IASCLIP = Intra Americas Study of Climate Processes
CLIVAR-VAMOS Monsoon Program (FY09 - FY14)
Outline

• **A review** of climate interactions that have led to small (2009) and large (2010) Atlantic warm pools. Models must replicate these processes.

• **New activity:** the IASCLIP Forecast Forum — a modest beginning.

• **Model problems:** global models are plagued by large biases; in some cases they don’t produce a warm pool (cold bias) — too little rainfall.

• **Observations:** how do we assess and verify model behavior?
  – problems in the IASCLIP region;
  – some approaches for improved observations;
  – current efforts to gain collaborations regionally.

• **IASCLIP governing structure:** new configuration of working groups and advisory panel.
Centerpiece of IASCLIP: the Atlantic warm pool (AWP)

5 largest warm pools

5 smallest warm pools

2005 large warm pool

2000 small warm pool

Western Hemisphere Warm Pool Area Anomaly Index
Various associated phenomena:

1. N. Atlantic subtropical high (NASH)
2. Low-level moisture transports
3. Mid-summer drought (MSD)
4. Spring tornados in Midwest
5. Likelihood of Midwest floods
6. Atlantic TC activity
7. Saharan air outbreaks

Work done at NOAA-ESRL
Enhanced Amazon Convection
Persistent El Niño in 2010

Multivariate ENSO Index (MEI) for 5 transitions from La Niña to El Niño since 1949 vs. recent conditions

Update: 6 July 2010
NOAA/ESRL/Physical Science Division - University of Colorado at Boulder/CIRES
NAO and SST Anomaly in North Atlantic

- Mid-latitude North Atlantic SST has been below-normal since May 2009.
- SST in the Hurricane MDR has been above-normal since Jul 2009, intensified significantly since Feb 2010, and slightly weakened in Jun2010.
Updates to IASCLIP website (UCAR)

**Overview**

A Prospectus (March 2008) for the Intra-Americas Study of Climate Processes program.

To achieve its goals, IASCLIP:
- Improved model simulations
- Provide detailed and targeted observations
- Designed to complement a suite of enhanced long-term observations.
- Lead to improvement for climate and regional forecasting agencies.

**Activities**

- Caribbean Outlook Forum 2010
- Colombia trip
- Dominican Republic trip

**Data Access**

- VAMOS Data Archives

**Modeling**

- IASCLIP Forecast Forum 2010
- IASCLIP Modeling Panel

**Meetings and Presentations**

**Documents**

- IASCLIP F.A.Q.
- IASCLIP Documentation

**Media**

- Agenda de trabajo por el ambiente (Univ of Puerto Rico, Diálogo Digital)

**Related Links**

- IASCLIP Web site at NOAA/AOML
- IASCLIP Web site at NOAA/NSSL
- Institutions, Officises, and Organizations

**Publications**

- Journal papers 2008-2010

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**Recent IASCLIP-Related Research**

**Refereed publications appearing in print in 2008**


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**Refereed publications appearing in print in 2009**


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**Refereed publications appearing in print in 2010**


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**Pending publications in 2010**


IASCLIP Forecast Forum (IFF)

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. 1). However, there is a growing optimism that the initialized seasonal prediction climate models may fair better than the long-term (multi-decadal) integrations (Fig. 1). The forecast issued by this forum is experimental in nature, and 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 change 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 others show regional information while others provide regional information on a few models available). We plan to update the forum at the end of the year.

Participating Models: NCEP CFSv2, GMAO GCMv1, ECPC GSM, CCSM3, COAPS GSM

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Members/Day</th>
<th>When Initiated</th>
<th>Coupled to Ocean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCEP CFS</td>
<td>10</td>
<td>15-25 June</td>
<td>Yes</td>
</tr>
<tr>
<td>COAPS GSM</td>
<td>6</td>
<td>June</td>
<td>No</td>
</tr>
<tr>
<td>CCSM3</td>
<td>6</td>
<td>July</td>
<td>Yes</td>
</tr>
<tr>
<td>GMAO GCMv1</td>
<td>18</td>
<td>July</td>
<td>Yes</td>
</tr>
<tr>
<td>ECPC GSM</td>
<td>12</td>
<td>July</td>
<td>No</td>
</tr>
</tbody>
</table>

Variables: Sea Surface Temperature, 700mb ECPC GSM, 500mb ECPC GSM, Precipitation, Surface AIR Temperature, Atlantic Hurricane Outlook

Source: NOAA
Leaft Update: June 26, 2010 (Initial Conditions: June 14 - June 23)
Note: Areas in gray masked for lack of hindcast skill
IASCLIP Forecast Forum (IFF)

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. 8). 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 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 CFSv2, GMAO GCMv1, ECPC GSM, CCSM3, COAPS GSM

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

Current Conditions | Upcoming Forecast | Consensus Forecast

<table>
<thead>
<tr>
<th>Feature</th>
<th>NCEP CFS</th>
<th>COAPS GSM</th>
<th>CCSM3</th>
<th>GMAO GCMv1</th>
<th>ECPC GSM</th>
<th>Consensus</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWP area anomaly</td>
<td>Large</td>
<td>N/A (uncoupled)</td>
<td>Large</td>
<td>Large</td>
<td>Large</td>
<td>Large</td>
</tr>
<tr>
<td>Strength of the Caribbean Low level Jet</td>
<td>Weakened</td>
<td>-</td>
<td>Weakened</td>
<td>Weakened</td>
<td>Weakened</td>
<td>Weakened</td>
</tr>
<tr>
<td>Mexican Rainfall</td>
<td>Weak</td>
<td>-</td>
<td>Weak</td>
<td>Weak</td>
<td>Weak</td>
<td>Weak</td>
</tr>
<tr>
<td>Strength of the North Atlantic Subtropical High</td>
<td>Weak</td>
<td>-</td>
<td>Weak</td>
<td>Weak</td>
<td>Weak</td>
<td>Weak</td>
</tr>
<tr>
<td>Mid-west dry or wet?</td>
<td>Dry</td>
<td>-</td>
<td>Dry</td>
<td>Dry</td>
<td>Dry</td>
<td>Dry</td>
</tr>
<tr>
<td>North American Seasonal rainfall anomaly?</td>
<td>Dry</td>
<td>-</td>
<td>Dry</td>
<td>Dry</td>
<td>Dry</td>
<td>Dry</td>
</tr>
<tr>
<td>Tornado activity in the Tornado alley</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vertical shear in the MDR</td>
<td>Weak</td>
<td>-</td>
<td>Weak</td>
<td>Weak</td>
<td>Weak</td>
<td>Weak</td>
</tr>
<tr>
<td>Atlantic tropical cyclone activity</td>
<td>-</td>
<td>Strong</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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:

Climatological area of 28.5 isotherm is shaded in red and the contour of the 28.5 isotherm for all ensemble members. The ensembles include 6 members/day.

View Comments | Add Comment | FAQs | Student Credits
IPCC-AR4: The JAS climatological mean SST

Only two models (ECAM5 & UKMO) get a reasonable WHWP

Same models get the best precip
Lack of GPS-reported T(z) profiles in the IAS (1999-2005)
Caribbean soundings (compared to San Juan)

Radiosonde reception is "non-uniform"
2010 trips to Caribbean Region

• **Trips completed** to Colombia, D.Republic & Barbados, planned for Bahamas, Jamaica, Central America & Cuba.

  – **Objectives:** (a) inform regional institutions about IASCLIP; (b) learn about their perspectives & concerns; (c) obtain cooperation on data and observations.

  – **Colombia:** (a) improve availability of real-time data streams; (b) 1-2 radiosonde stations and several surface met stations on small islands; (c) deploy XBTs & drifters on monthly resupply cruises.

  – **Dominican Republic:** (a) they are expanding their precip network; (b) they want to improve radiosondes; (c) they are digitizing data archives.

  – **Anglophone Caribbean:** (a) Climate Outlook Forum (Barbados, Lisa Goddard); (b) main concerns are TCs & sea level rise; (c) already engaged with IASCLIP concept.

• **Reports found on IASCLIP web page** ([www.eol.ucar.edu/projects/iasclip](http://www.eol.ucar.edu/projects/iasclip))
Small islands in Caribbean region — a unique opportunity

- 4 NDBC met buoys - add $T(z)$
- Sounding stations – reinforce
- Small islands – met sensors
Colombian islands...note facilities and logistical arrangements
Current NDBC buoy array - Caribbean

Next Generation Buoy
Multi-purpose / Multi-configurable Platform

Payload Tube + Payload
Aluminum Tower (7'-5") with Wind Fin, Self Powered O+1 light and Radar Reflector
Removable Fiberglass Power Well (24" SQ x 30" Deep)
Gilman Foam Hull (7'-6" dia)* with Aluminum Upper + Lower Frames with SS Tie Rods
Stainless Steel 4 Leg Bridle
# IASCLIP Governing structure

**Science Steering Committee (SSC)**  
- David Enfield (AOML, chair)  
- Art Douglas (Creighton, co-chair)  
- Lisa Goddard (IRI)  
- Kingtse Mo (NCEP)  
- Mike Douglas (NSSL)  
- Vasu Misra (COLA)

**IASCLIP Advisory Panel**  
- Wayne Higgins (NCEP)  
- Siegfried Schubert (NASA)  
- Hugo Berbery (UMD)  
- Bob Weisberg (USF)  
- Frank Marks (AOML-HRD)

## WG-A (Modeling & Diagnostics)
- Vasu Misra (COLA, chair)  
- Kingtse Mo (NCEP, co-chair)  
- Ben Kirtman (RSMAS)  
- Brian Mapes (RSMAS)  
- Chunzai Wang (AOML)  
- Rong Fu (GIT)  
- Jae Schenm (NCEP)  
- Sin Chan Chou (CPTEC)

## WG-B (Observations)
- Mike Douglas (NSSL, chair)  
- Art Douglas (Creighton, co-chair)  
- Mark Jury (UPRM)  
- Julio Sheinbaum (CICESE)  
- Jason Dunion (AOML)  
- Paquita Zuidema (RSMAS)

## WG-C (Apps & Capacity-Building)
- Eric Alfaro (UCR, chair)  
- Lisa Goddard (IRI, co-chair)  
- Michael Taylor (UWI)  
- Chidong Zhang (RSMAS)  
- Tereza Cavazos (CICESE)  
- Victor Magaña (UNAM)