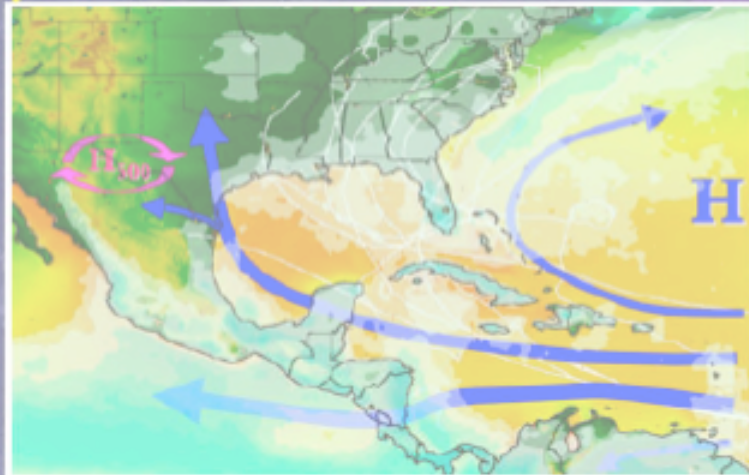# IASCLIP – Working Group on Regional Applications & Outreach

Eric Alfaro (chair), Lisa Goddard (co-chair)

Tereza Cavazos, Victor Magaña,
Chidong, Zhang, Michael Taylor

International requirements

Comments in the IASCLIP Science and Implementation Plan:

"The IAS region is a unique location in the world where so many countries are affected by the same set of climate phenomena."

"International collaboration is pivotal to the success of any climate research program for the IAS region. By the same token, a successful climate research program for the IAS region would yield broad international benefits. "

"Identify the broad IASCLIP community. This would start from interested scientists from the IAS region. They will contact other interested parties in the region. (ii) The **IASCLIP Alliance** will be organized mainly through communications via emails and electronic newsletters. Workshops and special sessions at major international conferences can be considered to convene alliance members on specific issues."

Guiding Questions & Issues

1. What are the likely needs of the IAS region?

2. What are the highest priorities for applications?

3. Which kinds of training would be most useful?

4. Which institutions are key to success?

5. What mechanisms exist for reaching the desired goals?
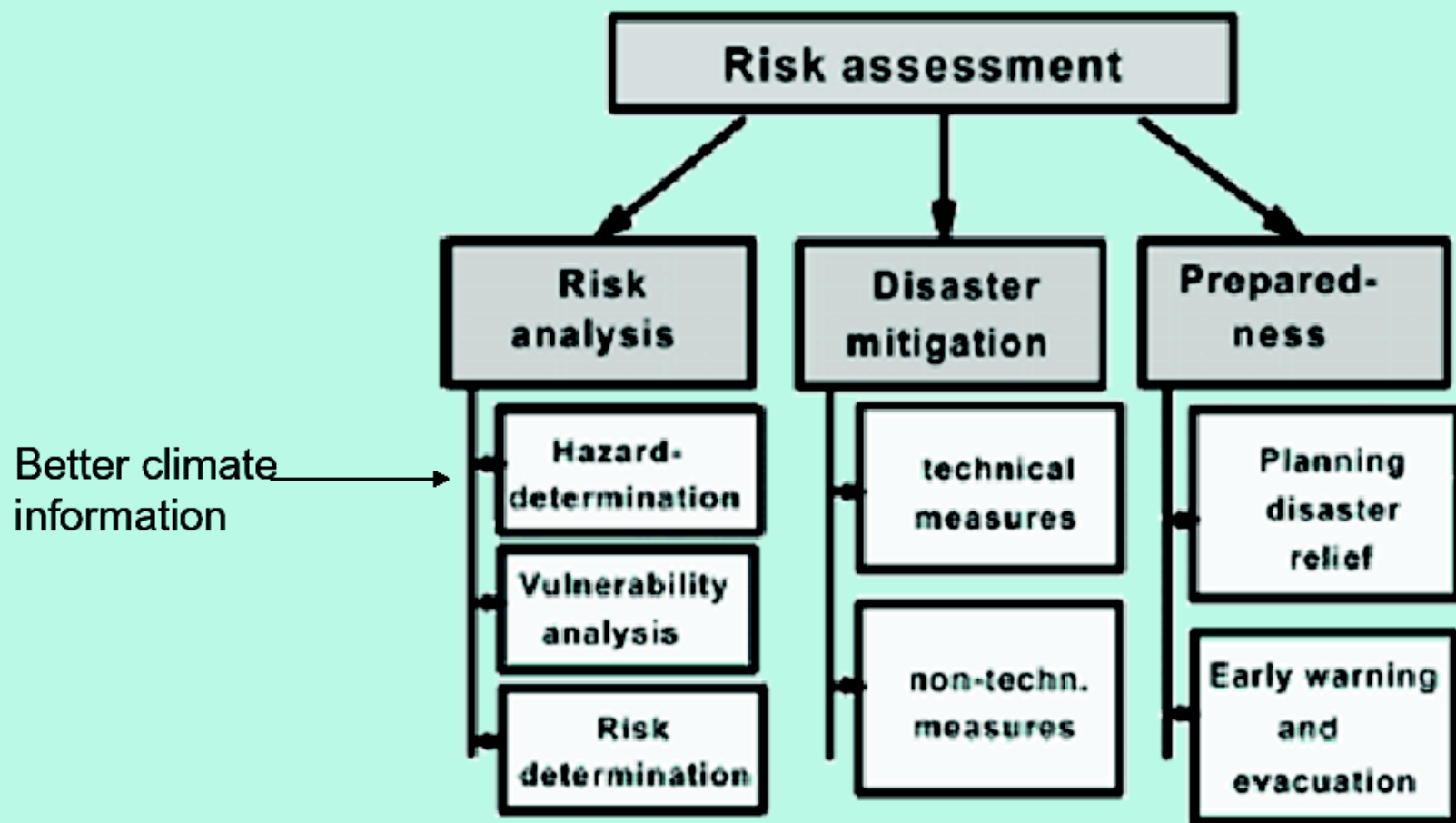
1. Likely Needs of the IAS Region?

- Climate Impacts:
  - Climate variability (hurricanes, drought)
  - Climate change (SLR, hurricanes, drought)
- Societal impacts:
  - Disasters, health (e.g. malaria), coastal environments, agriculture, water

- Rather than anticipate needs, start discussions about the problems.
  - ➔ *IASCLIP ALLIANCE*
- Increase numbers of climate scientists in the region, and increase capacity of institutions and individuals on understanding and predictability of CV&CC
  - Necessity in the region for formal capacity building at professional level, BSc, MSc or PhD especially in Atmosphere and Ocean Sciences.

~ 100 million

35 million

4 million

40.5 million

83 million

total non-Mexico: 162 million

Una adecuada gestión del riesgo requiere, entre otras cosas, de la determinación del peligro y la vulnerabilidad para poder definir acciones de prevención

Risk assessment

Risk analysis

Disaster mitigation

Prepared-ness

Better climate information → Hazard-determination

Vulnerability analysis

Risk determination

technical measures

non-techn. measures

Planning disaster relief

Early warning and evacuation

Source: V. Magaña

Bringing Climate Information In

- Improved understanding of impact of WHWP relative to ENSO

- Communication – e.g. participating in WMO-type trainings

- General tools for "tailoring" of climate information
  - Bias correction (models aren't perfect)

  - Statistical/dynamical approaches
  (e.g. CPT, Wx generators : These still require **capacity building**)

- Flexible and open data

Examples:

  + Some applications, including benefit to forecasts
  + Strengthening institutional policies so societies
  can actually use climate information (e.g. climate-based insurance systems)

Caracas Venezuela Floods and Landslides 1999/2000

View Downstream

Matthew C. Larsen, USGS

Debris-flow scars, remains of houses and two-lane highway on Caribbean coast.

Slide from **USGS**: http://pr.water.usgs.gov/public/venezuela/

Malaria and Dengue Early Warning in Colombia
GEF/World Bank Project: " Integrated National Adaptation Pilot: High Mountain Ecosystems, Colombia's Caribbean Insular Areas, and Human Health (INAP)"

Important figures to understand Colombia's Malaria cases

COLOMBIA REGIONS

North (Atlantic) [R2]
Amazon [R4]
Orinoco [R5]
Mid East (Andean) [R3]
West (Pacific) [R1]

Colombia's Total Malaria Cases: Regional participation 1960-2006

R1 R2 R3 R4 R5
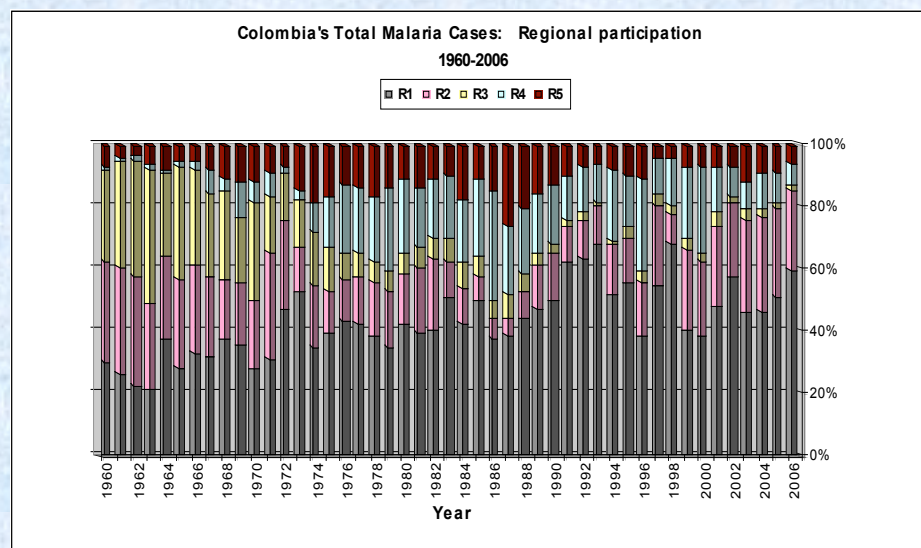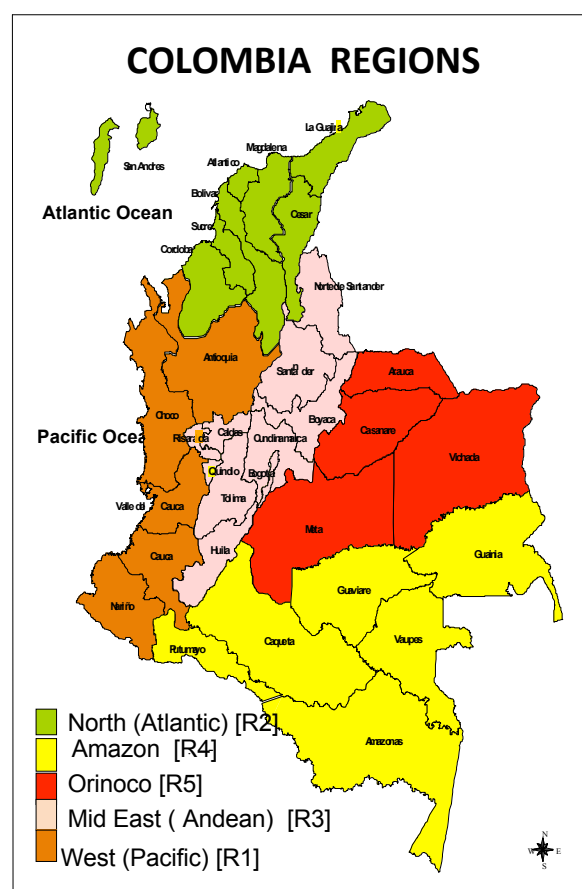
Highlights:
•Downward trend participation of R3 on the total malaria cases from 1960-2006
•High and upward trend participation of R1 and R2 on the total malaria cases from 1960-2006

Source: G. Mantilla

Index Insurance in Central America

- IRI is supporting the research, design, training, and implementation of drought index insurance for rainfed crops in Nicaragua and Honduras

- Partners include World Bank CRMG, IDB, CABEI, FIDES, Zamorano, Governments of Honduras and Nicaragua, and others.

- Some key climate questions in implementation:
  - How does the climate impact crop losses?
  - How can an understanding of regional processes be utilized to design higher quality, lower cost insurance products?
  - How could the forecast be integrated into insurance products?
  - How can short time series data be responsibly used in determining climatology to quantify risk?
  - Can Paleo analysis be used to better quantify risk?

- For more information contact:
Daniel Osgood deo@iri.columbia.edu

Agriculture in central Mexico

Énfasis en los estados
de Guanajuato y Querétaro
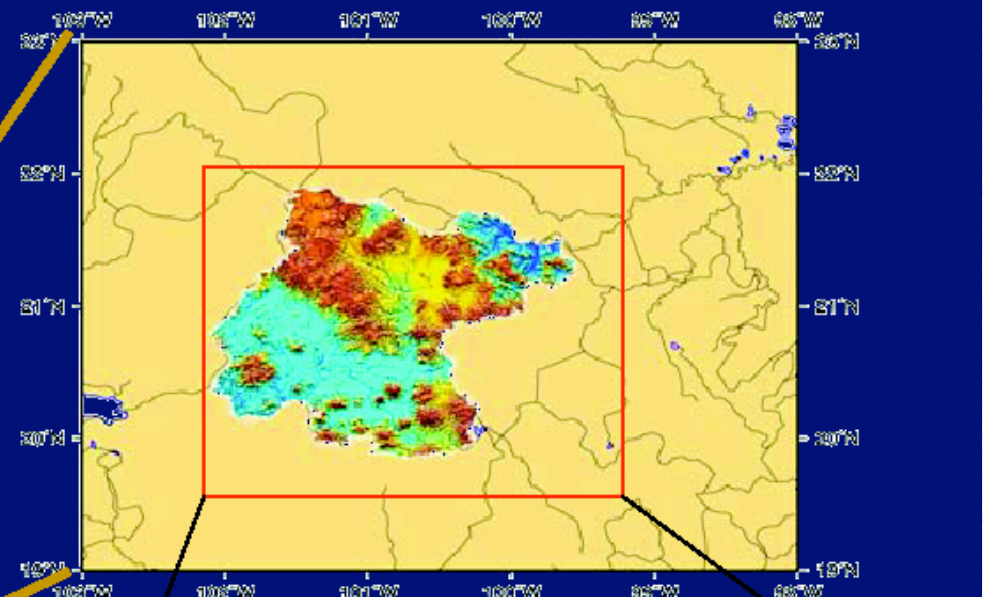
Rainfed agriculture

Source: V. Magaña
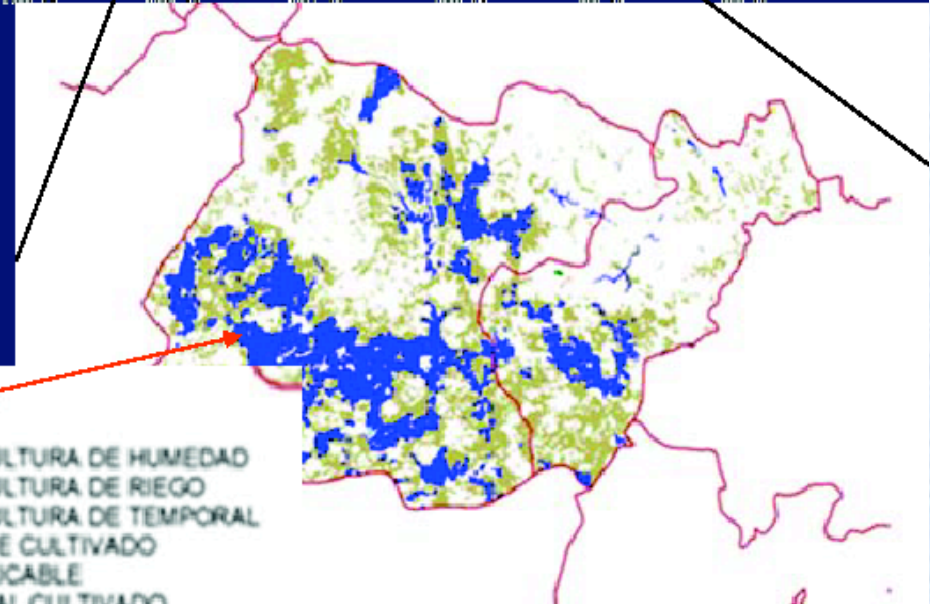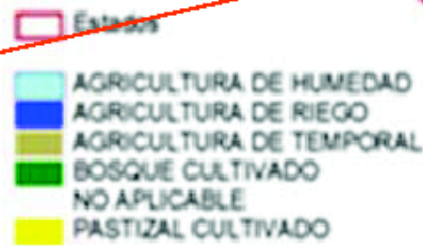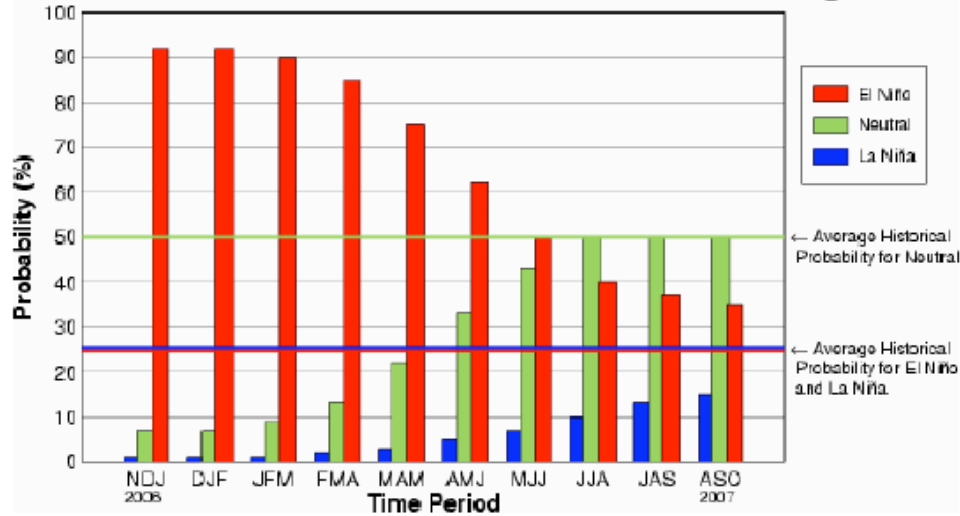
Estados

AGRICULTURA DE HUMEDAD
AGRICULTURA DE RIEGO
AGRICULTURA DE TEMPORAL
BOSQUE CULTIVADO
NO APLICABLE
PASTIZAL CULTIVADO

Basado en INEGI, Serie III de Uso de suelo y vegetación
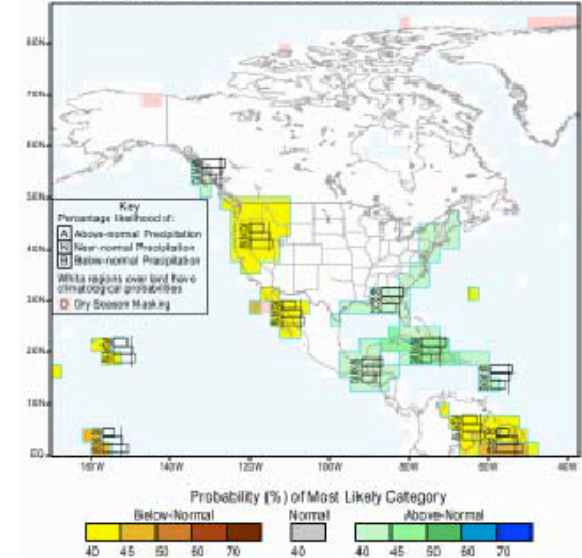
Improved capacity to predict ENSO and regional climate is of major importance in the decision making process in the agricultural sector
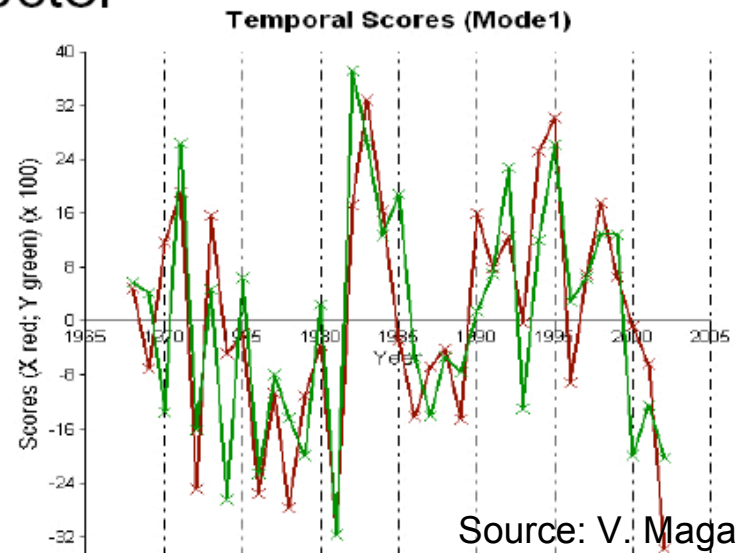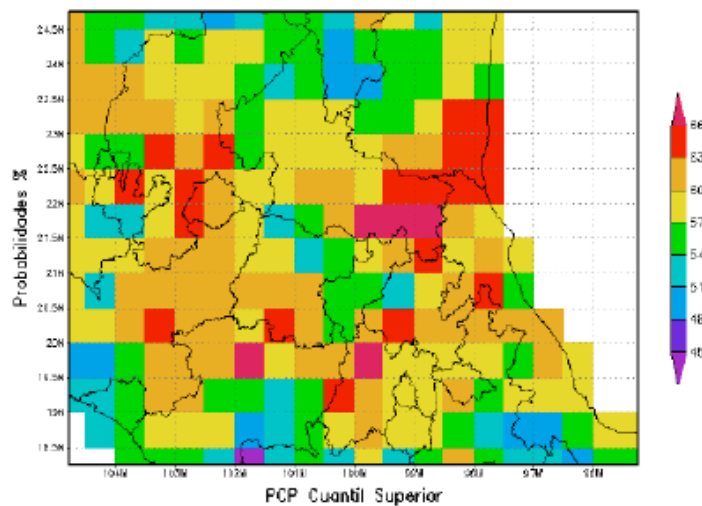
Source: V. Magaña

Gestión de Riesgo Climático en Agricultura

AMENAZA CLIMÁTICA
(Mapas de probabilidad de condición climática por encima o por debajo de un umbral
Datos meteorológicos de estación o malla
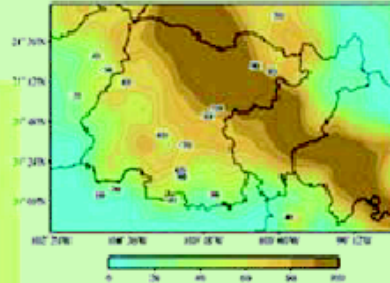
RIESGO CLIMÁTICO

Probabilidad de que dada una amenaza, se presenten pérdidas dada un nivel de vulnerabilidad
P(E1|E2)
Construida a partir de la historia de rendimientos o áreas siniestradas en cada lugar (datos SIACON O AGROASEMEX)
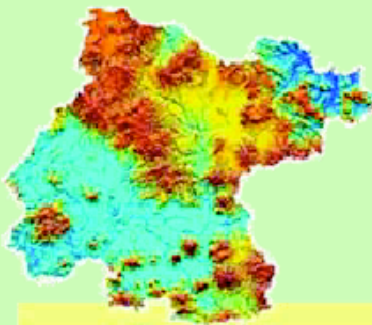
VULNERABILIDAD
Probabilidad de impactos negativos en agricultura resultado de diversos factores como son pérdida de suelos, malos manejos de cultivo, falta de apoyos, envejecimiento o migración

% de la Superficie
3.69 - 20.32
20.32 - 27.69
27.69 - 42.71
42.71 - 66.38
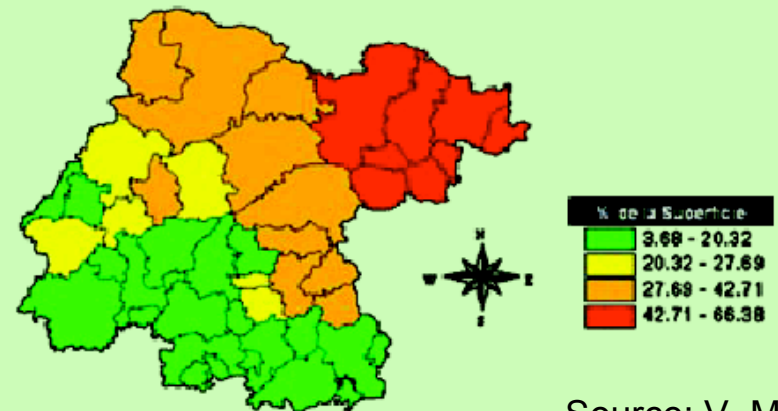
Source: V. Magaña

Relación del número de incendios y precipitación. Tlaxcala. Periodo 1991-2001

Source: V. Magaña
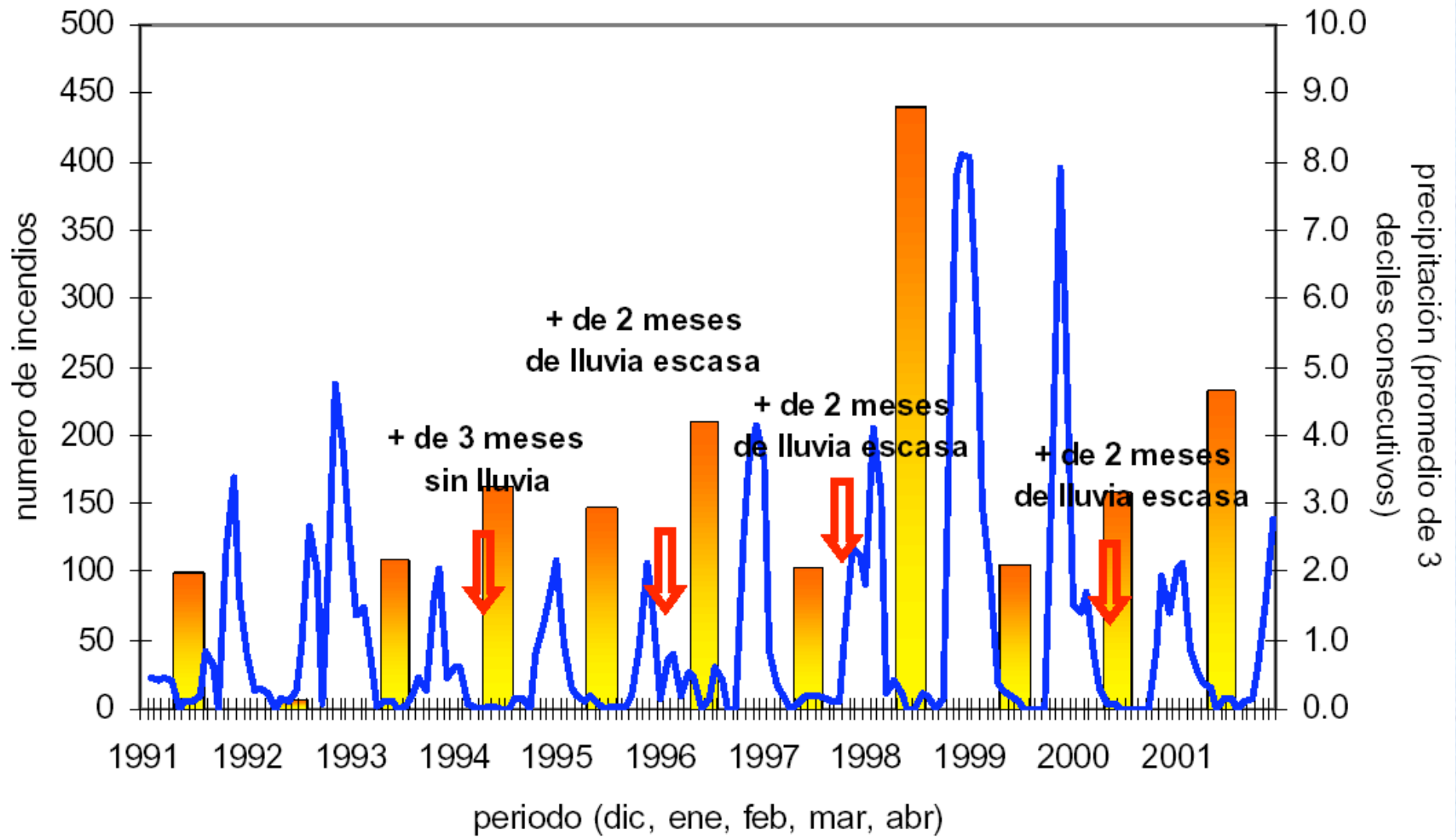
2. Highest Priorities for Applications?

- Climate Prediction across time and space scales.
  - Extreme events (tropical cyclones trajectories & landfall risk, cold surges, droughts, etc.)
  - Downscaling (numerical and/or statistical), it also would address in a more proper way the impacts study of main features in which IASCLIP will focus.
  - Climate change (drought, sea level rise/storm surges)

- Establishing communication networks
  - From climate science/prediction to climate risk management/policy (*IASCLIP ALLIANCE*)

3. Most Useful Training?

List below concerns training on climate…
Climate scientists could learn from sectoral or social professionals also.

- Academic interchange (researchers and students)

- Workshops with RCOFs (e.g. Climate, Media, Sectoral)

- WMO CLIPS training and other focused workshops (e.g. IAI RCNs, IRI CPT)

4. Key Institutions for Success?

- WMO-Regional Meteorological Training Centers (RMTC), (e.g. University of Costa Rica and the Center in Barbados)

- Universities in the region with academic programs that finish with a thesis elaboration in atmosphere and ocean sciences at graduate and/or non graduate level (e.g. University of Costa Rica, University of West Indies, University of Puerto Rico, UNAM, CICESE, etc)

- Regional mechanisms (e.g. Central American Integration System, SICA; and Inter-American Institute for Climate Change Research,IAI)

- Regional climate centers (e.g. CATHALAC, CIIFEN)

- International research centers (e.g. IRI)

- National, international, and non-governmental agencies tasked with climate risk management/policy/decisions (e.g. IFRC; ministries of health, agriculture, etc.)

Who are the potential players?
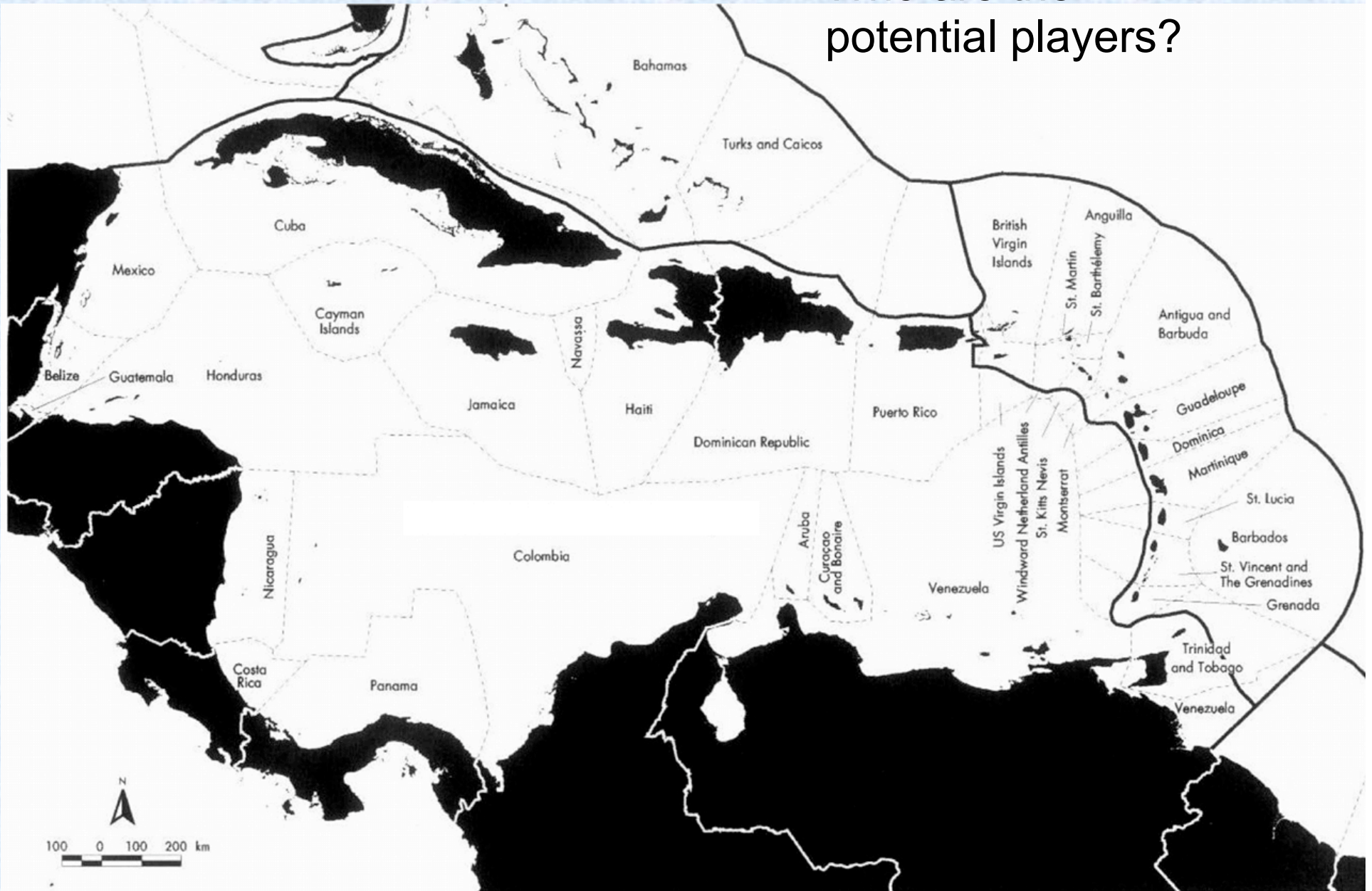
Regional Climate Outlook Forums
in the Caribbean

1st Caribbean RCOF: Kingston, Jamaica, May 1998
   (2 more since then – 1999, 2000)

Sponsors included the:

- International Research Institute for Climate and Society (IRI)

- U.S. Agency for International Development through its Office of Foreign
   Disasters Assistance (USAID-OFDA)

- The World Meteorological Organization (WMO)

- The Inter-American Institute for Global Change Research (IAI)

- National Oceanic and Atmospheric Administration (NOAA-OGP)

- Regional institutions such as the Caribbean Institute of Meteorology and
   Hydrology (CIMH).

Regional Climate Outlook Forums for Central America

XXVII Foro Climático de América Central held May 2009

- www.insivumeh.gob.gt
- www.hydromet.gov.bz
- www.snet.gob.sv
- www.smn.gob.hn
- www.imn.ac.cr
- www.etesa.com.pa
- www.hidromet.com.pa
- www.ineter.gob.ni

PERSPECTIVA CLIMATICA PARA AMERICA CENTRAL
MAYO-JULIO 2009
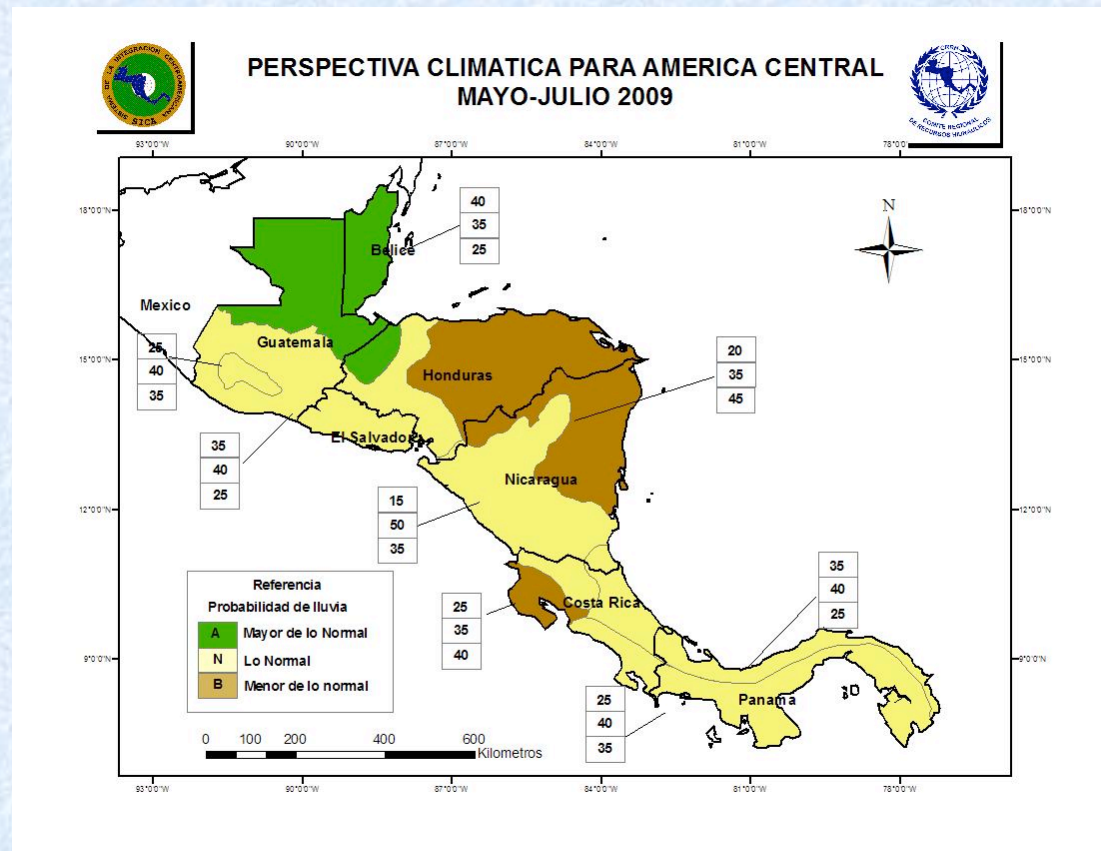
Regional Climate Centers

- e.g. **CIIFEN**

  Training regional NMHSs to produce more localized, probabilistic seasonal forecasts using CPT and recent model predictions together with observations

PRONÓSTICO ESTACIONAL OESTE DE SUDAMÉRICA
Probabilidades de Lluvia May-Jul 2009
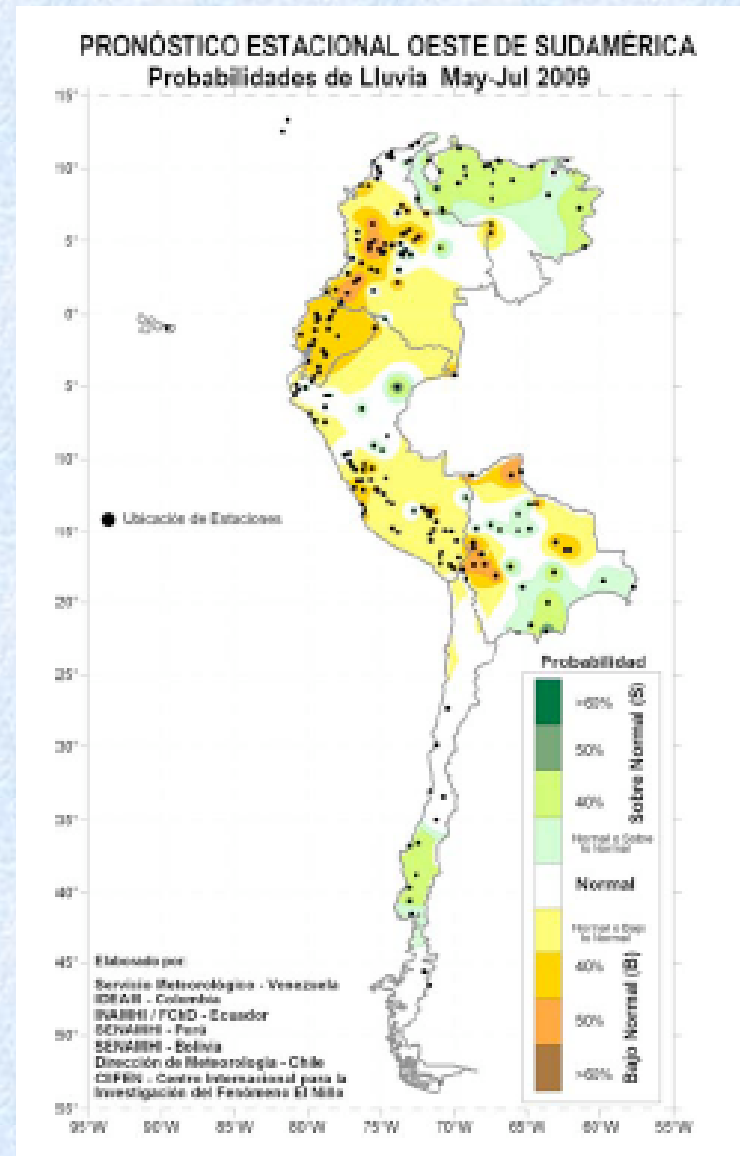
Int'l Climate Centers/Boundary Organizations

IRI Seasonal Temperature *Flexible* Forecast

Longitude 122.5W Latitude 40N lead 3.5 months start 0000 1 May — Probability of Exceedance
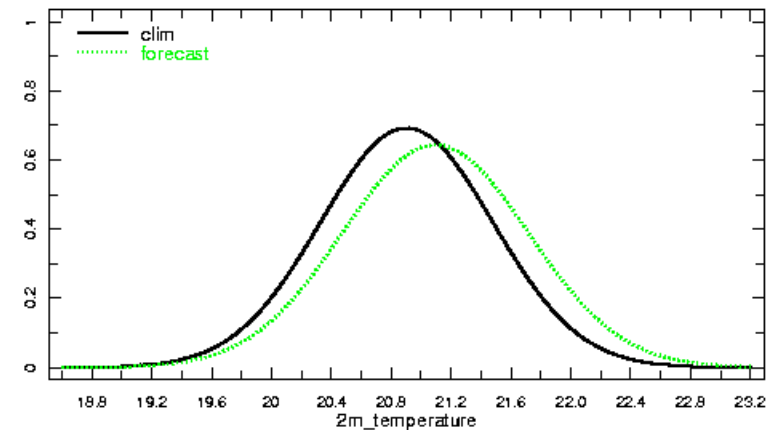
Longitude 122.5W Latitude 40N lead 3.5 months start 0000 1 May — Probability Distribution

1-2 Jun

Non-Governmental Organizations

Early-warning, early-action. Science meets the Federation.

"Improved early warning can have a significant impact on a more strategic approach to disaster response."
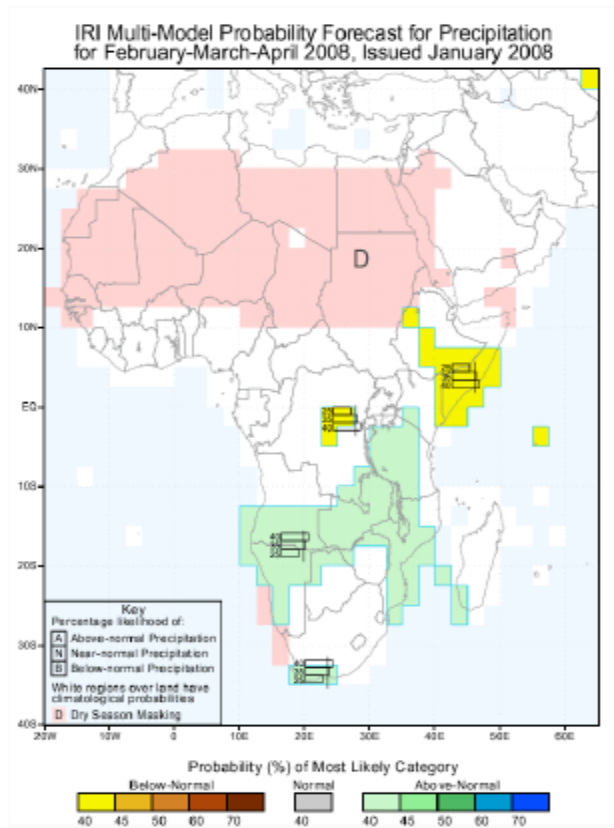
http://iridl.ldeo.columbia.edu/maproom/.IFRC/

Emergency appeal

International Federation
of Red Cross and Red Crescent Societies

West and Central Africa: Flood preparedness

Emergency appeal n° MDR61003
11 July 2008

This preliminary Emergency Appeal seeks CHF 750,000 (USD 731,134 or EUR 462,475) in cash, kind, or services to support the National Societies of West and Central Africa to assist 47,500 beneficiaries.

CHF 483,047 has been allocated from the Federation's Disaster Relief Emergency Fund (DREF) to start the planned activities. Discussions are currently taking place to reallocate approximately CHF 550,000 remaining from the 2007 West Africa floods appeal to support this appeal. While these discussions are underway, partners are encouraged to provide timely support to this appeal.

Red Cross Volunteer, Lomé, Togo, June, 2008

"Schemes" for Society to Benefit from Climate Predicitons/Projections

1. Technology transfer
2. Development of 'tailored' forecasts and decision support schemes
3. Integrated models to evaluate value of climate information in planning activities

"Good Communication"

"IASCLIP Alliance"
(Capacity building, Model improvements & applications, human capacity)

5. Mechanisms for Reaching Goals?

- Develop means of communication across *Alliance*

  – Dissemination of research (results & in-progress),
  climate observations & attribution, forecasts (maps, tools, etc)

  – Calendar of events (meetings, obs campaigns, funding opportunities)

  – Facilitate networking & points of contact

- Active participation in RCOFs & other WMO-esque trainings

- Funded collaborations

  – IASCLIP-related projects (e.g. supported by NOAA and IAI, possibly
  EU initiatives) and the own local mechanisms that some institutions
  or universities have to facilitate the academic interchange.

IAI Funded Projects in the Region

Landsc... Under C...

Venezue...

Ecosys... Costa ...

Tropi... Costa ... Venezuela, US

Hydrolog... Mexico

Trop... Unde... Mex... *Luis ...*

Spatial ... of Carib... Mexico, ... *Eric Alfa...*

Adapt... for Cli... Guate... US

Sustainable Use & Protection of Coastal Ecosystems

US, Dominican Republic, Jamaica, Puerto Rico

Suggested Emphasis for IASCLIP Applications and Outreach

1) "Good Communication"

- Regional Climate Outlook Forums (RCOFs)
- Active dialog with real-time forecast centers, and regional and int'l climate centers (e.g. CATHALAC, CIIFEN, IRI)

2) "IASCLIP Alliance"

- Capacity building
  → Professional training (Summer schools, workshops w/ RCOFs, IAI RCNs)
  → Scholar and student exchange
- Model improvements [for forecasts and applications]
- Information Sharing