

U.S. CLIVAR Summit

July 23-25, 2007

Annapolis, MD

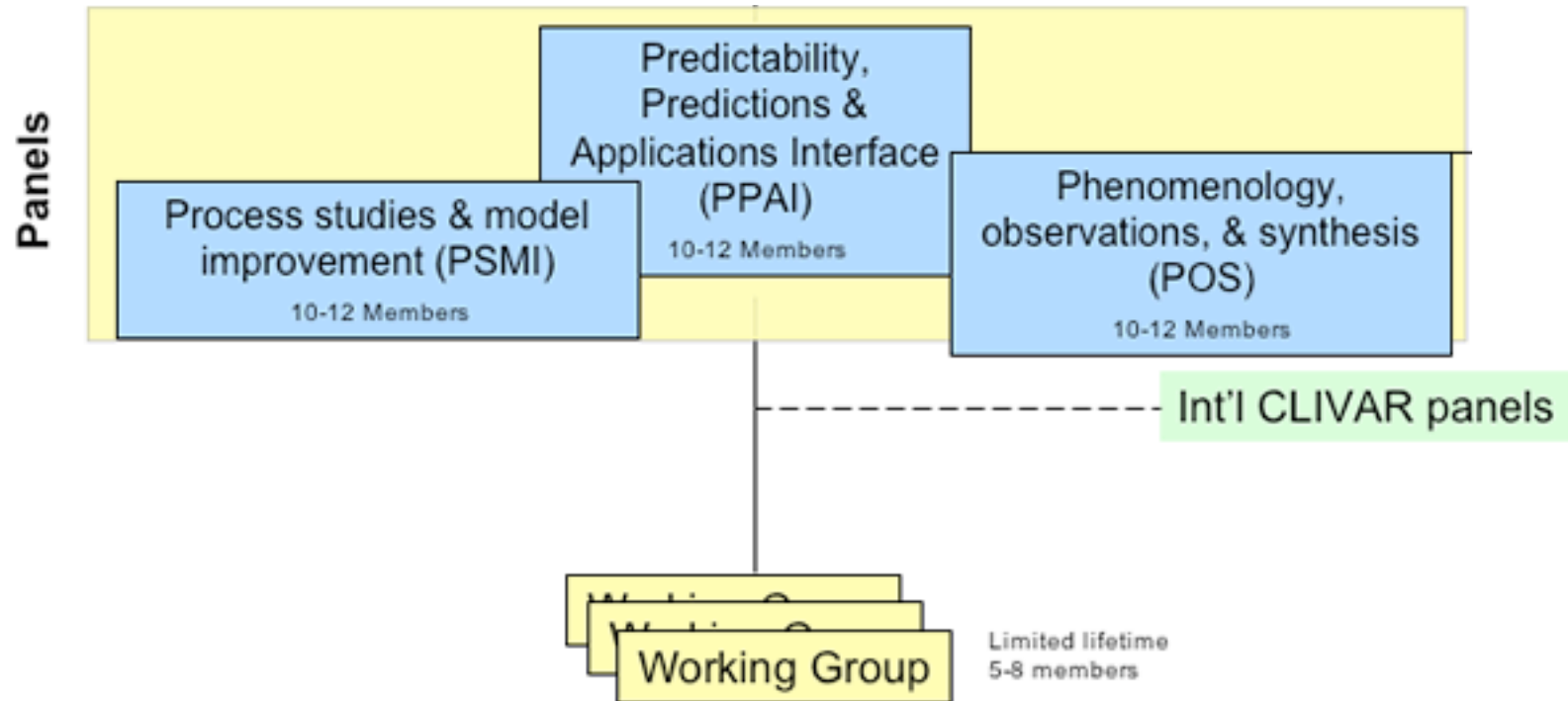
U.S. CLIVAR Report

Highlights from the Panels

U.S. CLIVAR, thru its Committee and Panels, serves to guide and implement the CLIVAR research program---aimed toward developing a predictive understanding of climate--- in the broad functional goals of i) predictability/prediction; ii) process and model improvement, and iii) phenomena/observations/synthesis. The Panels develop and coordinate research plans and activities, provide input to agency programs, and assess achievement using measurable performance metrics

***US CLIVAR Summit
23-25 July 2007***

U.S. CLIVAR Panels



Process Study & Model Improvement Panel (PSMI)

Co-Chairs: Meghan Cronin & Sonya Legg

Mission: to reduce uncertainties in climate models through an improved understanding and representation of the physical processes governing climate and its variations.

Activities:

- ***Process Studies***
- ***Working Groups***
- ***Climate Process Team***

Implementation Efforts of the PSMI Panel

° Define a Rubric for Best Practices in Conducting Process Studies

- (1) Entrain modelers during the early planning stages of process studies;**
- (2) Create synthesis data sets that can be used as benchmarks for assessing and validating models;**
- (3) Encourage broad data use gathered during the process study by**
 - (a) supporting an open data policy,**
 - (b) developing and ensuring centralized access to all components of the experiment, and**
 - (c) archiving data in a format intended for broad use.**

Implementation Efforts of the PSMI Panel

- *PSMIP assigned 2 liasons to each process study, and sent leadership of all process studies a letter asking for feedback on U.S. CLIVAR 'best practices for process studies'.*

Active&post-field phase:

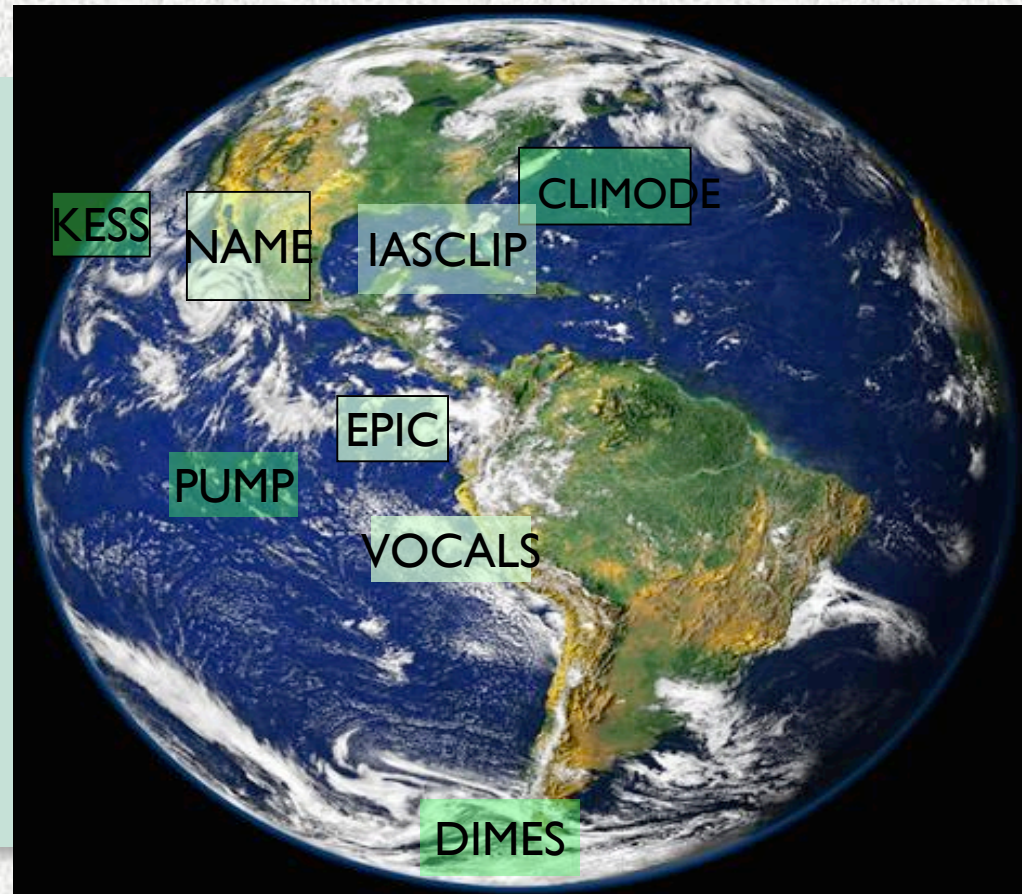
- *EPIC (Zuidema, Cronin)*
- *NAME (Sperber, Zeng)*
- *KESS (Cronin, Joyce)*
- *CLIMODE (Joyce, Ferrari)*

Pre-field phase:

- *DIMES (Ferrari, Joyce)*
- *VOCALS (Zuidema, Flatau)*

Planning phase:

- *mini-PUMP (Large, Cronin)*
- *IASCLIP (Zeng, ?)*



Implementation Efforts of the PSMI Panel

° *Formed a Working Group:*

Western Boundary Current Ocean-Atmosphere Interaction.

1) Terms of Reference Defined

2) Working Group brings together the KESS, CLIMODE and other western boundary current atmosphere-ocean interaction groups for a synthesis of results

PSMI Guidance for Climate Process Teams

Current status:

- Multi-institutional collaborations between model developers and process observationalists/theoreticians/modelers to improve climate model representation of physical processes.
- Two ocean mixing CPTs currently funded until August 2008

Past year's PSMI panel effort

- Identified requirements for successful CPTs from experience with pilot CPTs
- Initiated discussion with modeling centers to identify key processes which would benefit from future CPTs

Immediate Future

- Considering modeling center input, identify topics/process that will engage process-research community& recommend topics for future CPTs

Phenomenology, Observations and Synthesis Panel (POS)

Chair: Mike Alexander

Mission: To improve the understanding of climate variations in the past, present, and future; develop syntheses of critical climate parameters; and sustain/improve the global climate observational system

Activities:

- ***MOC Workshops***
- ***DRICOMP***
- ***Working Groups***

Implementation Efforts of the POS Panel

- ***Encourage Atlantic MOC Workshops at GFDL (2006) and Miami (2007)***

- 1) GFDL workshop assessed Atlantic decadal variability and predictability.
- 2) Miami workshop on ocean observing system needs for the AMOC, findings in upcoming report.

Implementation Efforts of the POS Panel

- ***Coupled model simulations of drought-
DRiCOMP***

- 1) **U.S. CLIVAR Project Office coordinated activity to provide support for research into the physical and dynamical mechanisms leading to drought.**
- 2) **Assess the roles of the oceans and the seasonal cycle in drought, the impacts of drought on water availability, and distinctions between drought and drying.**

DRought In COupled Models Project (DRICOMP)

N. American drought (12)

- SST forcing,
- ENSO,
- soil moisture,
- sfc energy balance,
- land-surface coupling

E. Asia (1):

- SST
- greenhouse gases

Sahel (2):

- SST
- soil moisture,
- vegetation

Tropics (2):

- SST
- ENSO

Central America (1):

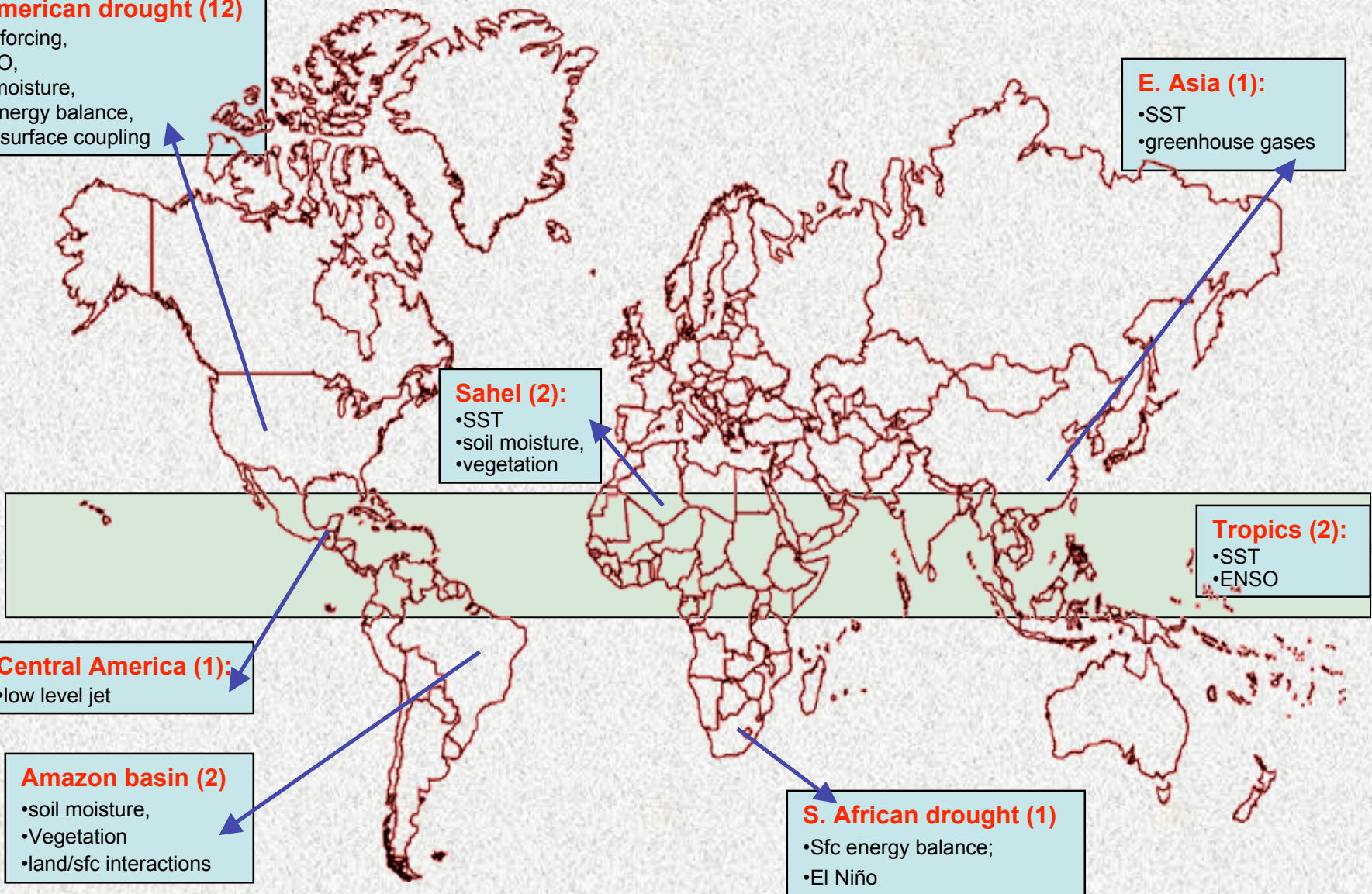
- low level jet

Amazon basin (2)

- soil moisture,
- Vegetation
- land/sfc interactions

S. African drought (1)

- Sfc energy balance;
- El Niño



Implementation Efforts of the POS Panel

° *Formed/Participated in Working Groups:*

Drought working group

MJO working group

Salinity Working group.

Western Boundary Current working group

- 1) Final report from Salinity WG**

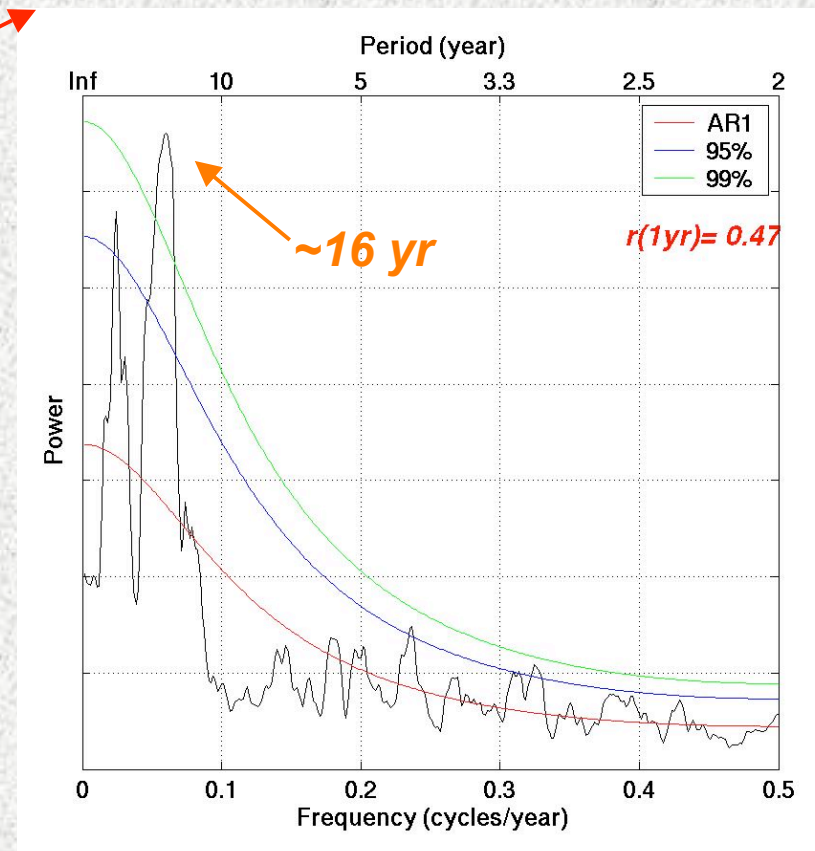
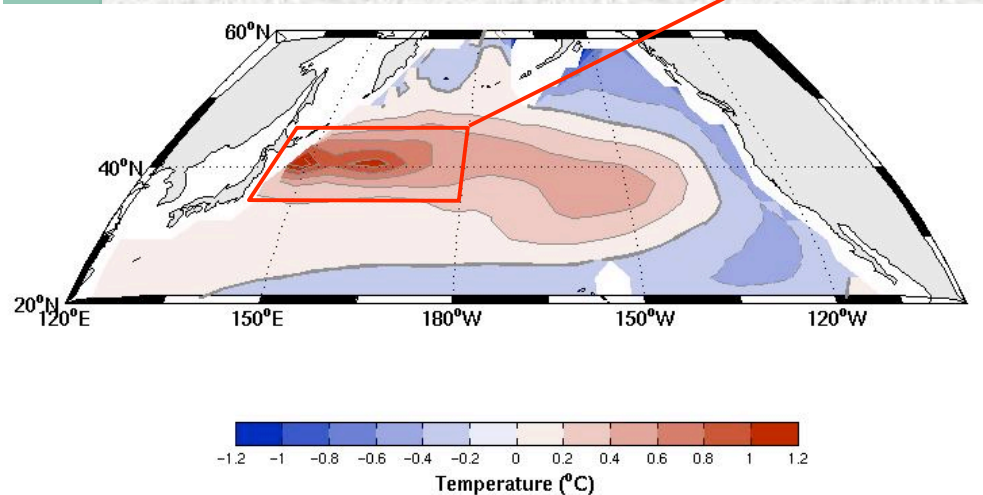
- 2) Drought WG engaged modeling centers (e.g., NCAR) to coordinate future experiments on ocean effects on drought.**

Recent Science Highlights

CCSM2 North Pacific Decadal Variability (CCSM2 control integration: Model Year 350-999)

Winter SST EOF 1 (21%)

Kuroshio Extension SST Index



Kwon and Deser (2007, J. Climate)

Recent Science Highlights

Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America

Richard Seager,^{1*} Mingfang Ting,¹ Isaac Held,^{2,3} Yochanan Kushnir,¹ Jian Lu,⁴
Gabriel Vecchi,² Huei-Ping Huang,¹ Nili Harnik,⁵ Ants Leetmaa,² Ngar-Cheung Lau,^{2,3}
Cuihua Li,¹ Jennifer Velez,¹ Naomi Naik¹

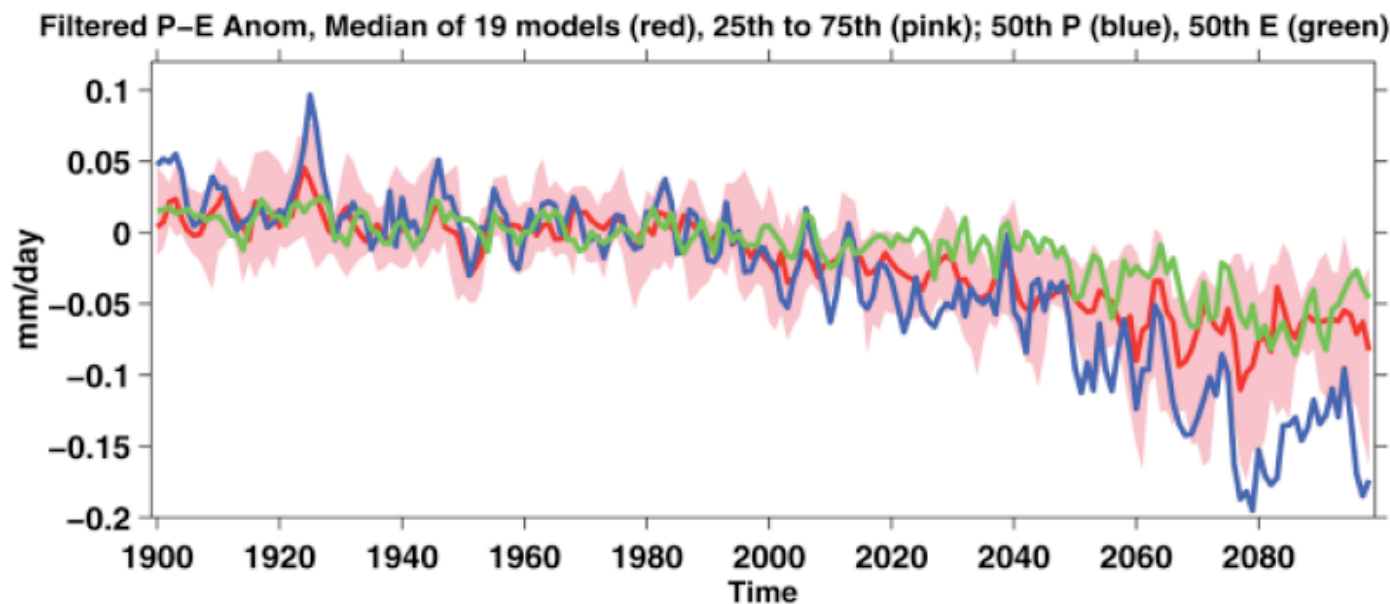


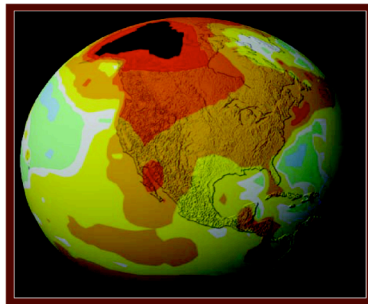
Fig. 1. Modeled changes in annual mean precipitation minus evaporation over the American Southwest (125°W to 95°W and 25°N to 40°N, land areas only), averaged over ensemble members for each of the 19 models. The historical period used known and estimated climate forcings, and the projections used the SResA1B emissions scenario.

Recent Science Highlights

“Past Peak Water in the Southwest”

M Hoerling and J.Eischeid

Southwest
HYDROLOGY
The Resource for Semi-Arid Hydrology
Volume 6/Number 1 January/February 2007

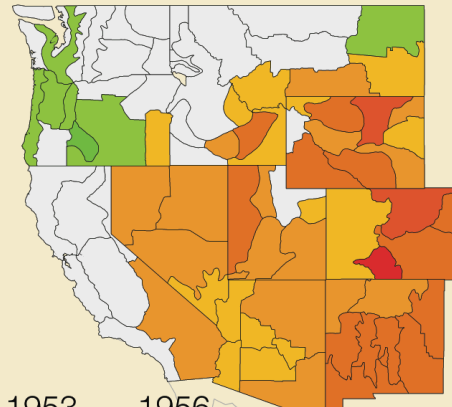


Inconvenient
Hydrology?

Southwest Hydrology
Journal of the Southwest
Hydrology Society
P.O. Box 2100
Flagstaff, AZ 86001-2100

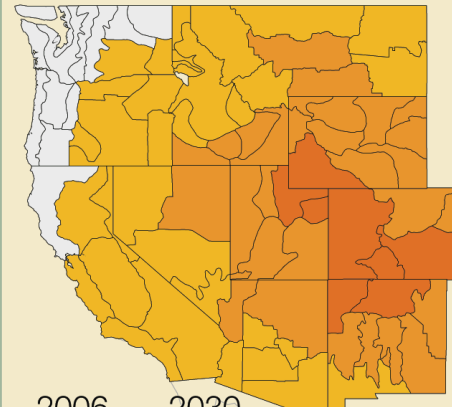
A publication of SWATH, an NSF Science and Technology Center - The University of Arizona

Historical

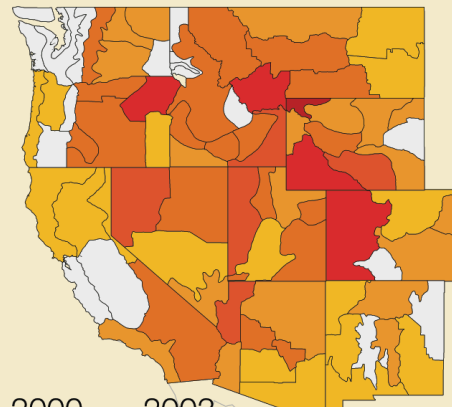


1953 — 1956

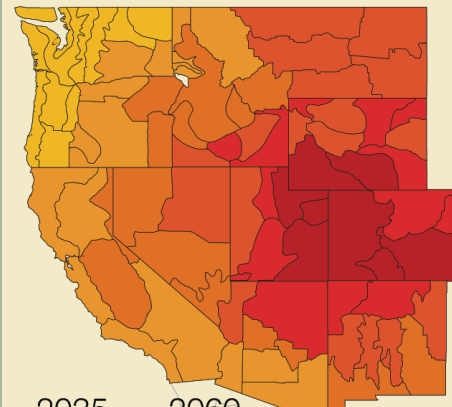
Future



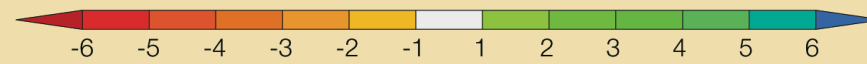
2006 — 2030



2000 — 2003



2035 — 2060



PDSI

Predictions, Predictability, and Applications Interface Panel (PPAI)

Co-Chairs: Lisa Goddard, Alex Hall

Mission: Our mission is to foster improved practices in the provision, validation and uses of climate information and forecasts through coordinated participation within the U.S. and international climate science and applications communities.

Activities:

- ***Best Practices in S/I Prediction***
- ***Predictions/Applications Post-doc Program***
- ***Working Groups***

Implementation Efforts of the PPAI Panel

° *S/I Prediction and Predictability*

1) Two articles in CLIVAR-Variations

(a) Practices in Seasonal-Interannual Climate Prediction

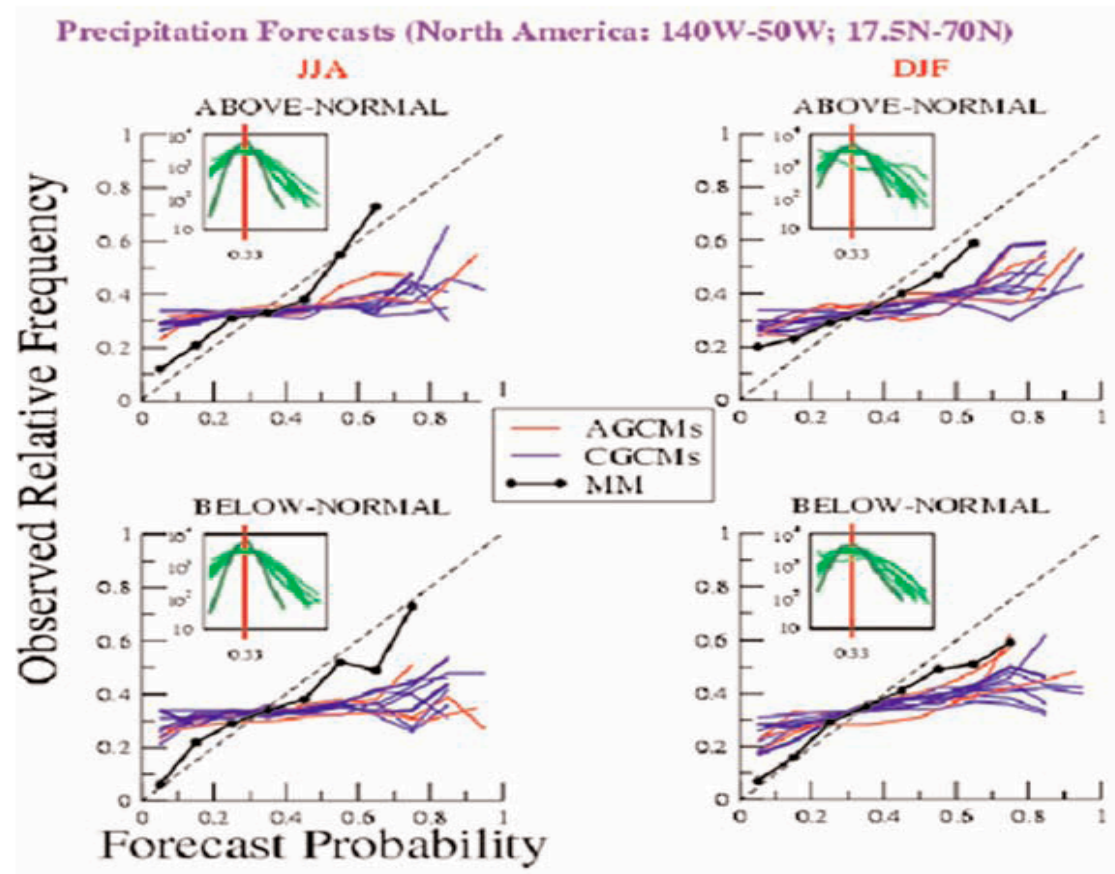
L. Goddard and M. Hoerling

(b) The Predictability of ENSO

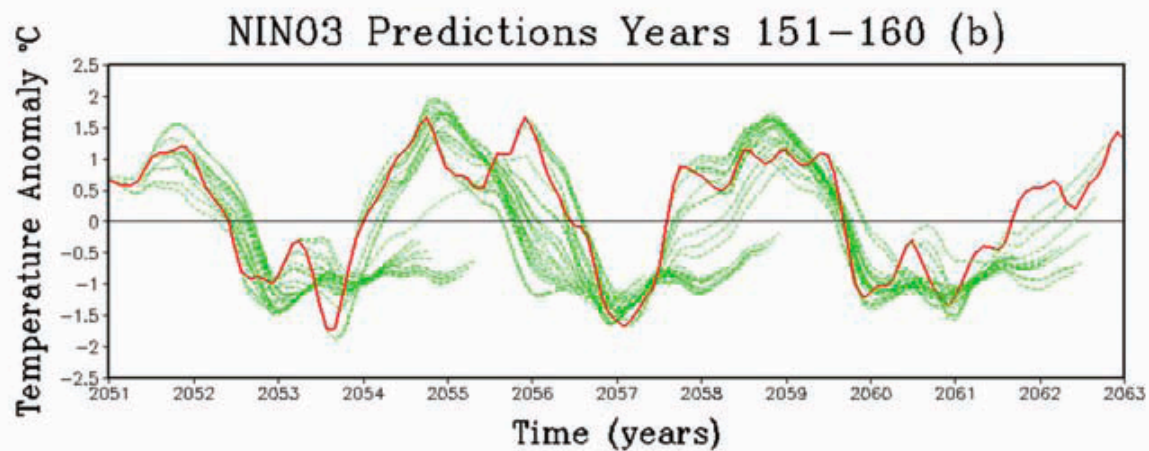
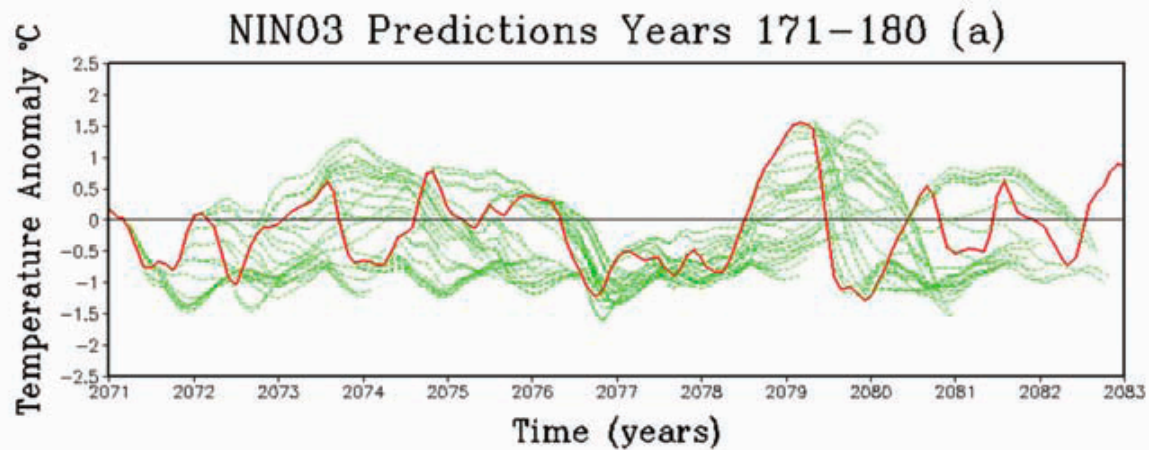
B. Kirtman

2) Participation in *Climate Diagnostics and Predictions Workshop*

° S/I Prediction-- Goddard and Hoerling



° *The Predictability of ENSO- Kirtman*



Implementation Efforts of the PPAI Panel

° *Recommendations from 31st CDPW (BAMS 2007)*

- (1) Periodic assessment of the skill of S/I forecast should be undertaken;**
- (2) Compare operational fcst skill against expected skill based on hindcasts for various prediction methodologies**
- (3) Determine predictability and sources of skill**
- (4) The reliability of S/I forecasts needs to be documented.**
- (5) Routine re-forecasting essential to assess impacts of new methods.**
- (6) Engage potential users of climate information**

Implementation Efforts of the PPAI Panel

° Improving Provision of Climate Information

Climate Prediction Applications Postdoctoral Program (CPAPP)

Goal: *grow the pool of scientists qualified to transfer advances in climate science and climate prediction into climate-related decision frameworks and decision tools.*

Setting: *jointly affiliated between a “Climate Research Institution” and a “Decision Making Institution” with a 2 year tenure*

Thematic areas: *dependent upon annual program announcement, may include such areas as water, agriculture, ecosystems, coastal risk management, hydrometeorological disasters, and energy*

Funding: *1/2 salary from national funding agencies (ie NOAA Climate Office) and 1/2 from “Decision Making Institution”*

Budget: *Initial 3 post doctoral candidates are estimated at 100k/year/postdoc*

Summary

- U.S. CLIVAR gaining wider attention and engaging broader community.
 - Agencies have been responsive.
 - US CLIVAR activities have been more visible and effective.
 - Community is taking note of US CLIVAR activities and engaging in workshops, Working Groups, and other sponsored community activities.
- New membership and leadership on the Panels should lead to increased energy level.
- Need to focus on linkages across Panels and Working Groups.
- Prepare more detailed strategic research strategies to the agencies on key foci.