CLIMAS

Climate Assessment for the Southwest Project

The University of Arizona

# Walking the Talk: *RISA Lessons for CCSP*

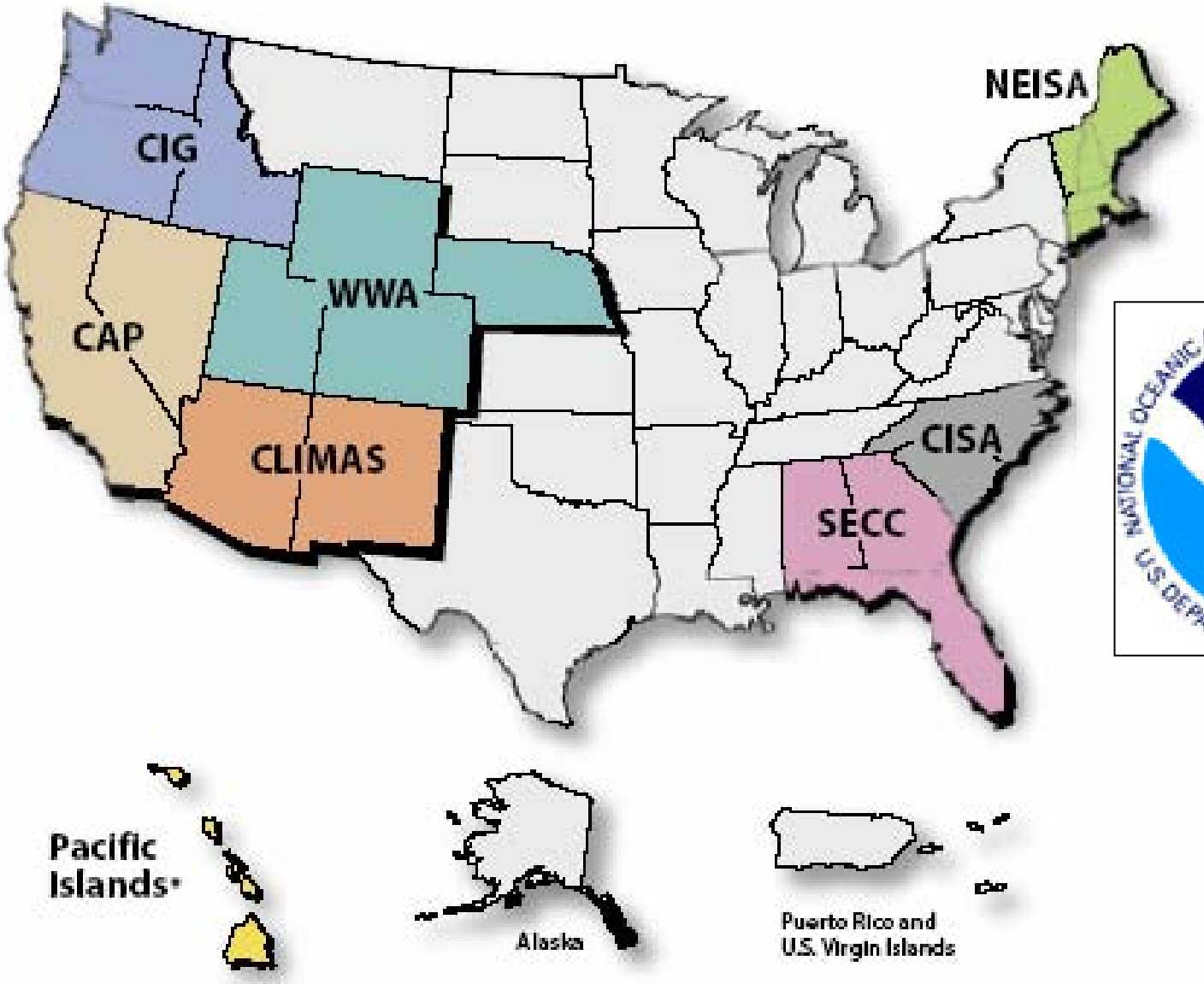
**Gregg Garfin**

Climate Assessment for the Southwest

U.S. Climate Change Science Program

**Climate Science in Support of Decision Making**

**CCSP Workshop** | **14-16 November 2005 Arlington, Virginia**




NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

# THE RISA NETWORK

# In Support of Decision Making

- **Climate science in support of decision-making must address the needs for**
  - Cutting-edge process-based science
  - Interactive web-based decision support tools
  - GIS
  - Modeling and predictions
  - Improved and expanded observations networks
- **Discovery-based science does this well**
  - This is the easy stuff

# It’s the Relationship!


http://www.weddingchannel.com/

# It's the Relationship!

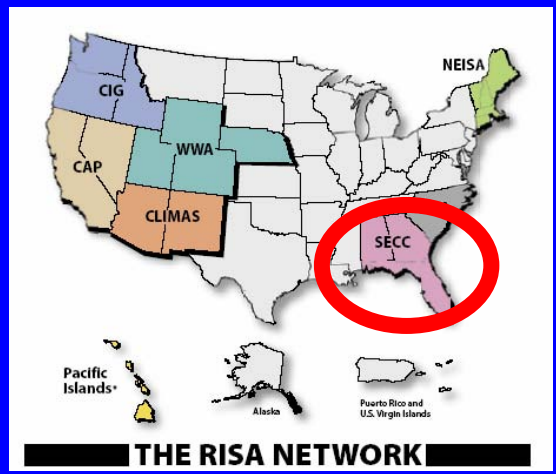
- **From a decisionmaker's viewpoint:**
  - *Trust*
  - *Commitment*
  - *Long-term relationship*


http://www.weddingchannel.com/

# Getting to Know You: Knowledge Exchange

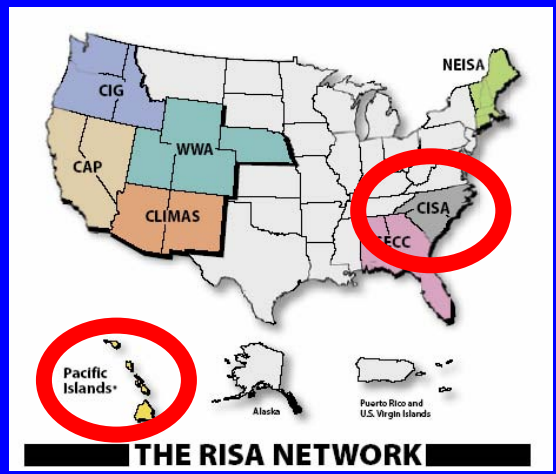
# Needs Assessment

- Timing of decisions
- Scale
- Frequency of delivery
- *Sondeos*
  - What are the variables of interest?
  - Can we model these?
  - Ancillary information?



# Decision Context

- Historical, cultural, socioeconomic factors
- Vulnerability to climate variability and change
- Institutional and legal issues



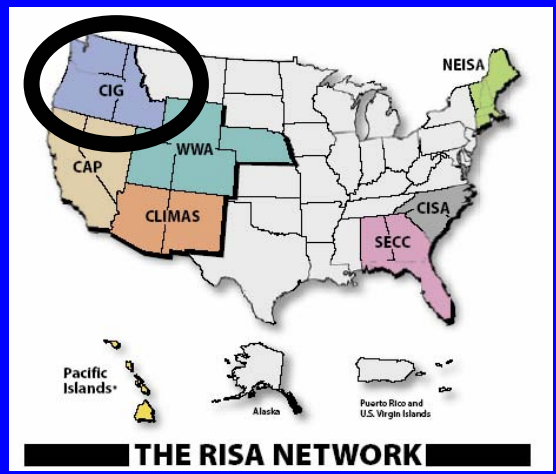
# Dating: Building Capacity

# The Workshop... A One-Night Stand?

- Knowledge transfer
- Feedback
- Increased capacities
  - To use decision support
  - To deliver decision support

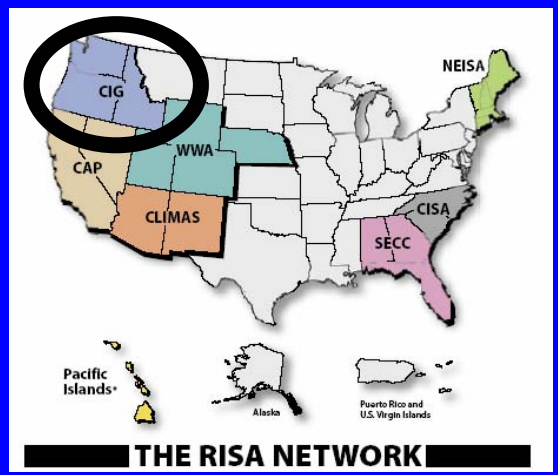
# Sustained Interaction

- CIG annual climate and water resources meetings
  - Focused on improving use of seasonal forecasts, ENSO variability, regimes, trends, climate changes
    - User lack of knowledge
    - Problems with forecasts



# Sustained Interaction

- **DROUGHT:** 2005 workshops on state water outlook + drought planning



# Sustained Interaction: The Payoff

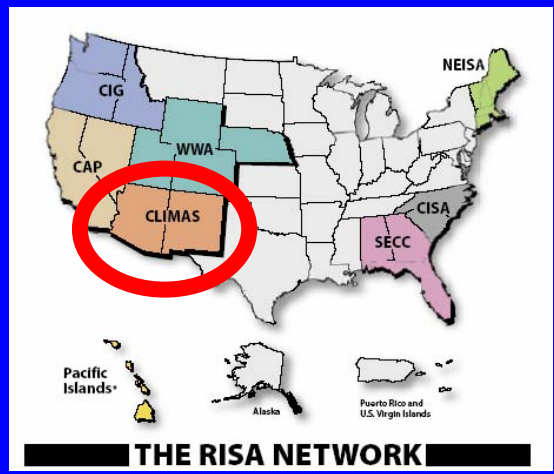
- Beatles = overnight sensation
  - **after 5 years of small clubs and beer halls!**

Photos: Google Image Search

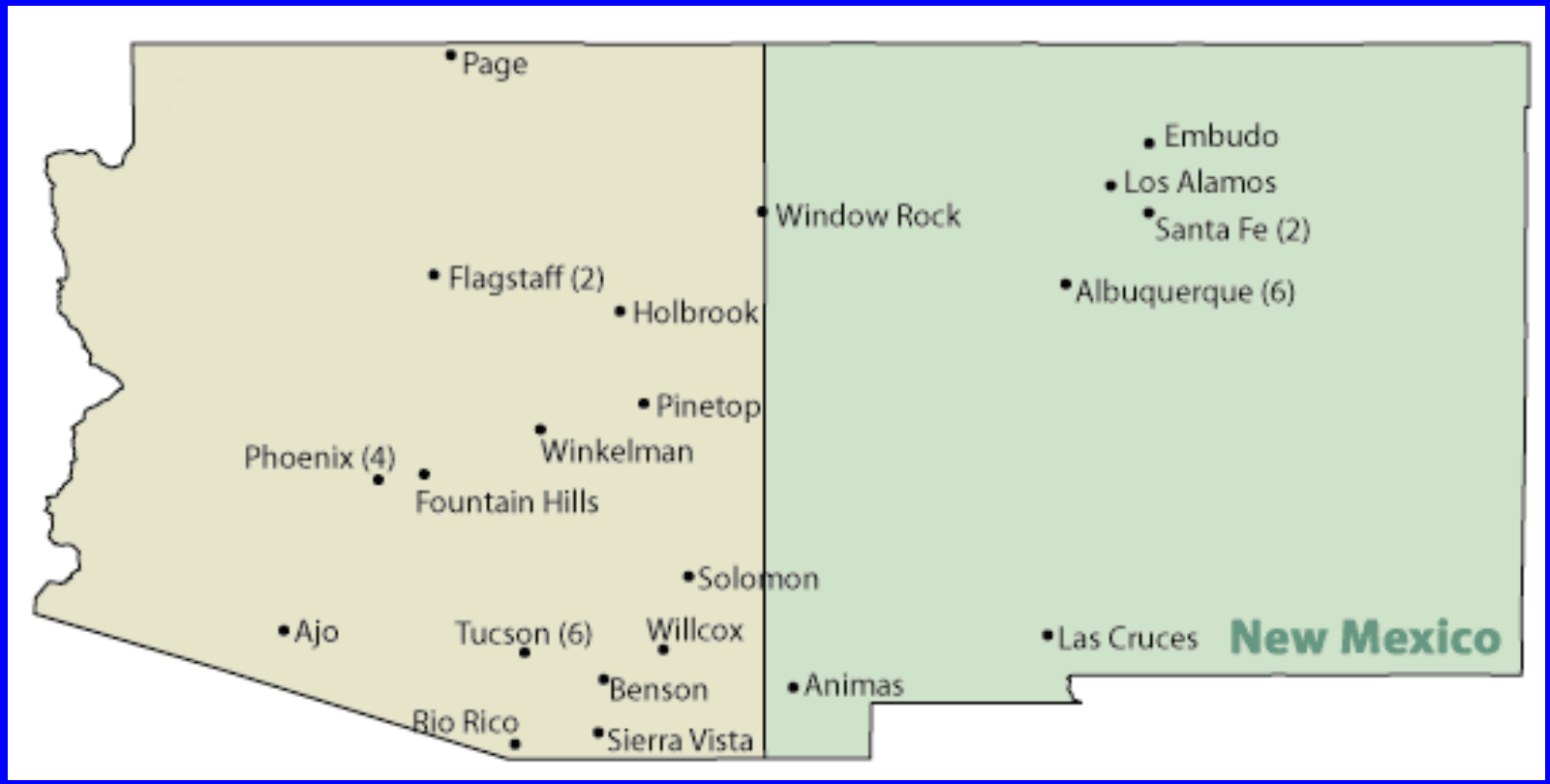
# That's the Way *(uh huh, uh huh)* I Like It *(uh huh, uh huh)*: Evaluation

# El Niño-Drought Initiative

**Users** ⇄ CLIMAS Climate Assessment Project for the Southwest ⇄ **Producers**



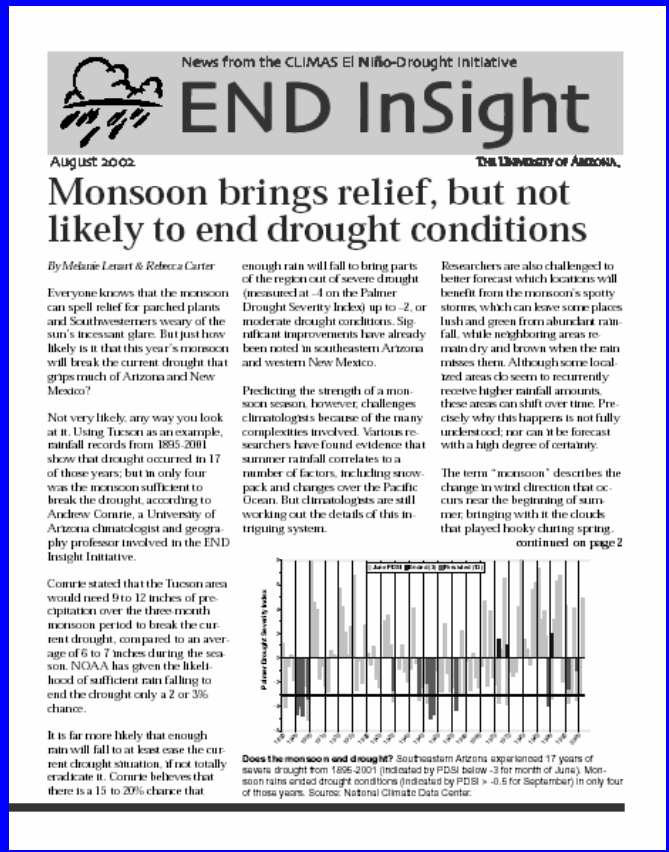
# Participants




- Water, Fire, Land and Wildlife Management
- Tourism, Energy, Cooperative Extension, Ranching

# Monthly Climate Information

- **Multiagency information**
- **Multiple pathways**
  - Climate summary
  - Surveys
  - Interviews
  - Press briefings
  - Workshops



News from the CLIMAS El Niño-Drought Initiative

END InSight

August 2002 — The University of Arizona

## Monsoon brings relief, but not likely to end drought conditions

*By Melanie Lenart & Rebecca Carter*

Everyone knows that the monsoon can spell relief for parched plants and Southwesterners weary of the sun's incessant glare. But just how likely is it that this year's monsoon will break the current drought that grips much of Arizona and New Mexico?

Not very likely, any way you look at it. Using Tucson as an example, rainfall records from 1895-2001 show that drought occurred in 17 of those years; but in only four was the monsoon sufficient to break the drought, according to Andrew Comrie, a University of Arizona climatologist and geography professor involved in the END Insight Initiative.

Comrie stated that the Tucson area would need 9 to 12 inches of precipitation over the three-month monsoon period to break the current drought, compared to an average of 6 to 7 inches during the season. NOAA has given the likelihood of sufficient rain falling to end the drought only a 2 or 3% chance.

It is far more likely that enough rain will fall to at least ease the current drought situation, if not totally eradicate it. Comrie believes that there is a 15 to 20% chance that enough rain will fall to bring parts of the region out of severe drought (measured at -4 on the Palmer Drought Severity Index) up to -2, or moderate drought conditions. Significant improvements have already been noted in southeastern Arizona and western New Mexico.

Predicting the strength of a monsoon season, however, challenges climatologists because of the many complexities involved. Various researchers have found evidence that summer rainfall correlates to a number of factors, including snowpack and changes over the Pacific Ocean. But climatologists are still working out the details of this intriguing system.

Researchers are also challenged to better forecast which locations will benefit from the monsoon's spotty storms, which can leave some places lush and green from abundant rainfall, while neighboring areas remain dry and brown when the rain misses them. Although some localized areas do seem to recurrently receive higher rainfall amounts, these areas can shift over time. Precisely why this happens is not fully understood; nor can it be forecast with a high degree of certainty.

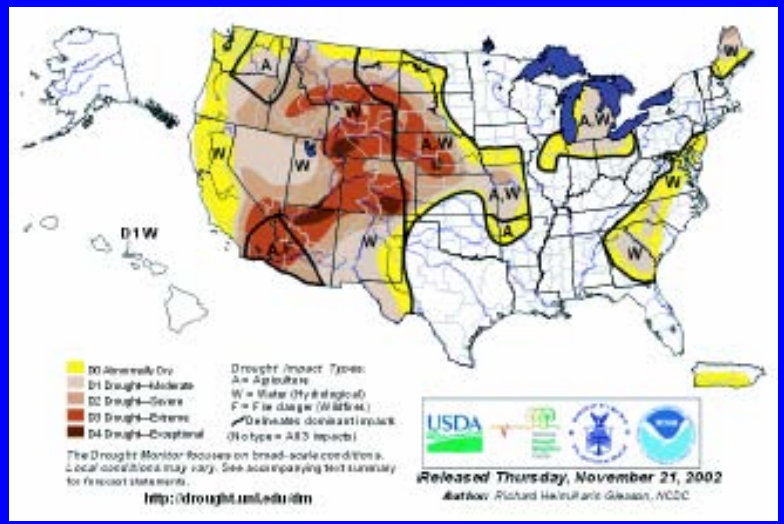
The term "monsoon" describes the change in wind direction that occurs near the beginning of summer, bringing with it the clouds that played hooky during spring.

continued on page 2

**Does the monsoon end drought?** Southeastern Arizona experienced 17 years of severe drought from 1895-2001 (indicated by PDSI below -3 for month of June). Monsoon rains ended drought conditions (indicated by PDSI > -0.5 for September) in only four of those years. Source: National Climate Data Center.

# Quantitative Responses (n=34)

## U.S. Drought Monitor

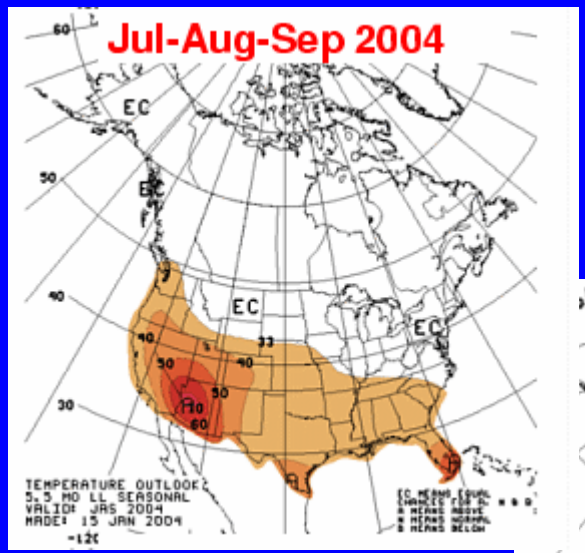


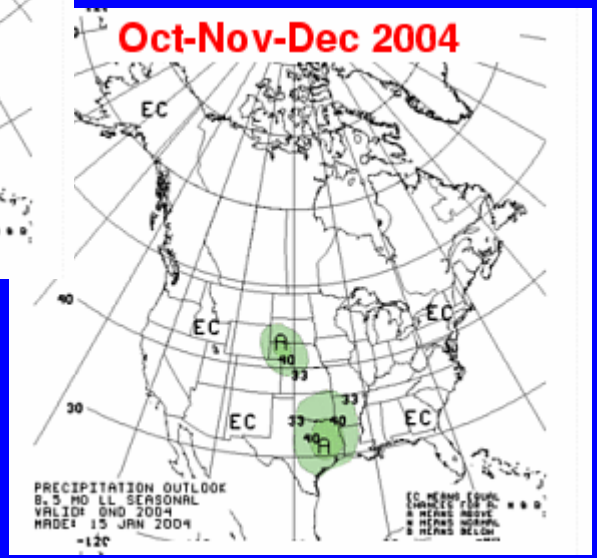

| | |
|---|---|
| Useful | 77% |
| Interesting | 23% |
| Neither | 0% |

***Need two maps***

# Qualitative Responses

## NOAA-CPC Seasonal Outlook




***Regional***
**Skill +**
**Verification**

# Climate Services

- **Translator function**
  - Region-specific interpretation
  - Links to news (impacts)
- **One-stop shopping**
  - User ability to put it all together **themselves**
- **Sustained interaction**
  - Credibility

# Constraints

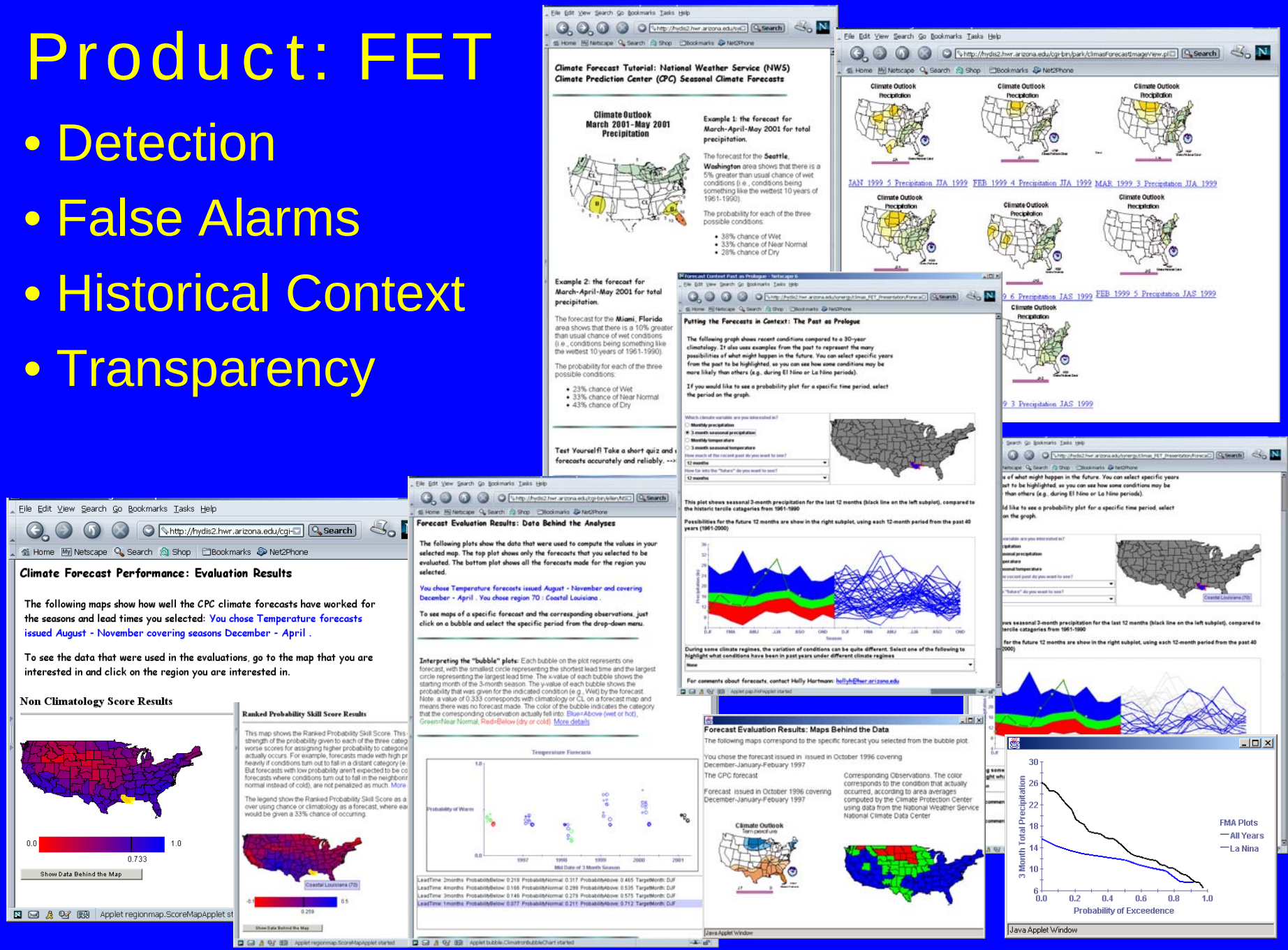
- Spatial resolution
- Locator information
- Web sites are too complex
- Products lack ancillary information
- Technology issues

# Constraints

- Institutional policy
  - Resistance to change
  - Complexity
    - *Opportunities for long-term investment in capacity building*

# Product: FET

- Detection
- False Alarms
- Historical Context
- Transparency

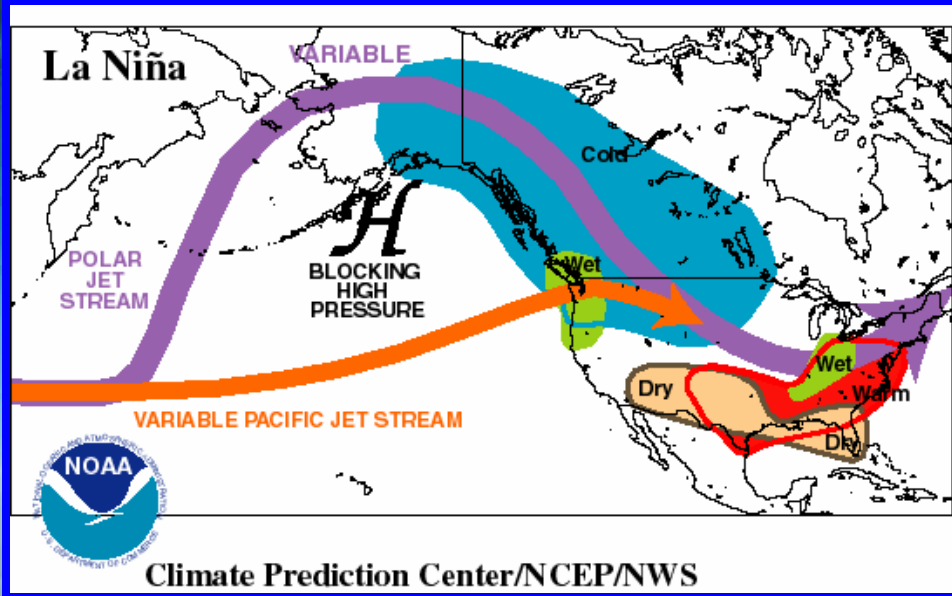


# Effective Outreach

- **Cooperative Extension**
  - Neutral, trusted information brokers
  - Diffusion of innovations
    - Early adopters
    - Language appropriate to the subset of decisionmakers
  - Overcome technology obstacles

# Partnership: Iteration

# The Implications of La Niña and El Niño for Fire Management




Fire History Lab, LTRR, U of Arizona

# Capacity Building Iteration

## Fire-Climate Workshops, Tucson, AZ 2000-2002

# Partnerships – Synergies

National Interagency Coordination Center

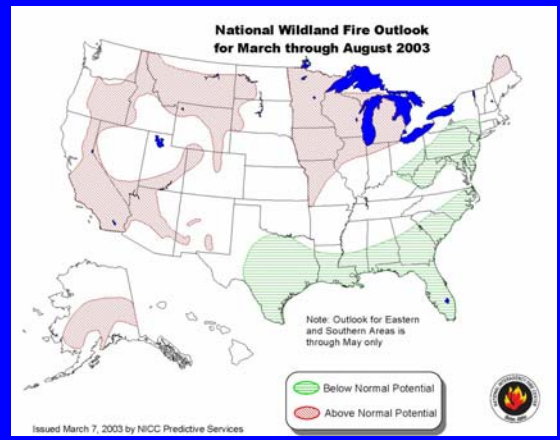
ECOSYSTEM CLIMATE FIRE APPLICATIONS

DRI Desert Research Institute

CLIMAS Climate Assessment Project for the Southwest

# Evolution

- 2003-2005 National Seasonal Assessment Workshops
- Multi-RISA + Multi-Agency
- Training + New products



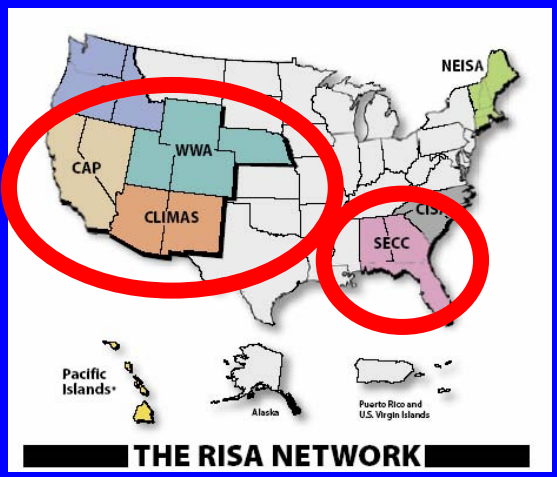
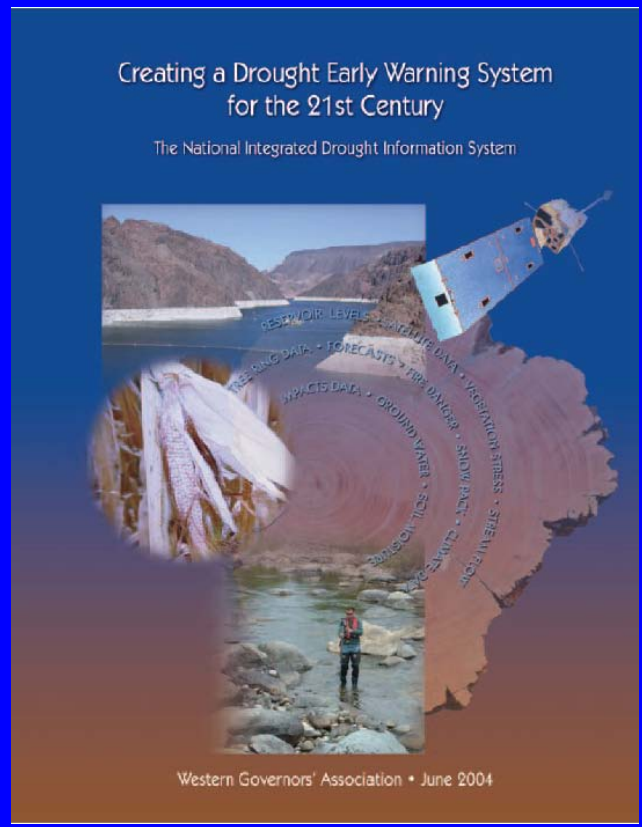




Photo: NY Times

# We Can't Do It Alone

- Need to create rewards for multiagency collaborations



# Take-Home Lessons

- Product *AND* Process
- Two-way knowledge exchange
- Trust, credibility, partnership
- Sustained, iterative interaction
- Capacity building

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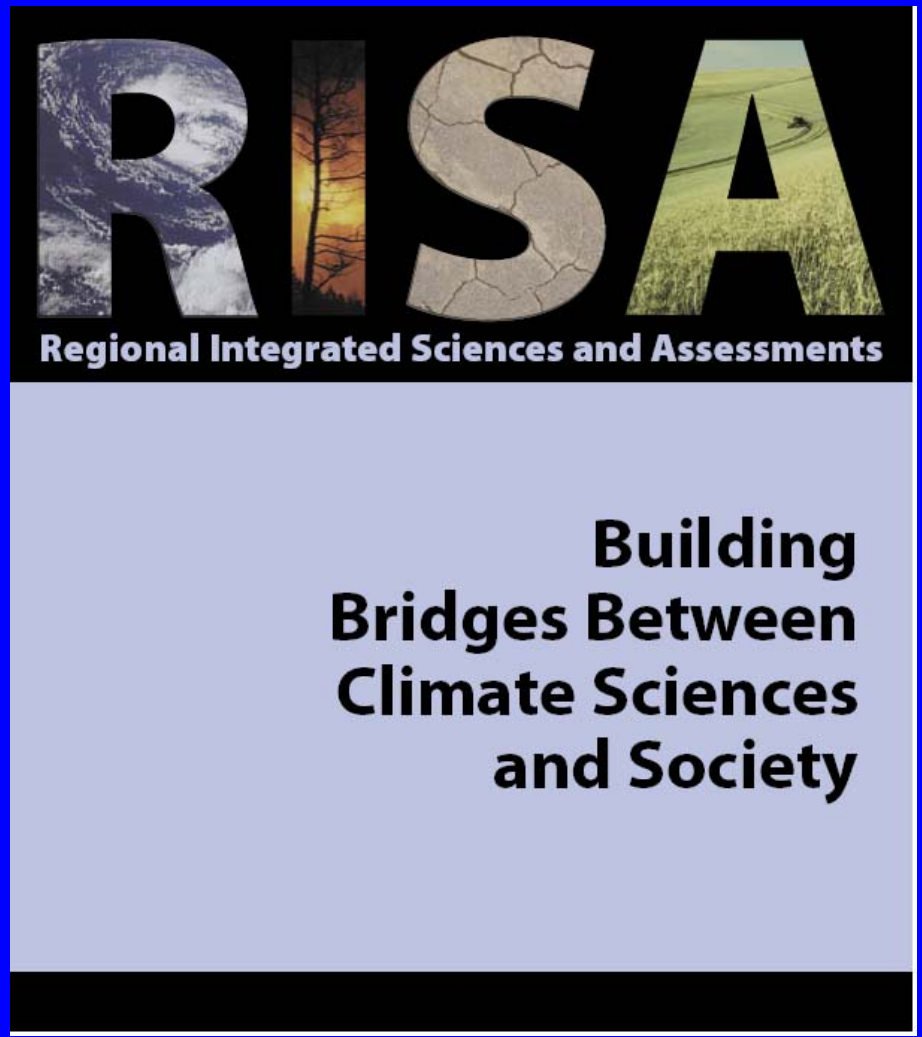
# Thank You for Your Kind Attention


**http://www.ogp.noaa.gov/mpe/csi/risa/index.htm**