



New Mexico  
**EPSCoR**

# New Mexico EPSCoR State Committee Meeting April 18, 2011

Santa Fe Institute

**Jack Jekowski**

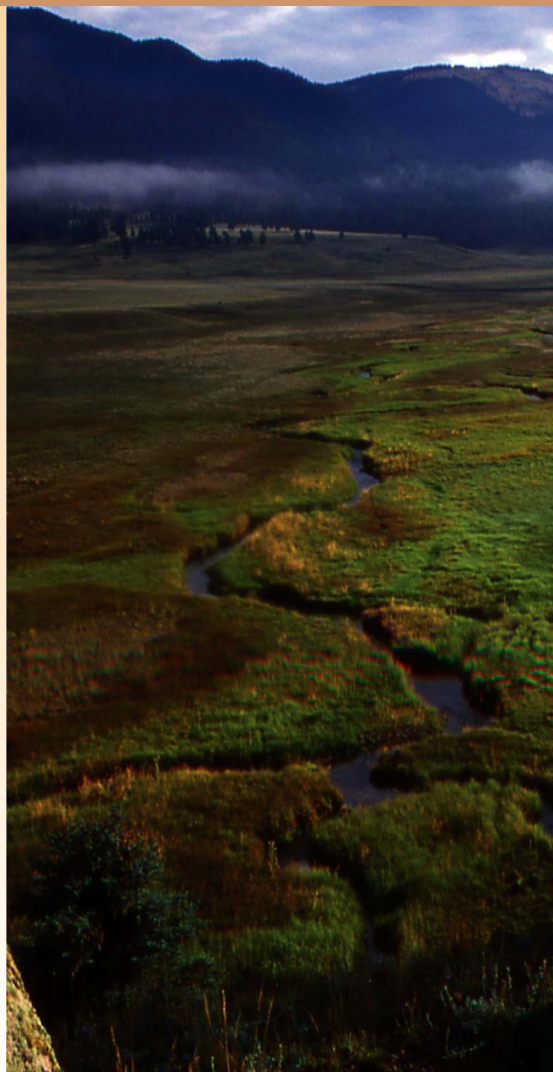
Committee Chair

**Bill Michener**

Director

**Mary Jo Daniel**

Associate Director



# State Committee Welcome/Agenda, Jack Jekowski

- Introductions
- Review Agenda
- Approval of Minutes from September 2010 meeting





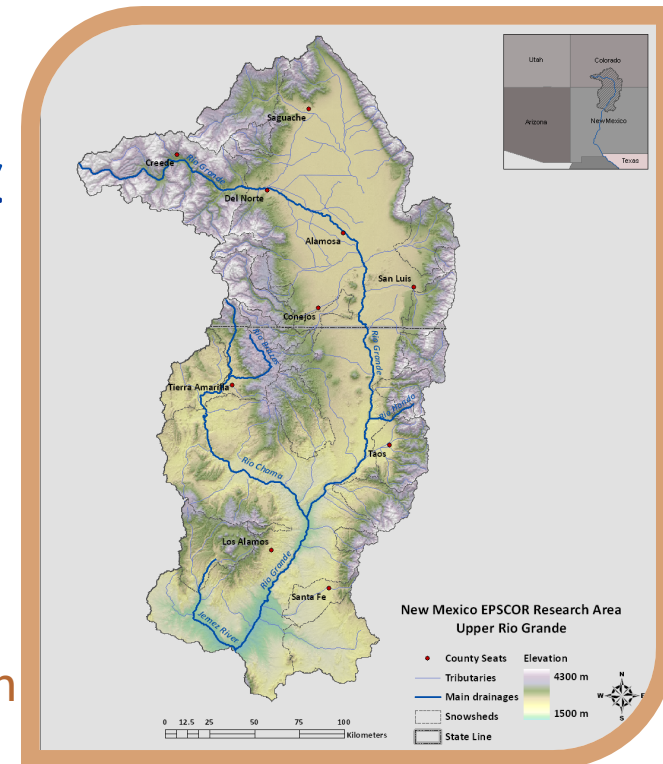
# Agenda

- 11:00 am Welcome and updates (Jack Jekowski)
- 11:15 am Project Updates (Mary Jo Daniel)
  - Track 1, Track 2, and C2 including upcoming events
- Noon Lunch with SFI
- 1 :00 pm RII Timeline and Process
  - AAAS Report Recommendations
  - Draft RFP for White Papers
- 2:00 pm Other Business (Jack Jekowski)
- 2:15 pm Closure



# NM EPSCoR Track 1 Science Focus:

- Mission: “Provide the critical gap infrastructure, computational support, and education and outreach opportunities to foster excellence in climate change research and education.”
  - How will New Mexico’s water quality and quantity be affected by climate change?
  - How will hydrological and water quality changes due to climate change impact the citizens, industry, and ecology of New Mexico?
  - How can knowledge of climate change effects on New Mexico’s water supply be communicated to resource managers and users to allow for mitigation and remediation?



# Research Infrastructure

1. Climate and hydrology observational networks
2. Development and refinement of multi-disciplinary models
3. Water Quality instrumentation and testing
4. Innovation Working Groups





# Cyberinfrastructure

1. Data acquisition, processing and storage
2. High Performance Computing
3. Interoperability
4. Collaboration Technologies
5. NM Climate Change Web Portal



# Human Infrastructure

## ■ Education

- K-12 Teacher Institute
- Faculty Leadership Workshop
- Undergraduate Research Opportunities Prog.
- Graduate Training
- NSF Day

## ■ Outreach

- Climate Change Exhibit
- Climate Change Seminars, Lectures, Cafes
- Town Hall
- EPSCoR Website; STEM Programs Portal



# Research: All Hands Meeting October 18, 2010

- Over 70 participants from all NM EPSCoR projects
- Component leads presented research updates/progress
- Keynote by Deb Peters, NMSU Jornada Exp. Station
- Over 30 student posters presented



Education Collaboration



AHM attendees are welcomed by Bill Michener





# Track 1 External Advisory Committee 10/25/10

## ■ Commendations

- *The review demonstrated very significant progress towards all major goals and objectives of the project since last year.*
- *The Integrated Working Groups and...meetings like the “All Hands Meeting” seem to have created a real sense of community, which was the key element that seemed lacking when the program was reviewed in January 2010.*
- *EPSCoR has been serving NM well and has taken on the role of “filling gaps” in the existing infrastructure by providing equipment, human resources, and other means to expand projects and programs already in place.*

Recommendations will be discussed later...



# Track 1 AAAS Review November 16-18, 2011

- Four focus areas of agenda:
  - Review of NM EPSCoR RII 3, William Michener
  - NM Science & Technology Plan, Tom Bowles
  - STEM Education, Rick Scott
  - Workforce Development, Julia Fulgham & John Montgomery
- *Overall, it is evident that NM EPSCoR has established a strong foundational program for research and education in the state of New Mexico, fully deserving of sustained support from the state and of a renewed and expanded commitment from New Mexico's major research universities.*

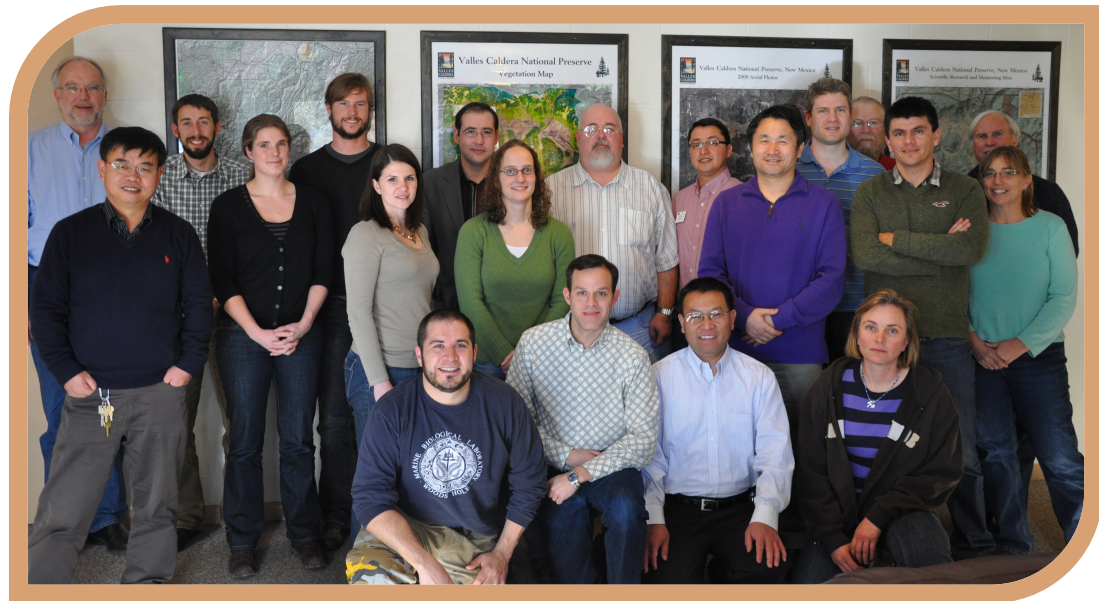


# Junior Faculty Leadership Workshop

- VCNP Science and Education Center, January 4-6, 2011
- 16 participants from 9 institutions, including UNM, NMSU, NNMC, ENMU, NMHU, and LANL
- New agenda components: Effective Teaching and Mentoring



Leader as Facilitator with Carl Moore



JFL 2011 Participants





# Track 1: NSF Day

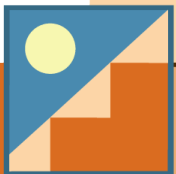
- March 17, 2011
- 180 Participants
- 9 Directorates
- Sessions Included:
  - NSF Proposal and Merit Review Process
  - Proposal Writing
  - Concurrent Directorate Sessions



NSF Day participants listen to the Welcome speaker

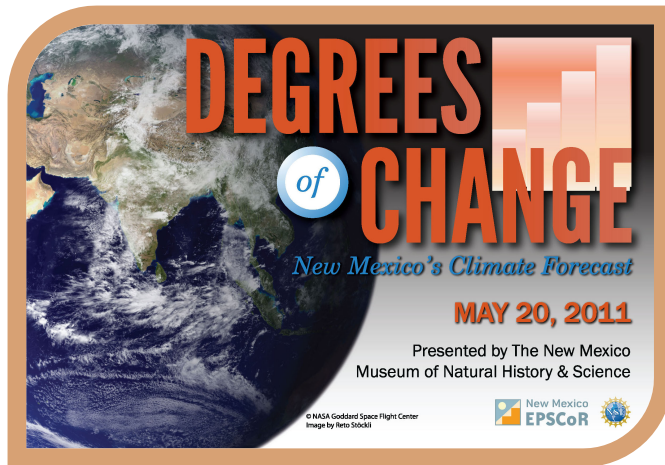


Attendees of the Education session share a laugh



# Track 1: Education and Outreach

- Math and Science Day at the Legislature
- NM STEM Programs Database
- Participation on NM Math and Science Advisory Council
- Museum Exhibit Opening



"Degrees of Change" at the NM Museum of Natural History

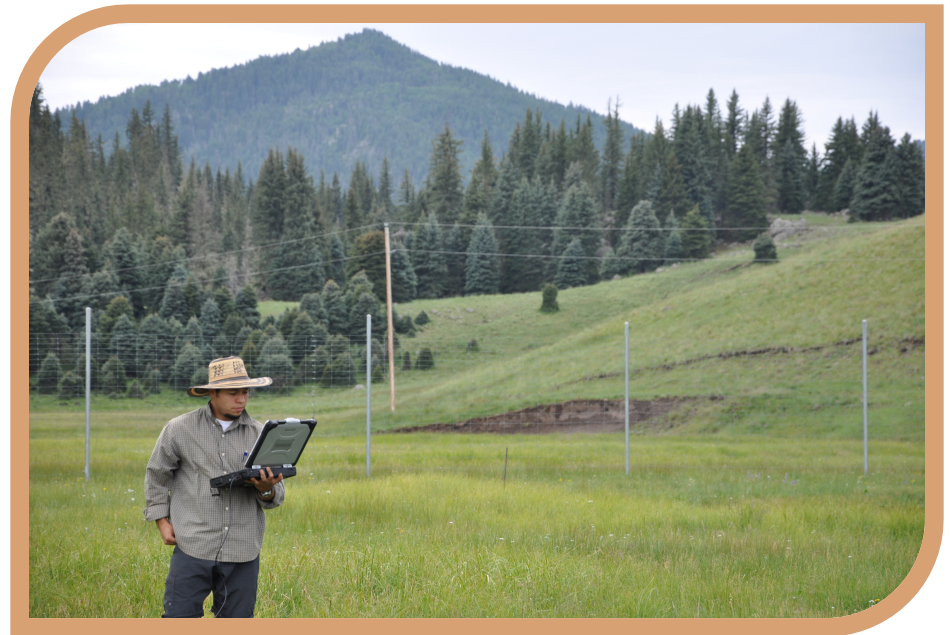


NM EPSCoR student Tyler Van Riper discusses climate change with attendees of Math and Science Day



# Track 1: Infrastructure Seed Grants

- 2 Awards of \$50,000 each made in first round:
  - NMHU
  - Dine College
- New proposals due July 15, 2011 for Sept. 1 start
  - 3 awards anticipated





# Newest Innovation Working Groups (IWGs)

- Applications of Distributed Temperature Sensing for Climate Change Research in New Mexico, Jevon Harding (NM Tech)
- CyberEnabled Science, Karl Benedict (UNM)
- Indicators of Ecological Thresholds, Robert Heinse (U of Idaho)
- Bridging the Gap Between Data and the 6-12 Science Classroom, Matt Nyman (UNM)

Proposals due June 1 (NM) and July 1 (Tri-State)



# Track 2 and C2

- Track 2

- Connectivity
- Interoperability
- Cyberlearning—(Supercomputer Challenge and GUTS)



*Western Consortium of Idaho, Nevada, and New Mexico*

- C2

- Western NM University
- Navajo Tech
- Northern NM College



## Track 2: Tri-State Consortium

- External Advisory Committee, February 17, 2011
- Fast Forward NM Kickoffs scheduled:
  - Silver City: July 30
  - Crownpoint: August 27
  - Espanola: September 24
- New Consortium Webpage:  
[www.westernconsortium.org](http://www.westernconsortium.org)



Western Consortium of Idaho, Nevada, and New Mexico





# 3<sup>rd</sup> Annual Tri-State Meeting

- April 6-8, 2011
- EPSCoR Western Consortium: New Mexico, Idaho, Nevada
- 185+ Attendees
- Featured Guest Speakers, Concurrent Sessions, Student Poster Session & Competition



Collaboration in the “Climate Drivers” Session

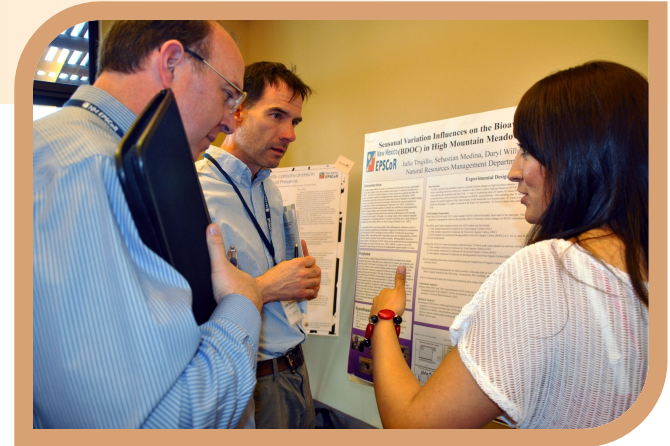


Tri-State Attendees listen to keynote speaker Craig Allen



# 3<sup>rd</sup> Annual Tri-State Meeting

- Sessions Included:
  - Climate Modeling Workshop
  - Connecting Education & Outreach with Research
  - Communicating Science to Non-Scientists
  - Enabling Climate Change Research
  - Catchment Science



NM EPSCoR student Julie Trujillo

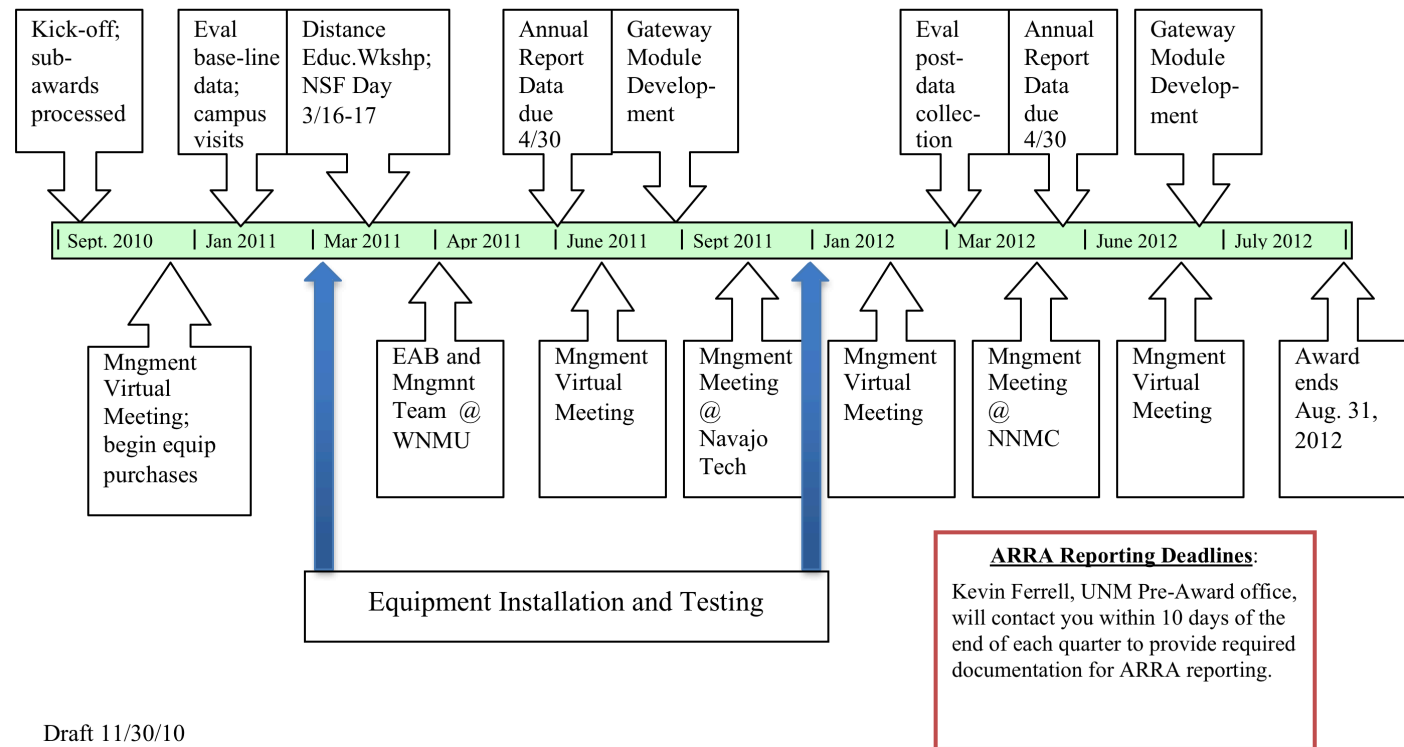


Networking, Sliders, and S'mores on Thursday's Reception



# C2: Improving Campus Connectivity

## C2 Timeline

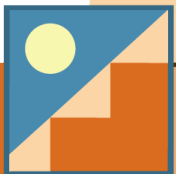


Draft 11/30/10



## C2 Progress

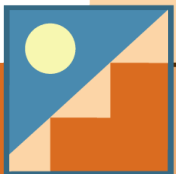
- External Advisory Committee meeting scheduled for April 19-20 at WNMU
- Distance Education Workshop for Faculty held April 12, 2011 at CARC (UNM Campus)
- Applications for Course Module Development Program (UCIEE) due May 17, 2011. Up to three participants will be selected; \$7500 each.





# Other Activities

- Enhanced Data Portal Launched
- \$150,000 award for Valles Caldera Movie
- Leadership attended National EPSCoR PD/PA Meeting in January
- Project Planner hired—Tracy Hart
- State office using IT Field Agent services



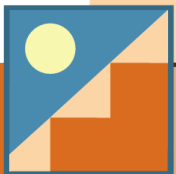
# Upcoming Activities

- April 19-20: C2 External Advisory Committee
- May 16-17: NSF EPSCoR Meeting in DC
- May 17: Distance Ed'n Course Module Program Applications Due
- May 20: Climate Change Exhibit Opening at NMMNHS
- June 2: Annual Reports (RII 3, Track 2, C2) due to NSF
- July 17: Infrastructure Seed Grant Proposals Due
- August 11: NSF Reverse Site Visit
- October 24-28: National NSF EPSCoR Meeting in Coeur d'Alene, Idaho



# Upcoming Events: 22<sup>nd</sup> National NSF EPSCoR Conf.

- October, 24-27, 2011
- Coeur d'Alene, Idaho
- Topical sessions:
  - NSF updates
  - Water/Environment
  - Workforce Dev.
  - Energy
  - Cyberinfrastructure



# Upcoming Events: NSF Reverse Site Visit

- Team of 2-5 (or 3-6) individuals
  - ✓ William Michener (PI/PD)
  - ✓ Mary Jo Daniel (Associate Director)
  - ✓ Mike Pullin (NM Tech)
    - Sam Fernald (NMSU)
  - ✓ Laura Crossey (UNM)
  - ✓ Karl Benedict (UNM)
- August 11, 2011 (1-5 pm)
  - 90-minute presentation
  - Q&A





# Track 1 Proposal Development

- EAB Report Recommendations
- AAAS Report Recommendations
- State of the Overall NSF Budget and Target Investments
- Proposal timeline
- Draft RFP



# EAB RII Track 1 Recommendations

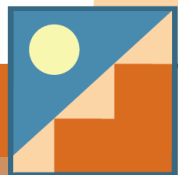
- Meeting: October 25, 2010; Final Report - January 2011
- External Advisory Board Members:
  - Elsa Bailey, Director/Principal, Elsa Bailey Consulting, San Francisco, CA
  - Stephen G. Borleske, Director, Delaware EPSCoR
  - L. Ruby Leung, Laboratory Fellow, Atmospheric Science and Global Change Division, Pacific Northwest National Laboratory
  - Steven Semken, Associate Professor, School of Earth and Space Exploration, Arizona State University
  - Emily H. Stanley, Professor, Department of Zoology, University of Wisconsin-Madison
  - Amy Ward, Professor, Biological Sciences, University of Alabama
  - Mark W. Williams, Associate Professor, Institute of Arctic and Alpine Research and Dept of Geography, University of Colorado



## EAB Recommendations (4):

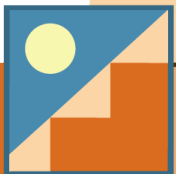
1. As evidenced in the reviews, very significant progress has occurred in the research programs, but the driving research questions in a number of the programs were not clearly articulated and their relationship to the key climate change/ water issues in the Southwest region were not well defined. The EAB recommends further work by the leadership team in this area. This will enhance both the scientific merit of the program and the value by the external stakeholders.

- As one example, the water quality study in Valles Caldera has many clear strengths with respect to developing collaborative partnerships, deploying cutting edge technologies for environmental monitoring, engaging students, and establishing a program that has substantial potential for public outreach, given its location. However, research questions tend to be basic, descriptive, and more academic in their focus. That is, there appears to be a missed opportunity by not pursuing questions related to climate-driven water quality problems that inevitably emerge in an arid, warming, water-stressed region (e.g., salinization, increased contamination due to water limitation).



## EAB Recommendations (4):

2. As the program progresses into year three, the EAB recommends that the leadership articulate and formalize a sustainability plan. Many of the programs appear to have a natural sustainability pathway after RII-3 is complete, but there may be some significant gap areas. The formalization of a plan will allow the leadership to more clearly see gaps and enhance the long term impact of RII-3.





## EAB Recommendations (4):

3. The Climate Change, water chemistry and hydrology themes of RII-3 have a lot of common elements to other programs across the nation and world. The EAB recommends that the program leaders and researchers pay more attention to connectivity to external research efforts, particularly in the sensor area and in the environmental data storage and analyses areas.



## EAB Recommendations (4):

4. It is still not clear “What is EPSCoR” and where it sits as an initiative unto itself versus where it sits as a means for leveraging other projects. There is no question that EPSCoR provides a means to integrate multiple projects and serves as a systems organizer; but, it would be useful for both EPSCoR and NSF to see how EPSCoR both fits into and serves the “big picture.” For example, what would be happening without EPSCoR? Why is EPSCoR necessary to NM’s progress? Answers to these questions would be useful toward building a case for the next proposal.

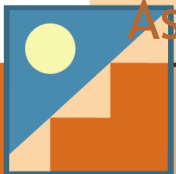


# AAAS Recommendations

- December 20, 2010

- AAAS Review Team:

- Antonio Baptista, Ph.D. - Director, Science and Technology Center for Coastal Margin Observation and Prediction, Oregon Health and Science University
- Robert Barnhill, Ph.D. - Vice President for Science Policy & Strategic Initiatives, Society for Advancement of Chicanos and Native Americans in Science
- Leonard Krishtalka, Ph.D. - Director, Biodiversity Institute, University of Kansas
- Thomas Zawodzinski, Ph.D. - Governor's Chair in Advanced Energy Storage and Conversion Systems, University of Tennessee-Knoxville
- Kelly L. Orr, Ph.D. - Senior Program Associate, American Association for the Advancement of Science



# AAAS: Research and Research Infrastructure

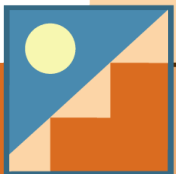
1. Develop an ‘evolutionary’ research focus across the themes of climate, water, and energy, their intersections and reciprocal impacts.
2. Broaden the scope and scale of current NM EPSCoR emphases within climate and water surface, snowmelt, acequias to include ground water and aquifers, the socioeconomic parameters of the climate-water system, and a systems input and modeling regime.
3. Add energy, with an emphasis on algal biofuels, as a third, primary component to the climate-water system.
4. Implement a strongly integrative cyberinfrastructure component—cyber-enabled discovery—blurring the line between research and cyberinfrastructure.
5. Develop and sustain an observation and prediction system for the water and natural resources of New Mexico.
6. Census the ideas, resources and commitment across the state’s research community with a Request for Information (RFI) focused on climate-water-energy, detailing all of the components in this nexus, and the integrative cyber/IT medium.





# AAAS: Education and Outreach

1. Continue current efforts focused on research training, STEM education, public outreach, and diversity—expanding these initiatives to encompass fostering interdisciplinary teams and engaging tribal communities.
2. Develop and implement, as highest priority, a coordinated strategy for Tribal engagement to be led by the NM EPSCoR Director.
3. Commit to an expanded role for Tribal issues in the vision and mission of the program, and to increased participation of Tribal Colleges in all aspects of the Program.
4. Dedicate at least 0.5 FTE of the NM EPSCoR Leadership to coordinating the Tribal Engagement effort. That could be done through allocation of combined FTEs of the Director and Associate Director, or through hiring a new, empowered, member of the leadership team with this specific responsibility.



# AAAS: EPSCoR Leadership and Culture

1. Fashion a sustainable interdisciplinary and inter-institutional collaboration or research culture, emphasizing a teams-based approach to science, among the three large research universities; smaller, regional colleges; and tribal institutions.
2. Tie NM EPSCoR and ancillary funding for projects and centers to commitment to building the bridges implied by the above recommendation.
3. Obtain buy-in from the Vice Presidents for Research at the three large research institutions, in order to establish research leadership within the state.



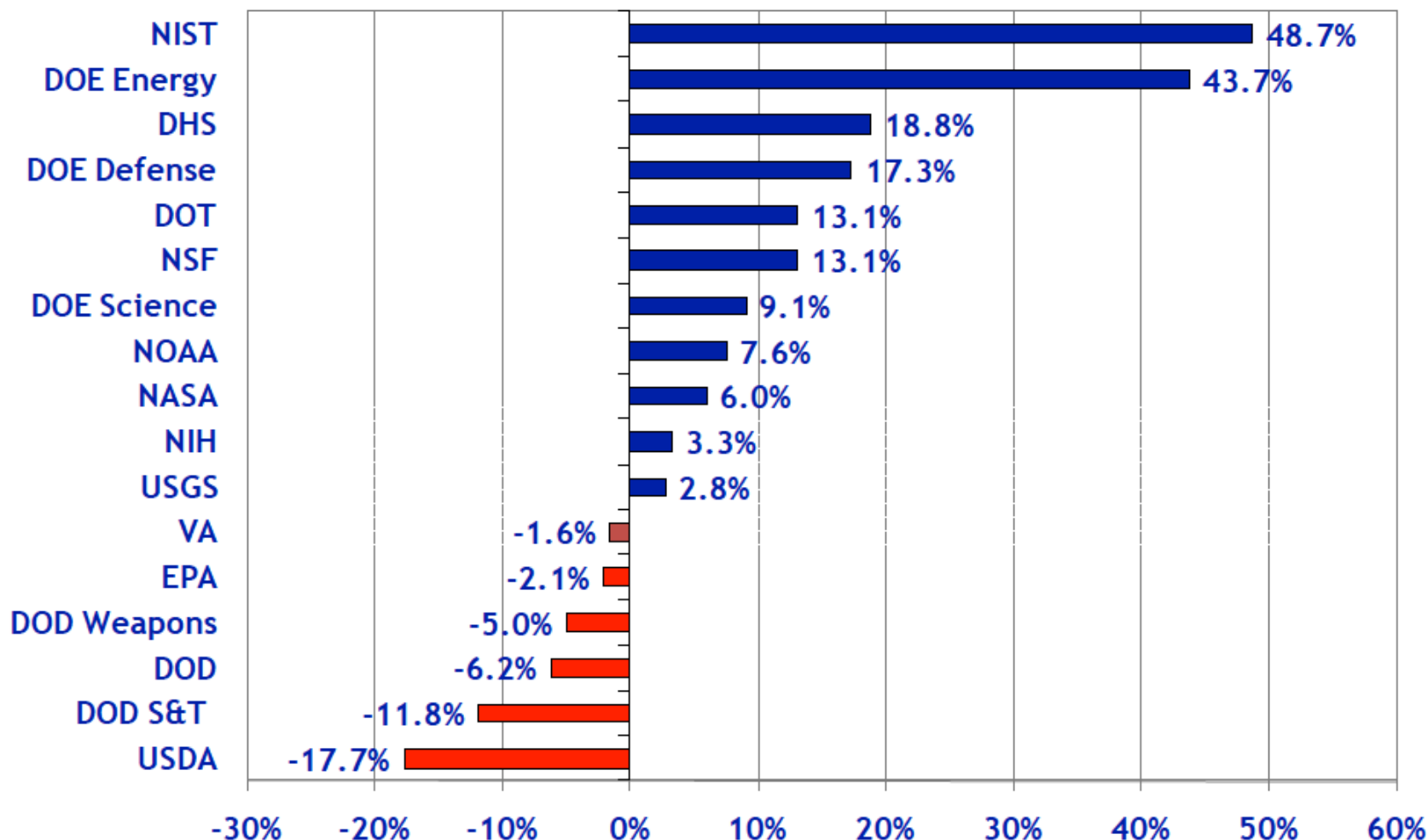
# National Science Foundation

- Total Budget
  - FY 11 House CR: \$6.6b, -5.8%
  - FY 11 Senate CR: \$6.9b, +0.0%
  - FY 12 Request: \$7.8b, +13.0%
- Total R&D
  - FY 11 House CR: \$5.2b, -4.1%
  - FY 11 Senate CR: \$5.4b, -1.7%
  - FY 12 Request: \$6.3b, +16.1%
- Clean Energy: \$576m
- Science, Engineering and Education for Sustainability (SEES)
  - \$998m for climate and energy
- Cyberinfrastructure for 21<sup>st</sup> Century Science and Engineering (CIF21): \$117m



# R&D in the FY 2012 Budget Request

percent change from FY 2010



Source: OMB R&D data, agency budget justifications, and other agency documents.

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## For More Information...

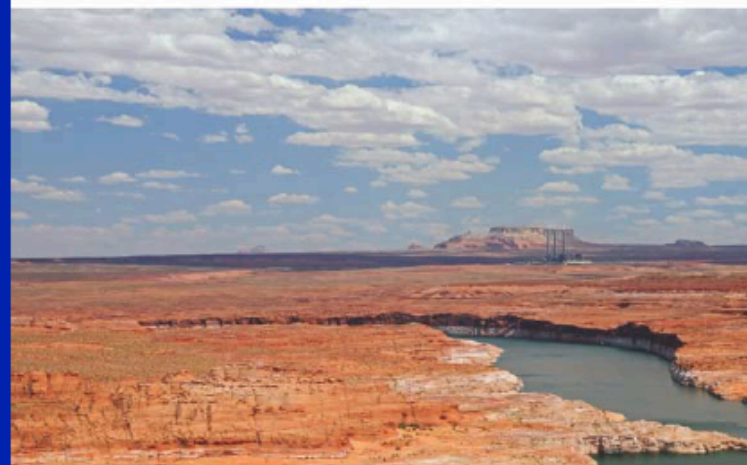
The AAAS R&D web site is  
<http://www.aaas.org/spp/rd/>

Twitter: @AAAS\_RDBudget

The FY 2012 AAAS Forum on  
Science and Technology Policy  
is May 5-6, 2011  
in Washington, DC

### AAAS REPORT XXXVI Research & Development FY 2012

Intersociety Working Group







# RFP White papers: Eligibility

- White Papers can be submitted by any New Mexico Institution of Higher Education that offers doctoral degrees in science and engineering. Non-PhD granting institutions can be partner institutions in submitting a white paper; collaborations among different types of institutions are very strongly encouraged. A researcher can be the PI of only one White Paper. However, researchers may be team members in more than one White Paper.



# RFP White papers: Financial Considerations

- Although details from NSF are not yet final, funding for 2012 Track 1 projects is expected to be \$4 million per year for five years (\$20M total).
- NSF will likely require a state match of \$4 million for the five-year project (i.e., 20%).
  - Approximately \$12.5 million will be available for the RII research infrastructure component;
  - the remaining funds will support New Mexico Education, External Engagement, Workforce Development, Evaluation & Assessment, and Cyberinfrastructure Development activities, as well as the state EPSCoR office.



# RFP White papers: Financial Considerations

- The RII research budget may be allocated to items such as:
  - Major research equipment such as new instrumentation, laboratory upgrades and installation of field experiments;
  - Start-up packages for new faculty hires;
  - Research opportunities for faculty at non-PhD granting partner colleges and universities;
  - Support for undergraduate and graduate students, as well as post-doctoral associates; and
  - Creation of new graduate research training groups.
  - Only minimal support can be provided to a small number of faculty members (e.g., up to one month per year for one faculty member per major contributing institution to support administration, reporting and coordination activities).



# RFP White papers: Elements (15 pages +)

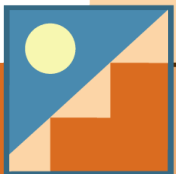
- Planned research and justification Relevance to NM S&T Plan and economic impact
- Key infrastructure components
  - major instrumentation
  - laboratory enhancements
  - start-up packages for new faculty hires
  - new graduate training programs
  - Etc.
- Leveraging of existing physical, human, and cyberinfrastructure resources,
  - investments from prior NSF support (including the current RII award)
  - partnerships with National Labs and business/industry
- A one-page description of the sustainability strategy
- References
- Listing of universities and community colleges participating and a campus leader from each participating institution (2 page CVs)





# RFP White papers: Timeline

- June 2011 - Request for White Papers for research theme released
- Nov. 2011 - White Papers submitted
- Dec-Feb - White Papers reviewed by external committee
- March 2012 - White Paper(s) selected; request for additional information
- March-July - Full proposal written by State EPSCoR leadership
- July(Anticipated) - NSF RFP released
- August 2012 - Tiger Team Review
- Sept-Oct - Proposal is revised and budgets are finalized
- Nov 2012 - Proposal Submitted to NSF



# RFP White papers: Review Process

- All white papers will be reviewed by the NM EPSCoR State Committee and a panel of out-of-state reviewers. Reviewers will consider:
  - Intellectual merit of the proposed research topic
  - Broader impacts
    - Evidence of strong and meaningful collaboration among New Mexico institutions of higher education, including the Tribal Colleges, regional colleges and universities, and community colleges.
    - Diversity of the leadership and faculty teams with respect to gender, race, and ethnicity.
- Research theme(s) will be further refined by the State EPSCoR Office in conjunction with the proposer team. In addition, other required components will be developed with input from educators and others throughout New Mexico for the State EPSCoR Office's final proposal submission to NSF.



# Thank you !

