NAME 2004 Working Sessions

Tuesday, March 23, Morning Session

NAME 2004 Field Operations

- NAME Project Office activities status; Draft Field Operations Plan; NAME Data Catalog; NAME Forecast Operations Center
- **New Action Items:**
  - Sonde requirements (6 actions; several require decisions on additional funding prior to April Tucson meetings)
  - IOP protocols and aircraft flight patterns

NAME 2004 Working Sessions

Tuesday, March 23, Afternoon Session

Status of NAME 2004 EOP

- Instrument Platform Status; IOP Measurement Coordination; Aircraft Operations;
- **New Action items:**
  - NAME 2004 EOP (14 actions; several require decisions on additional funding);
  - Discussed and ranked NAME 04 IOP's (non-aircraft and aircraft related)
  - Distribute VPM7 actions to NAME SWG [these are an update to (and reflect progress on) actions that arose during the March 4th EOP/IOP Coordination meeting in Boulder, Co].

NAME Working Sessions

Wednesday, March 24, Morning Session

NAME Modeling and Data Assimilation Strategy

- Regional Reanalysis; NAMAP2; CPT; Operational Warm Season Prediction issues
- **New Action Items**
  - Guidance is needed on monitoring for NAME04
    - GFS monitoring; operational EDAS; Briefing sequence for NAME04
  - Strategy on NAMAP2 was discussed
    - Build on NAMAP; NAME representative at WGSIP meetings; Observed SST dataset to use
  - Update NAME Modeling and Data Assimilation "White Paper"
    - "NAME Roadmap" – Diagnostics, Model Development, Experimental Prediction (SST & Soil Moisture), Applications (e.g. Hydrology)
    - Joint NAME-MESA modeling activities (Tier 3)
    - Forward to US CLIVAR Pan American Panel
  - Organize team to develop / refine NAME milestones and deliverables

NAME Working Sessions

Wednesday, March 24, Morning Session

Strategy on NAMAP2

- Build on NAMAP (we were loose on b.c.'s; SST product not optimal)
- A NAME "name" to participate in WGSIP meetings to Ben Kirtman
- A US_Mexico precipitation reanalysis from the Unified needs to be completed (Shi, Yarosh, Higgins)
- Guidance for future modeling activity (see Dave's PPT)
  - establish baseline simulations of 2004 summer monsoon season
  - link to model development research;
  - Expand participation (outside U.S. (e.g. Rene Lobato); outside WWB; WGSIP
- Establish baseline simulations for NAME 2004
  - Period JJAS 04? Special IOP runs?
  - Observed SST's (NAME SST prodcut in the GOC?? Intercompare SST products to whatever NAME04 produces (e.g. Douglas' XBT's); leave SST's up to global modelers as a sensitivity experiment)
  - Extend analysis to examine submonthly transient variability
  - Increase emphasis on continental-scale variability (esp. Tier 3)
  - Distributed analysis as opposed to centralized (as in NAMAP)
  - Carry out sensitivity studies (to SST, etc.) or leave such efforts to individual modeling groups.
  - Define specific indices or subregions to examine? For example metrics defined in NAMAP

    Monsoon onset date; afternoon convective peak; amount of nocturnal precip;

NAME Working Sessions

Wednesday, March 24, Morning Session

Strategy on NAMAP2

- Link to model development research
  - Merge or integrate NAMAP-2 with diurnal cycle activity
  - Hence (enhance) focus on the diurnal cycle of precipitation (multi year simulations)

- Robertson (Issues)
  - Regional and phenomenologiucal-focused study of climate predictability; highly relevant to IRI
    - GCM/regional model development
    - Land surface initialization / modeling
    - Atmospheric initialization
    - Identification of statistical predictors
    - Applications (higher order quantities like dry-spell frequency and monsoon "onset date"
    - Response to regional (high resolution) SSTA regional ocean-atmosphere interaction
    - IRI applications over NAME region; Mexican Met service

NAME Strategy (VPM7 Charge)

(1) NAME 2004 is a major field experiment with modeling activity and good links to operational centers (NWS, SMN);

(2) NAME 2004 has a major focus on the diurnal cycle of convection in complex terrain;

(3) Improved monitoring and modeling of the diurnal cycle will go a long way towards improved warm season precipitation forecasts not just for Tier 1, but for Tiers 2 and 3.

NAME Strategy (VPM7 Charge)

(4) The NAME 2004 EOP will not directly address the relative influences of oceanic and continental boundary conditions on NAME Tier 3. However, post-NAME 2004 modeling activities (NAME Roadmap) will address this. NAME Tier 3 boundary should be considered "fuzzy".

(5) A majority of NAME WG members present felt that a VAMOS Modeling Group could help coordinate joint MESA-NAME activities, make sure that the appropriate modelers participate, and facilitate links with operational centers.

NAME ROADMAP

Post-NAME 2004 Activities

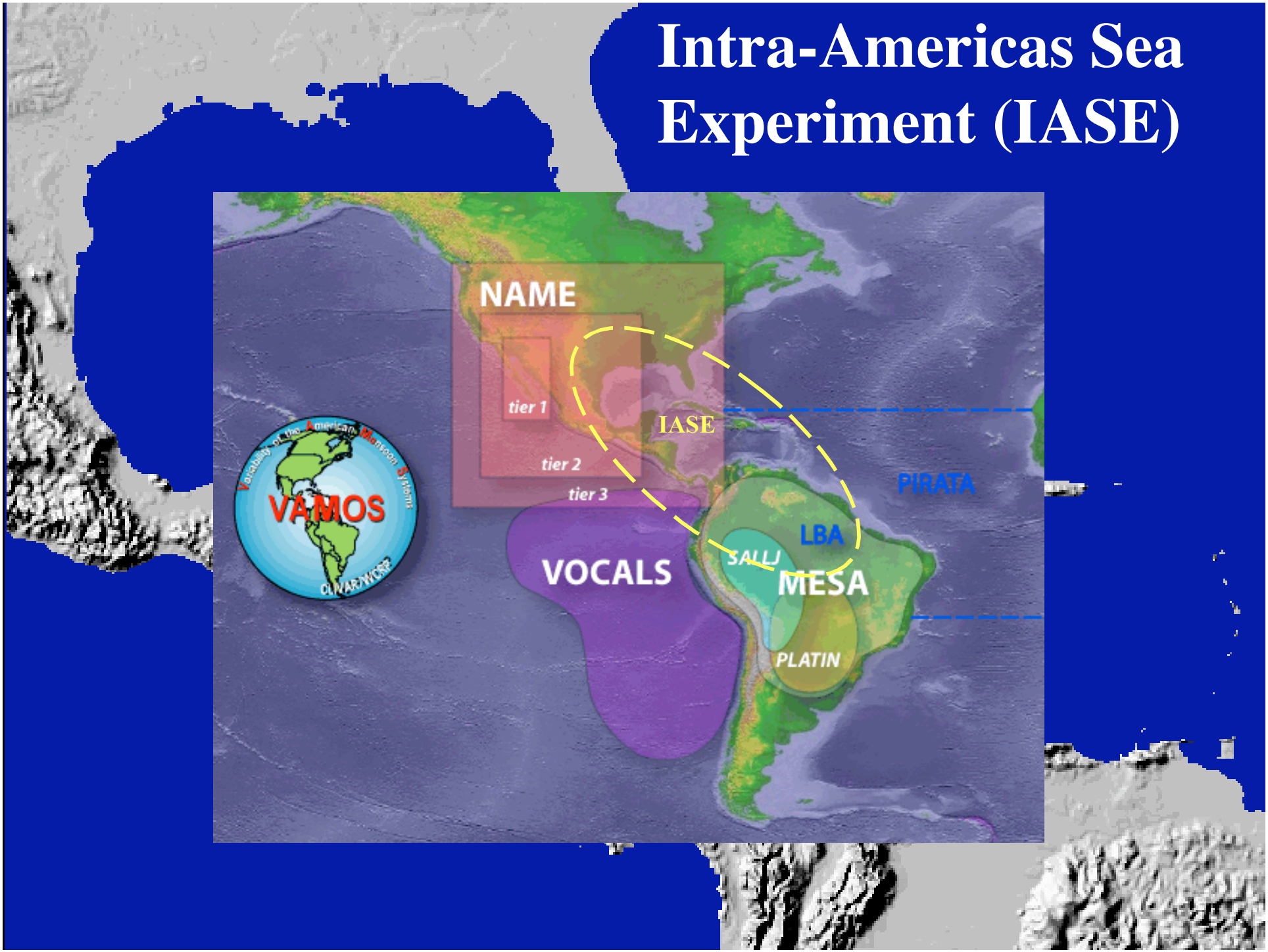
* **Diagnostics and Analysis**
  - NAME 2004 data impact studies (multi-tier synthesis)
  - Reanalysis (global, regional)
* **Model and Forecast System Development**
  - Diurnal Cycle Experiments (Schubert et al.) –multiyear simulations
  - NAMAP2 (NAME04)
  - NAME CPT (combines 1st 2; with focus on diurnal cycle of convection)
* **Experimental Prediction**
  - NAME 2004 case studies / hindcasts
  - Sensitivity to SST and soil moisture (operational centers); joint NAME-MESA activity
  - Subseasonal prediction (e.g. MJO)**;** joint NAME –MESA activity
* **Applications and Product Development**
  - Assessments (Hazards, North American drought monitor)
  - Forecasts (North American seasonal and subseasonal)
  - Applications (Agriculture, Fire WX, Water Resource & Hydrology)

NAME MILESTONES

- **Benchmark and assess current global and regional model simulations of the North American monsoon (2004)**
- **Evaluate the impact of additional data from the NAME 2004 field campaign in operational seasonal forecast models (2006)**
- **Simulate the initiation of regular deep convection (i.e. monsoon onset) to within a week of its observed initiation (2006)**
- **Simulate the diurnal cycle of observed precipitation to within 20% on a monthly averaged basis (2007)**
- **Reproduce the magnitude of the observed afternoon peak of latent and sensible heat fluxes to within 20% on a monthly averaged basis (2008)**

- **Action: Organize a team to develop / refine NAME milestones and deliverables by SWG-7 (late 2004) (Higgins and SWG)**

Intra-Americas Sea Experiment (IASE)



Scientific Problem:

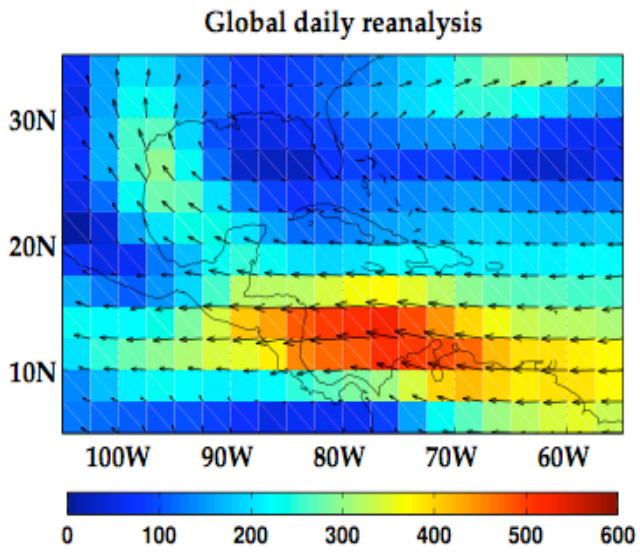
- Water vapor transport by low-level jets from the IAS and western hemispheric warm pool (WHWP) region is critical to precipitation in the Americas.

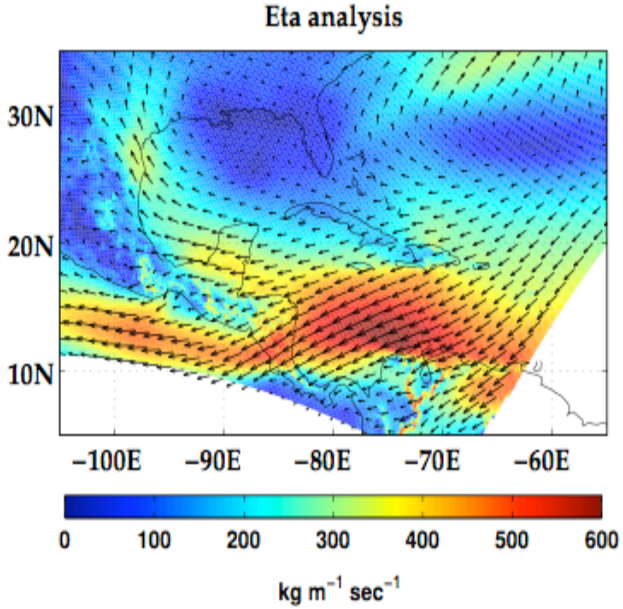
- Mechanisms for the intraseasonal, seasonal and interannual variability of water vapor transport are not well understood.

- The ability of global and regional models to reproduce water vapor transport must be assessed and key physical processes that contribute to model deficiencies must be identified.

- Routine observations in the IAS region and current data assimilation products are inadequate for comprehensive model evaluation and improvement.

Vertically Integrated Water Vapor Flux – July 2002





The comparison shows:

* Large differences (e.g. Yucatan, NE Brazil);
* Artifacts along the boundaries in the ETA analysis;
* Differences in the transport pathway into S America.

A special regional reanalysis covering the IAS domain is required.

Scientists from Columbia, Venezuela, Central America and Caribbean countries should be heavily involved.

Objectives:

1. To determine the relative roles of
    - local physical processes (e.g., air-sea-land interaction, boundary layer, precipitation); and
    - internal dynamics (e.g., the planetary-scale circulation)

    in the variability of water vapor transport from the IAS/WHWP into the Americas.

Objectives:

2. Use the IAS/WHWP as a testbed to

- benchmark our ability to simulate key physical processes that contribute to the variability of water vapor transport in global and regional models;
- identify model deficiencies in the treatment of these processes;
- improve the observing system to collect data necessary to improve the model treatment; and
- assess the impact of improved physical representations on simulations and predictions of precipitation in the Americas.

Milestones:

(A) Model Evaluations (2006 - 2009)

- Document errors and uncertainties in simulated and predicted water vapor transport in the IAS/WHWP;
- Assess their impacts on prediction of precipitation in the Americas;
- Identify deficiencies in the treatment of physical processes responsible for these errors and uncertainties.

(B) Data Collection (2009 - 2010)

- Acquire in situ observations from field experiments targeting the physical processes responsible for the model errors and uncertainties;
- Make a special regional reanalysis product including the field data and covering the entire IASE domain

Milestones, cont.:

(C) Model Improvement (2010 - 2015)

- Pinpoint and mend model deficiencies in representations of key physical processes based on the field data and special regional reanalysis;
- Assess the impact of improved physical representations on regional and global model performance.

Deliverables:

- Improved understanding of the mechanisms for intraseasonal, seasonal, and interannual variability of water vapor transport in the IAS/WHWP;

- New observations from field experiments and a special regional reanalysis product;

- Quantification of model errors and uncertainties, improvement in representations of key physical processes, and assessments of the impact of the improvements on prediction of precipitation in the Americas;

- Experience from an international model-observation (climate process) team working on physical processes key to short-term climate variability in a specific region.

Potential PIs:

US:

Diagnostics:

Hugo Berbery (U Maryland), Dave Enfield (NOAA/AOML), Rong Fu (George Tech), Wayne Higgins (NOAA/CPC), Brant Liebmann (NOAA/CDC), Kingtse Mo (NOAA/CPC), Jan and Julia Paegle (U Utah), Chunzhai Wang (NOAA/AOML)

Modeling:

Andy Robertson (IRI), the current NAMAP team, NCEP, NASA, GFDL, NCAR

Field observations:

Bruce Albrecht (U Miami), Mike Douglas (NOAA/NSSL), Chris Fairall (NOAA/ETL),Brian Mapes (NOAA/CDC),Richard Johnson (CSU), Robert Weller (WHOI)

Central and South America:

Jorge Amador (Costa Rica), Ramon Velasquez (Venezuela),
Anthony Chen (Jamaica), Tercio Ambrizzi (Brazil),
Miguel Cortez (Mexico), Rene Lobato (Mexico),
Victor Magana (Mexico), Jose Marengo (Brazil),
Ramon Perez (Cuba)

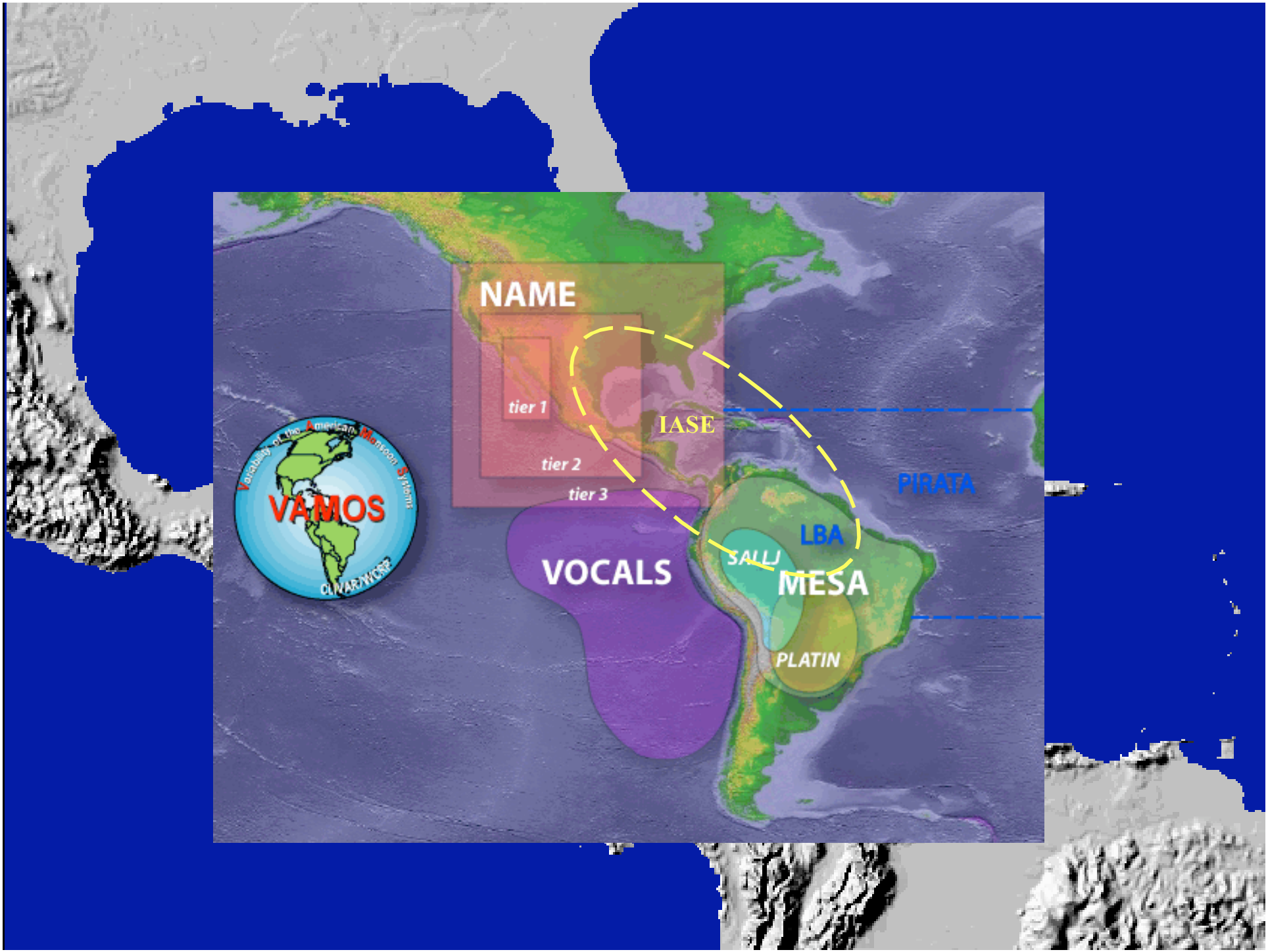
Recommendations:

(1) Invite Dr. Chidong Zhang (chair of IASE) to VPM8 to present IASE Science and Implementation Plan;

(2) After VPM8, VAMOS Panel to review S&IP and determine whether IASE should become an official VAMOS program.

(3) Provide preliminary advice to the IASE:

- **Revisit the name of the program**
- **Broaden the scope a bit (beyond vapor transport) and consider linkages to MESA and NAME.**


NAME
tier 1
tier 2
tier 3
IASE
PIRATA
LBA
SALLJ
VOCALS
MESA
PLATIN
VAMOS
Variability of the American Monsoon Systems
CLIVAR/MCSP