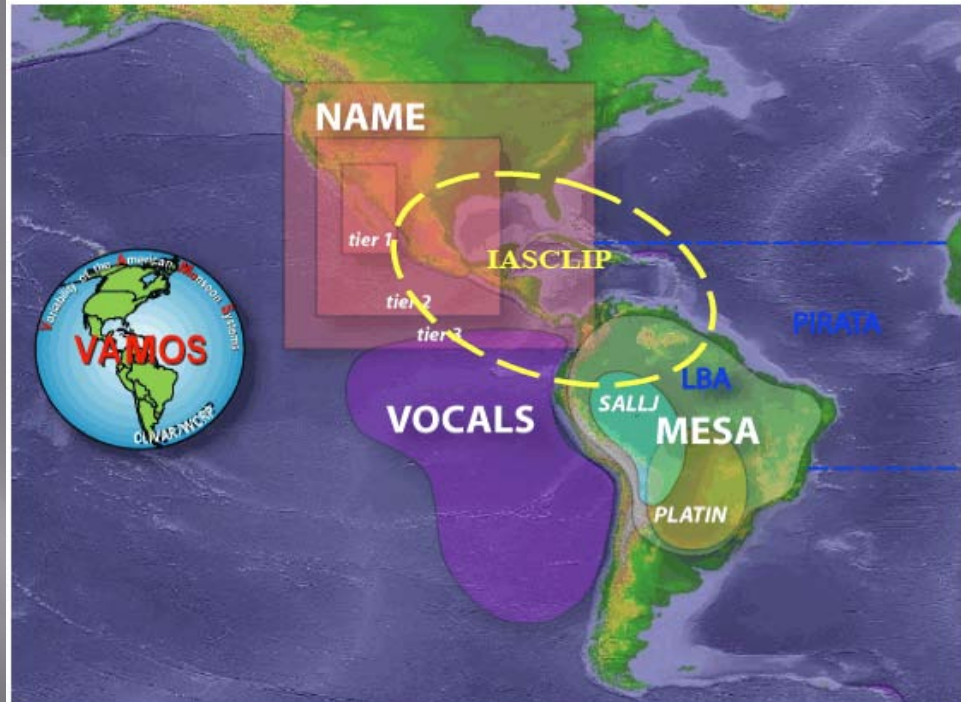


An IASCLiP Overview

Prepared by
Art Douglas
Creighton
University



THE VAMOS IASCLiP Research Program Straddles the Previously Studied Monsoon Systems of North America and South America

Bi-Modal rainfall distributions characterize the IAS region and are tied to the annual movement of the ITCZ between the two hemispheres. The impact of IASCLiP SSTs on Regional Climate is poorly understood and impacts on adjacent continental monsoon systems poorly studied. A lack of systematic observations in the region limits our ability to assess model performance with diagnostic studies being severely limited by systematic data set development.

What is IASCLiP?

From Town Hall Meetings at NOAA CDP Workshops and Tropical AMS Conferences

- ▣ An integrated ocean-atmosphere research program focusing on the Prediction of weather and climate impacts of the warm water pool of the Americas (EastPac-Gulf of Mexico-Caribbean).
- ▣ IASCLIP seeks to improve operational and research modeling efforts across the Americas through a better understanding of the climate processes within the region.
- ▣ With cooperation of various federal and foreign funding agencies, IASCLIP seeks to improve and expand the observational network across the region as a means to improve NCEP operational models. Early warning systems and long term climate monitoring will benefit from the new network.

- The program seeks to improve our understanding of the seasonal cycle and movement of the ITCZ across the warm water pool and nearby continents.

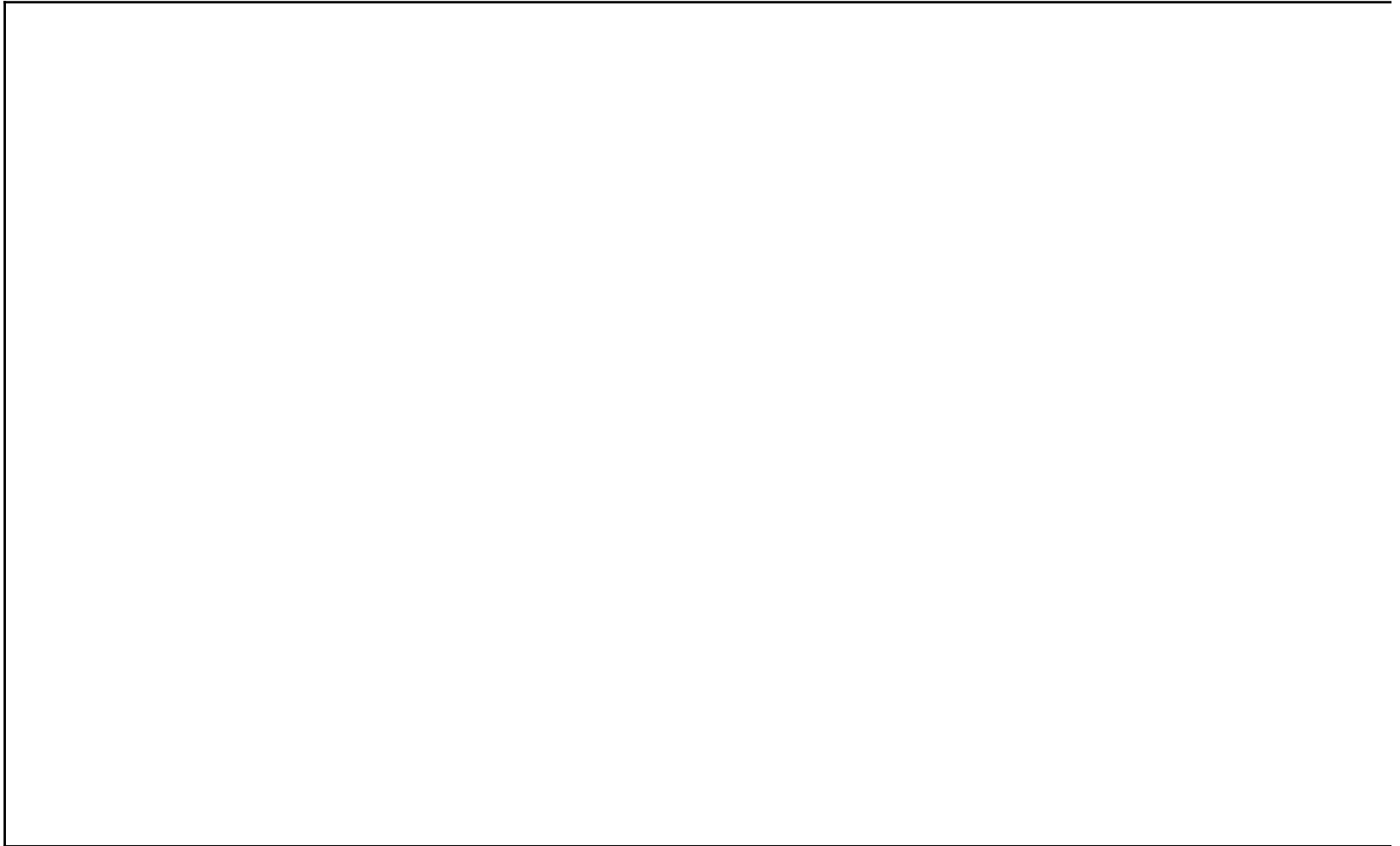
- Emphasis is placed on understanding the transition of the monsoon systems between South and North America and associated teleconnections (lagged and concurrent).

$\geq 28.5^{\circ}\text{C}$

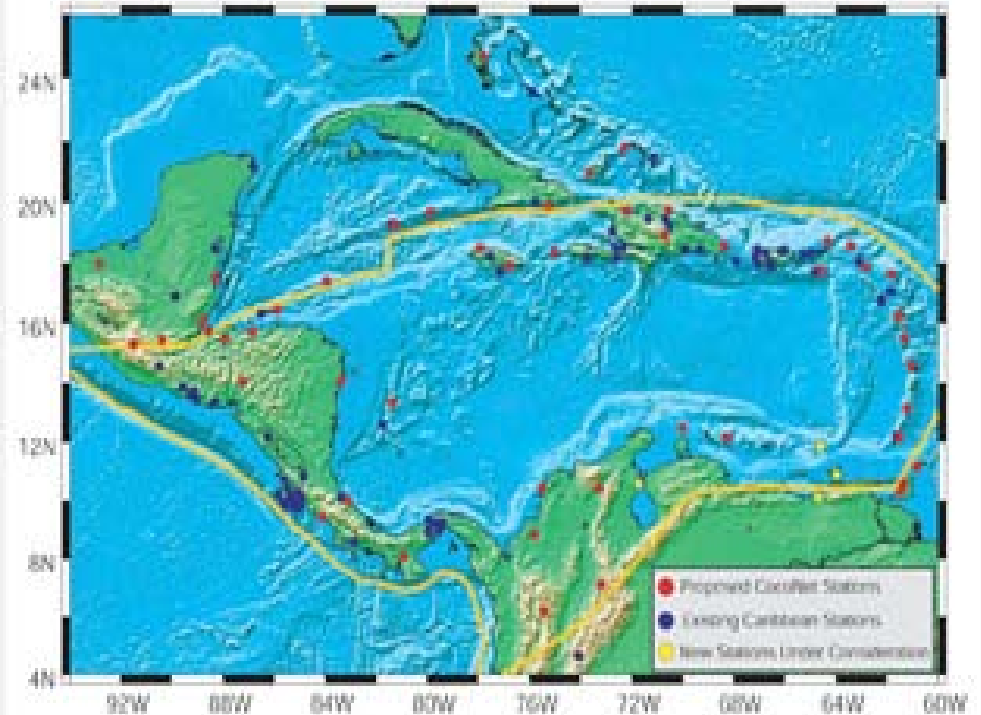
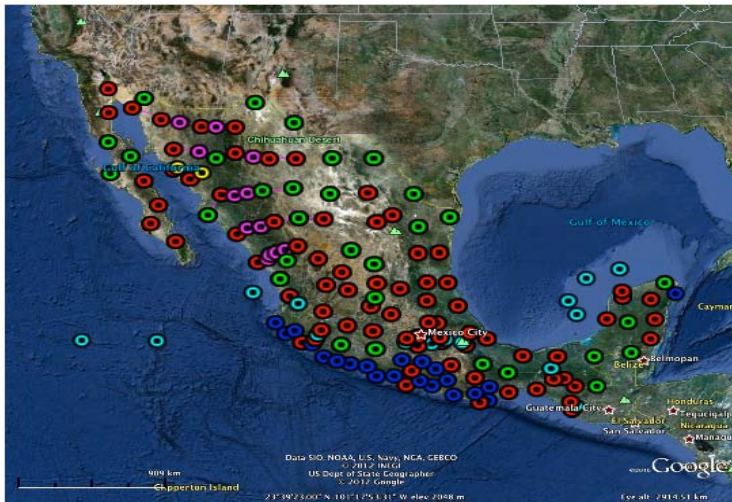
- The program seeks to improve our understanding and prediction of major weather events and climate extremes within the region:

1. Intraseasonal to decadal fluctuations in TC frequency, intensity and point of TC landfall.
2. Flood events (ITCZ, TC, and frontal induced).
3. Regional droughts (mid-summer drought).

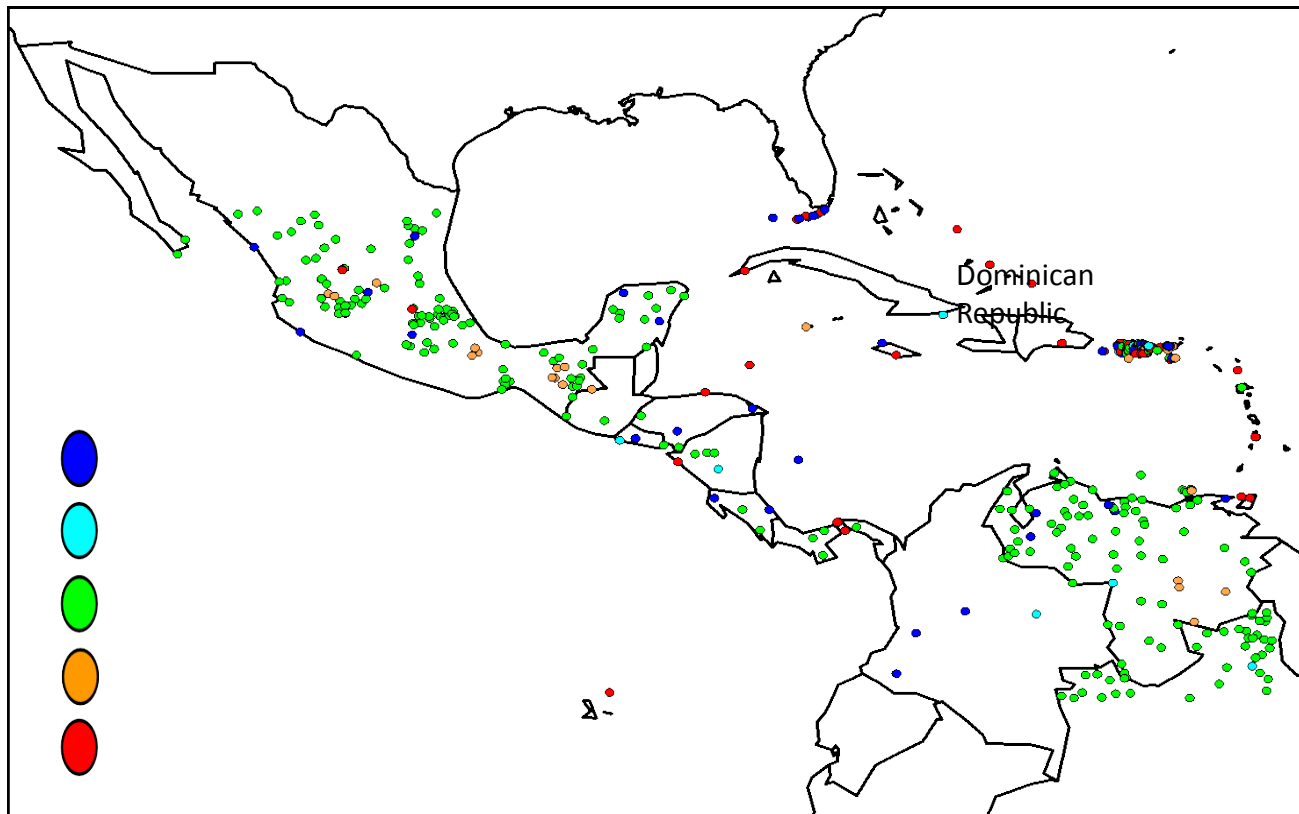
Radiosonde Distribution Showing Last Reporting Period: DATA LOSS IS A MAJOR PROBLEM IN THE IAS REGION



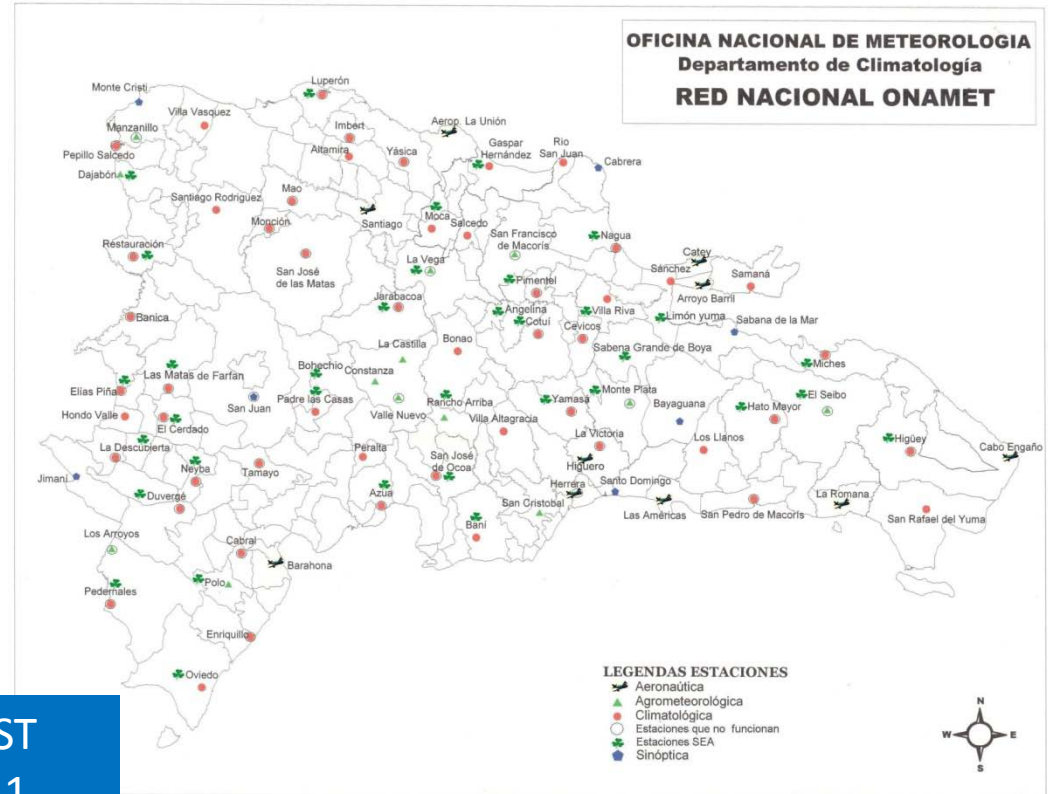
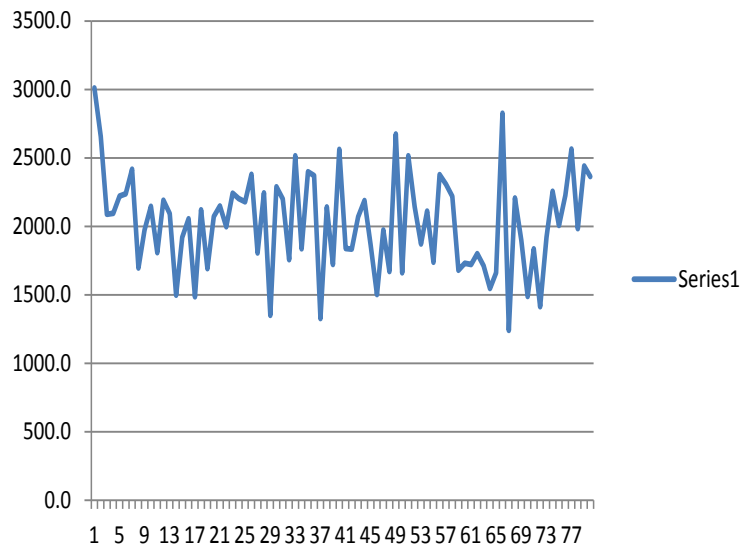
NASA SPONSORED GPS NETWORK EXPANSION INTO THE CARIBBEAN (COCONET) AND MEXICO (TLALOC) WILL OFFER THE ABILITY TO MONITOR PW IN THE IAS REGION WITH IMPROVED SURFACE REPORTING. THE IASCLIP TEAM IS WORKING CLOSELY WITH THESE TWO NEW PROJECTS.



HIGH QUALITY MONTHLY CLIMATIC DATA CONTINUES TO BE A MAJOR ISSUE WHEN CONDUCTING DIAGNOSTIC STUDIES OR REAL TIME CLIMAT MONITORING. MAP SHOWS LAST YEAR OF WMO GHCN DATA BY STATION. IASCLIP WORK WITH DOMINCAN REPUBLIC IS NEARING COMPLETION.

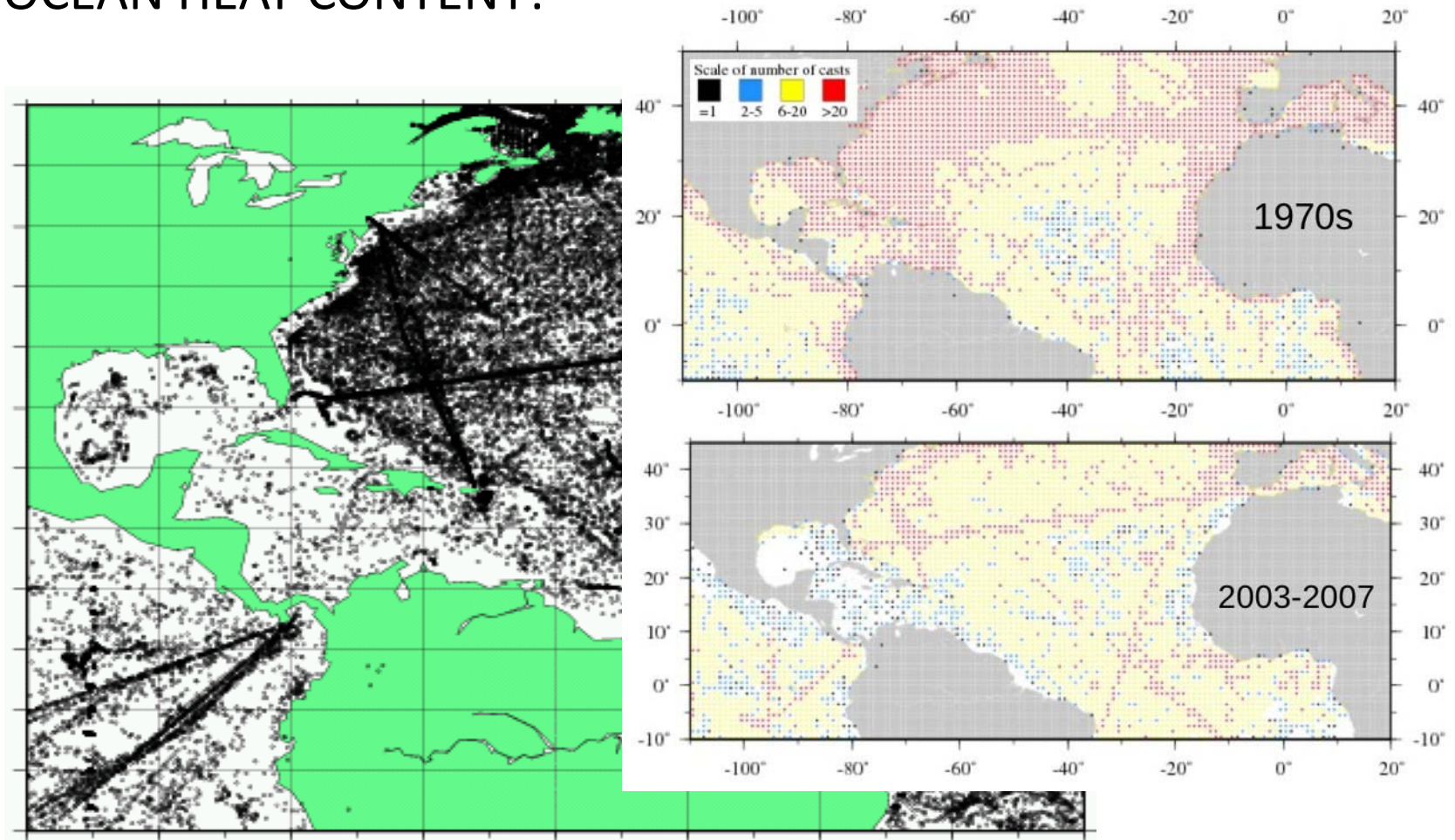


IASCLIP HAS BEEN WORKING WITH THE DOMINICAN REPUBLIC TO DEVELOP A LONG TERM DATA SET OF REGIONAL CLIMATE INDICES 1932-2011. THIS PILOT PROJECT COULD BE EXPANDED THROUGH THE IAS DOMAIN WITH NOAA ARC SUPPORT



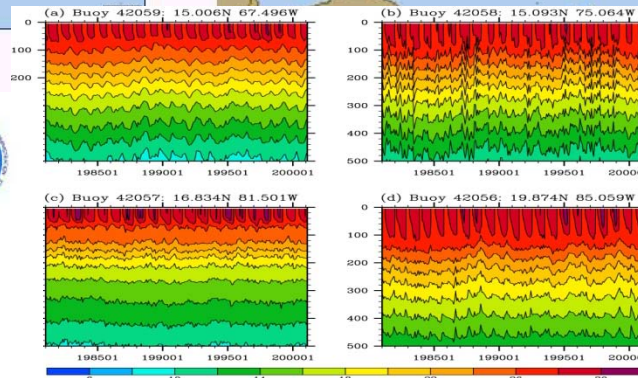
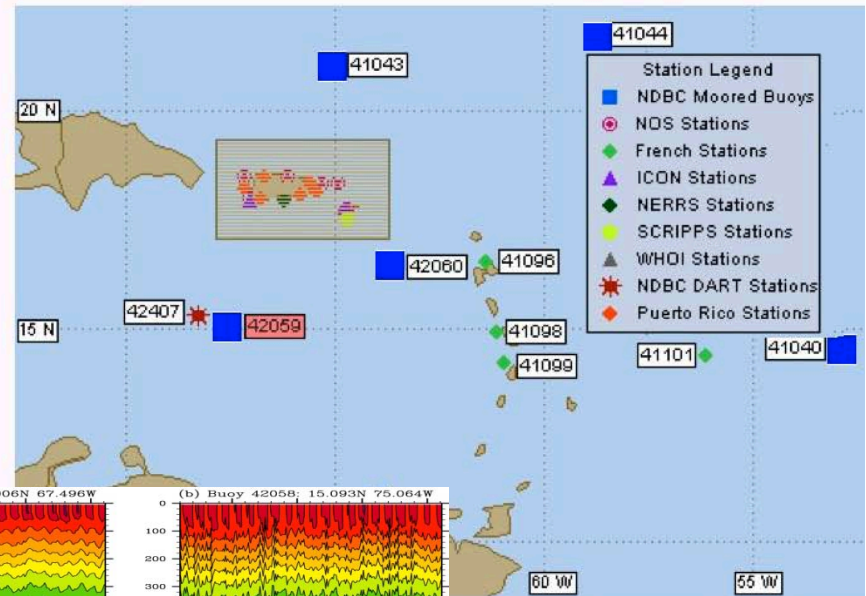
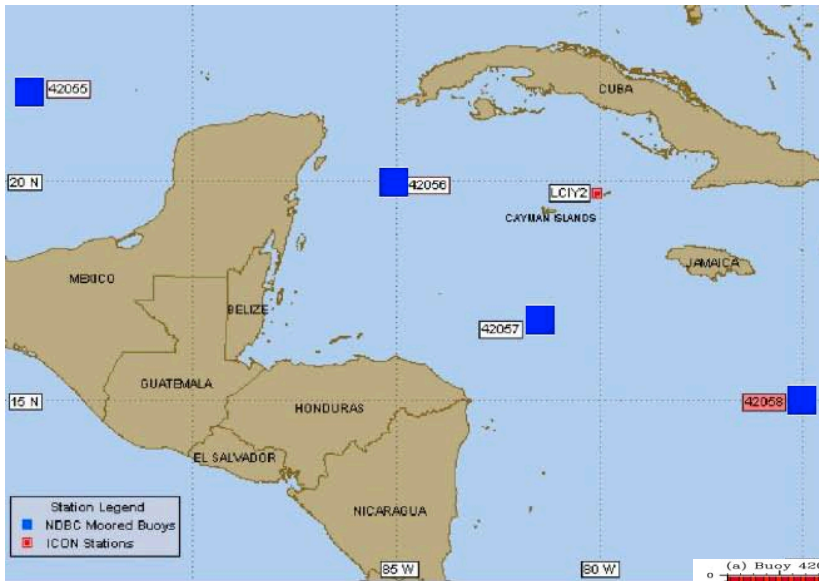
ANNUAL RAINFALL REGION 2 NORTHEAST COAST DOMINICAN REPUBLIC 1931-2011

XBT DENSITY BY DECADE: IASCLIP DOMAIN UNDER SAMPLED WITH POOR UNDERSTANDINGN OF INTER-ANNUAL VARIABILITY IN OCEAN HEAT CONTENT!



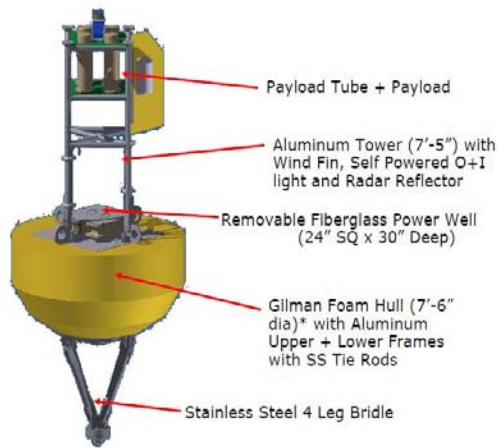
Falta de perfiles térmicos de XBT en el Caribe (1999-2005)

NOAA Buoys That Could Be Fitted With Depth Thermosters



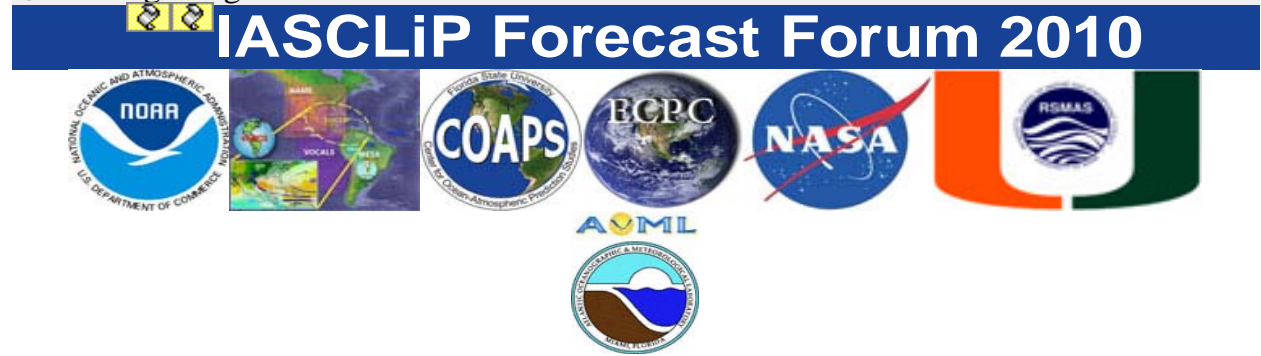
Next Generation Buoy

Multi-purpose / Multi-configurable Platform



IASCLIP continues to work with NOAA to propose placing subsurface thermosters on surface buoys in the IASCLiP Domain. Funding is the challenge!





**First IASCLiP
Forecast
Forum from
2010 and now
going into the
Third Year.**

IASCLiP Forecast Forum 2010, albeit late to start in the season is motivated from a general enthusiasm in the community to put the climate models to operational rigor in a season and over a region where most models have difficulty in simulating the observed mean state and its variability ([Fig. 5](#)). However, there is a growing optimism that the initialized seasonal prediction climate models may fair better than the long-term (multi-decadal) integrations ([Fig. 6](#)). *The forecast issued by this forum is experimental in nature, is neither liable nor responsible for any decisions made thereof, and is not reflective of the official forecast from any of the participating institutions.*

The charge of this forum is to make experimental forecasts for summer and fall seasons.

Caveats: Since this forum is in its nascent stage, we have gathered seasonal forecast data for late boreal summer and early fall 2010 with little restrictions (if any) on the modeling groups. Therefore you may find that the display of the data is not uniform across models (e.g. some show global information while for others we have restricted to IASCLiP region; there are also several data gaps with some models having all the displayed information while others providing of what is available). We plan to update the forum at the end of the year.

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

Models Coming Soon to this Forum: HYCOM, CCSM3.5, CM2.1

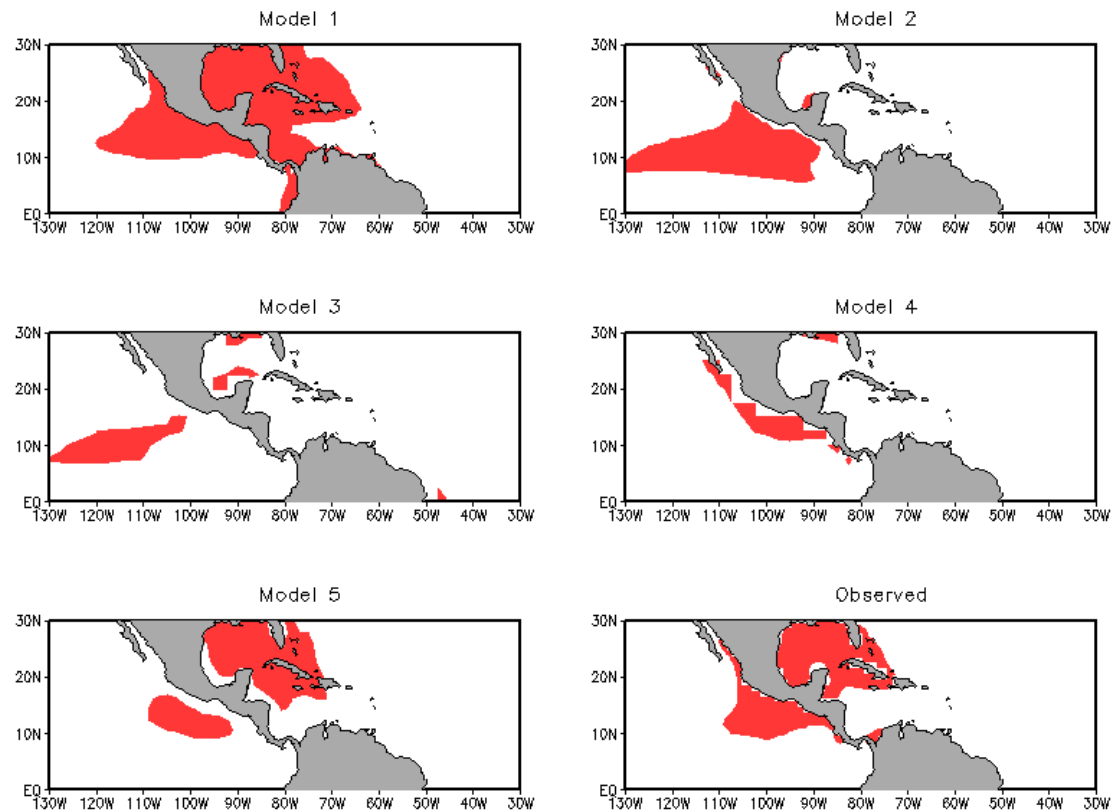
- **Current Conditions**
- **Upcoming Forecast**
- **Consensus Forecast**

Models

Model	Reference	No. of Ensemble members	Coupled to ocean?
NCEP CFS v2	A	20	Yes
COLA-RSMAS-CCSM3	B	6	Yes
NASA GMAO	C	9	Yes
POAMA	D	30	Yes
GFDL	E	10	
FCI-FSU (previously ECPC)	F	12	No. Prescribed (persisted SST & IRI forecasted SST)
CWB	G	10	Yes
IRI-ECHAM4p5 (Anom)	H	12	Yes
IRI-ECHAM4p5 (direct)	I	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://gmao.gsfc.nasa.gov/research/modeling/cgcm/
D	http://poama.bom.gov.au/
E	http://iridl.ldeo.columbia.edu/SOURCES/.Models/.NMME/.GFDL-CM2p1/
F	http://ecpc.ucsd.edu/projects/GSM_model.html
G	http://www.cwb.gov.tw/V6/climate/other-subject/WPGM_CWB2tier_CFS.pdf
H	http://iridl.ldeo.columbia.edu/SOURCES/.Models/.NMME/.IRI-ECHAM4p5-AnomalyCoupled/
I	http://iridl.ldeo.columbia.edu/SOURCES/.Models/.NMME/.IRI-ECHAM4p5-DirectCoupled/

The IASCLiP climatological distribution of SST $\geq 28.5^{\circ}\text{C}$ for June-July-August season for five of the coupled ocean-atmosphere models used in the IASCLiP forecast forum. The observations are from ERSSTV3 computed over a 30 year climatology from 1971-2000. **LARGE SPREAD IN THE MODELS!**

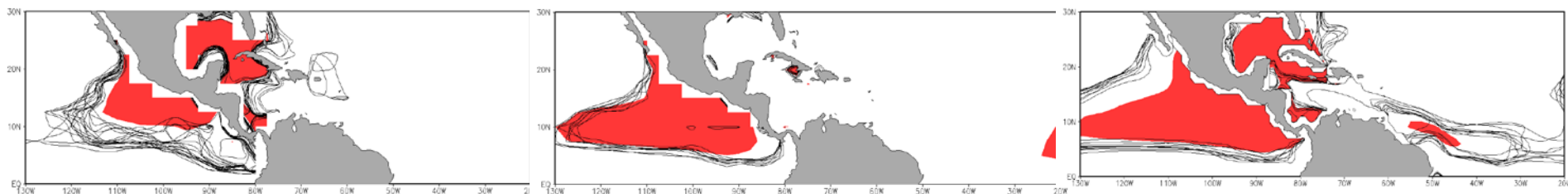


CURRENT JUNE-AUGUST 2012 SST FORECASTS CONTINUE TO SHOW POOR AGREEMENT IN WARM POOL PLACEMENT PER ENSEMBLE MEMBER ISOTHERMS $>28.5^{\circ}\text{C}$

NCEP CFS v2

NASA GMAO

GFDL-C2Mp1



Summary of Model IASCLiP Forecasts For June-August 2012

Feature	NCEP CFS v1	NASA GMAO	CCSM 3	CWB	POAMA	FCI-FSU	GFDL-CM2p1	IRI-ECHAM4p5 (anomaly)	IRI-ECHAM4p5 (direct)	Model's CONSEN.
AWP Area Anomaly	Avg.	Avg.	No AWP		No AWP	Lg.	Large	Varies by ensemble	Small	Average
East Pac. Warm Pool	Large	Avg.	Large		Large	Avg.	Large	Avg.	Varies by ensemble	Large
MDR Vertical Shear	Avg.	Slightly Strong		Avg.	Weak	Wk.				Average
Strength of NASH	Very Strong	Slightly Strong		Weak	Weak	Stg.				Slightly Strong

The NMME models unanimously show development of El Nino conditions in the equatorial Eastern Pacific basin.

We are not discussing the rainfall forecast from these models at this time, as the skill masks show a lack of forecasting skill during JJA.

How Do We Maintain Momentum for IASCLIP?

- Under a US Budget Crisis that continues to impact climate funding agencies (NOAA, NSF, NASA)?
- Under a NOAA plan that saw NOAA Climate Services being put on hold (the need to emphasize climate prediction rather than climate change?)
- Under a Reorganized Climate Program Office that appears to be considering new IASCLIP emphasis.
- Under a period of economic stress for potential participating countries within the IASCLIP domain? This is very apparent in national travels.

IASCLiP

Intra-Americas Study of Climate Processes

- The Warm Water Pool of the Americas provides a prominent source of memory for climate forecasting across the IASCLIP region. Most climate models do not reproduce the warm pool.
- IASCLIP proposes enhancing the real time observing system in the region in support of operational modeling and climate monitoring.
- Improvement of climate forecast modeling for the region is paramount to IASCLIP's success.
- IASCLIP will concentrate on improved prediction of:
 - a. TC frequency and intensity, from intraseasonal to inter decadal time scales, including efforts to forecast landfall potential.
 - b. Regional flood events that frequently impact the U.S.
 - c. Regional droughts that frequently spread into the U.S.