Questions:

1. **Where should we put the next dollar in climate change research (priority setting)?**
2. **How do we decide that now and what would improve the process (and how can IAMs contribute to the process)?**

Agenda:

1. **Look at the current climate research and policy landscape.**
2. **Examine the climate research guidance we already have today and how we make decisions using that guidance.**
3. **Speculate how that decision process could be improved.**

Jack Fellows
EMF Workshop on Climate Change Impact and Integrated Assessments
29 July 2010
Snowmass, Colorado

The World Today

- Science Community. Warming unequivocal and likely due to observed increase in anthropogenic GHG concentrations (4th IPCC Assessment).

- Public. June 2010 Yale/GMU poll: public belief in global warming, that it is caused by humans, and should be a high priority has increased several points since Jan 2010 -- due to signs of economic recovery and fading memories of snowstorms/climategate (political cues – not science).

- Congress. House barely passed a climate/energy bill in 2009 (Waxman-Markey). Republicans strongly opposed this bill and are targeting Democrats that voted for it. The Senate has abandoned any hopes for such a bill. Logjam remains!

The World Today..continued

- Obama Administration. Wanted to add climate to health care and financial reform legislative successes, but not enough leadership on either adaptation or mitigation. Mitigation legislation is dead, there is no overall adaptation policy, and the USGCRP adrift (21% below its highest level -- NASA effect?).

- Local/Regional Leaders. Sensing the Federal paralysis and faced with planning for the future, 80% of states have adopted or developing a climate action plan (duplicative; no standards; lack tools, information, scientific support; workforce issues).

- OSTP.
  - Interagency Climate Change Adaptation Task Force (OSTP, CEQ, NOAA) report due out in Fall. Interim report said no overall strategy likely.
  - Propensity to let the agencies take the lead and not provide overall direction or leadership (e.g., USGCRP).

The World Today..continued

- OSTP/OMB FY2012 S&T Priorities.
  1. Promoting sustainable economic growth and job creation.
  2. Defeating dangerous diseases while reducing health care costs.
  3. Moving toward a clean energy future while curbing GHG emissions.
  4. Understanding, adapting to, and mitigating the impacts of climate change.
  5. Managing the competing demands on land, fresh water, and the oceans for the production of food, fiber, biofuels, and ecosystem services.
  6. Developing the technologies to protect our troops, citizens, and national interest.

- FY2012-13 Budgets. The President is committed to a freeze in non-security spending thru FY13. All non-security agencies must submit a FY12 budget 5% below the FY12 level in the FY11 budget and identify 5% of their budget with the lowest impact on their mission.

The World Today..continued

- OMB. Agencies must protect Presidential initiatives and show how lower priority S&T activities are being redirected into Presidential S&T initiatives. OMB will formalize working groups focused on key areas (STEM, climate science, climate technology, clean energy, computing research).

- Summary:
  - Climate public opinion based on political cues, not science.
  - Mitigation legislation dead (science won't be run over by C&T).
  - Climate an Obama priority, but tough budget environment, and "soft" leadership on climate research, adaptation, or services leaves agencies to fend for themselves.
  - Local and regional leaders really need help with climate adaptation (and mitigation) planning.
  - OMB forcing issues in leadership vacuum.

So, where do we put the next climate research dollar?

- Personal Opinion:
  1. Help the President speak truthfully and convincingly about the climate change challenge,

  2. Help local/regional leaders plan for climate change (public-private partnerships, tools, information, and workforce), and

  3. Help the climate research agencies deal with these issues given the “soft” central leadership.

- Do we have clear research guidance in these areas?

Research Direction: we have plenty (recent)!

- 2009 NRC Report: Restructuring Federal Climate Research to Meet the Challenges of Climate Change (Ramanathan) http://books.nap.edu/catalog.php?record_id=12595
  - Reorganize the USCRP around integrated scientific-societal issues.
  - Establish a comprehensive climate observing system .
  - Develop a new generation of coupled Earth system models.
  - Strengthen research on adaptation, mitigation, and vulnerability.
  - Initiate a national assessment process.
  - Coordinate federal efforts to provide climate services.

- America's Climate Choices. http://americasclimatechoices.org/
  - Informing an Effective Response to Climate Change (Liverman/Raven)
  - Advancing the Science of Climate Change (Matson)
  - Adapting to the Impacts of Climate Change (Wilbanks)
  - Limiting the Magnitude of Future Climate Change (Fri)

- National Climate Adaptation Summit. Webcast: http://www.joss.ucar.edu/events/2010/ncas/index.html

National Climate Adaptation Summit

- Origins. In July 2009, the President's Science Advisor asked UCAR to convene the Summit. Held 25-27 May 2010.

- Issue. Many communities (Federal to local) struggling with how to plan for reliable water, food, energy, health, etc services in the face of a changing climate. No Federal strategy and confusion over roles and what constitutes authoritative information.

- Goal. Bring together ~200 users and providers of climate information (50/50) to examine the needs, knowledge, and roles that could help guide Federal to local climate research, program, and policy planning.

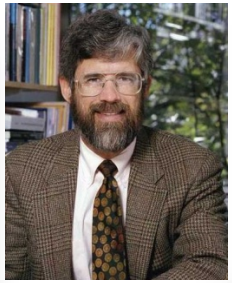
- Summit Co-Chairs. Shere Abbott, Rosina Bierbaum, and Jack Fellows

National Climate Adaptation Summit

Planning Committee

- Shere Abbott, OSTP
- Peter Backlund, NCAR
- David Behar, Water Utility Climate Alliance
- Rosina Bierbaum, University of Michigan
- Maria Blair, Council on Environmental Quality
- Joyce Coffee, Chicago Depart. of Environment
- Ruth DeFries, Columbia University
- David Evans, Noblis Inc.
- Jack Fellows, UCAR
- Chris Field, Stanford University
- Adam Freed, New York City Office of Long-Term Planning and Sustainability
- Kathy Jacobs, University of Arizona
- Tom Karl, NOAA
- Bob Kates, Independent Scholar
- Jerry Mellilo, Woods Hole OI
- Ed Miles, University of Washington
- Frank Nutter, Reinsurance Association of America
- Richard Richels, EPRI
- Cynthia Rosenzweig, Columbia University
- Brad Udall, Western Water Assessment
- Tom Wilbanks, Oak Ridge National Laboratory
- Don Wuebbles, University of Illinois
- Gary Yohe, Weslyan University

National Climate Adaptation Summit

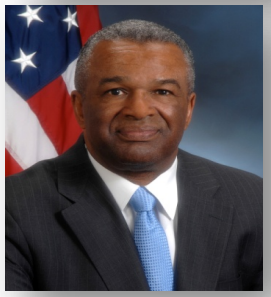












National Climate Adaptation Summit

Report in Development

Current Situation (sample):

- No national climate adaptation strategy and inadequate funding,
- A bewildering mix of climate programs and policies across dozens of Federal agencies that discourage good climate decision making and risk analysis,
- No simple and authoritative Federal climate scenarios,
- No effective “portal” or “clearinghouse” for this information,
- Federal agencies have not mainstreamed climate adaptation planning and no planning/budget process to integrate these multi-agency efforts.
- Thus, most local public or private sector groups find if quite difficult to evaluate the risks and vulnerabilities they are facing.

National Climate Adaptation Summit

Possible Responses (sample):

- The President should be more vocal on the importance of this topic, the validity of the science, and the need to take reasonable actions,

- Develop a comprehensive Federal climate adaptation strategy and funds to encourage effective planning and partnerships,

- Provide an easy to use, one-stop “climate information portal” from all the relevant Federal agencies,

- Be a leader by adopting good climate adaptation practices within and across Federal agencies,

National Climate Adaptation Summit

Possible Responses (sample):

- Eliminate or revise policies that are inconsistent with climate adaptation planning,

- Better coordinate space/ground-based observations and produce a limited set of Federal information that is responsive to decision making needs (e.g., water, heat, extreme events, sea level change, etc),

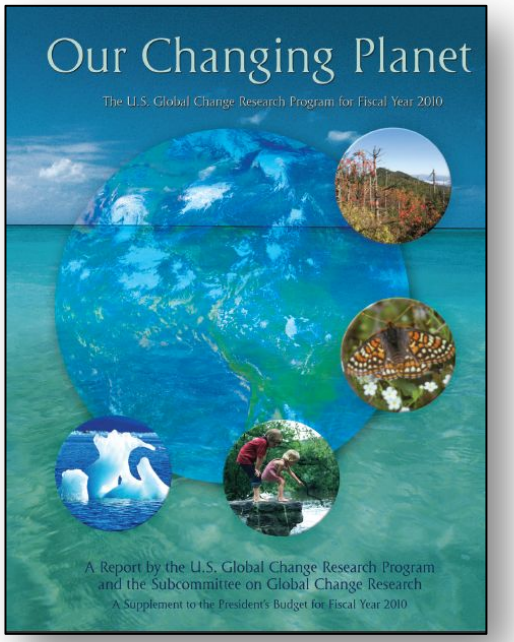
- Help prepare the next generation environmental leaders and workforce primarily through funding to non-profits and universities.

How do we decide how to make these investments now and how could that be improved?

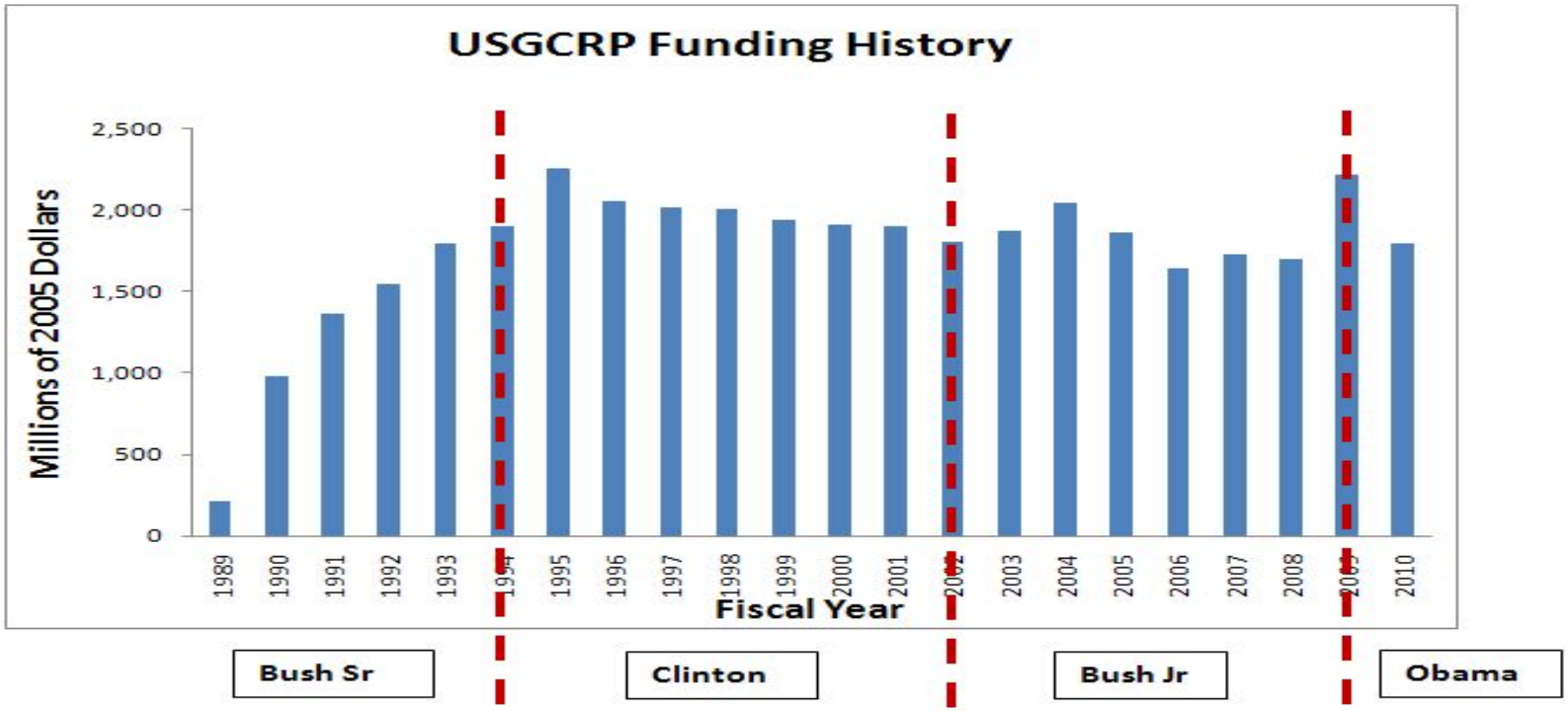
- Research Guidance. All these reports says that we lack the proper policy framework to tackle the climate change challenge. I believe we know where to make the investments and why – but we don't know how to connect all this guidance to what all the agencies are really doing.

- 2010 Our Changing Planet. Cites the 2009 NRC report, but doesn't propose any significant departures from the past (the 2009 OCP Bush Administration) – a "caretaker" document.

- U.S. Global Change Research Program History. Politics and public perception played a major role in the evolution of this program and the future will be no different……



USGCRP Funding History and Influences



Note: 2009 includes ~$400M of American Recovery and Reinvestment Act Funds

- Bush Sr. Pro-research investment versus policy action, focused S&T priorities, strong WH leadership, Bretherton Report, great interagency tools and people.
- Clinton. Pro-policy action versus research, hundreds of S&T priorities that diffused interagency tools and leadership.
- Bush Jr. Little interest in topic. Focus on other policy issues.
- Obama. Finishing second year and not much progress.

When making investments worked, what helped?

- A common framework, vocabulary, and priorities and significant trust and partnership between agencies.

- Key senior political leaders that provided critical tools (many times for all the wrong reasons):
  - **Time.** Focused priority guidance.
  - **Legitimacy.** NSTC and integrated budget hearings.
  - **Authority.** Fencing and coordinated OMB Passbacks.

- Less emphasis on policy action (stakes are higher now) and a lot of just plain luck.

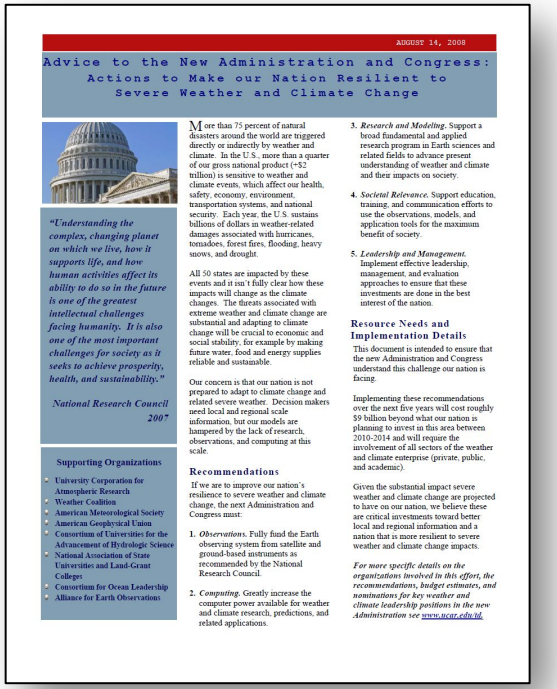
What to do?

Personal Opinion:

1. Help the President speak truthfully and convincingly about the climate change challenge. Response: stay engaged in the IPCC process and be vocal about the importance of climate change.

2. Help local/regional leaders plan for climate change (partnerships, tools, information, and workforce). Response: help recast the USGCRP on broader climate research, adaptation, and services mission (relevancy to users).

3. Help the agencies deal with these issues given the "soft" central leadership. Response: be diplomatic, but emphasize the need for new climate framework and the tools/leadership needed to make this happen (previous page).



AUGUST 14, 2008

Advice to the New Administration and Congress: Actions to Make our Nation Resilient to Severe Weather and Climate Change

"Understanding the complex, changing planet on which we live, how it supports life, and how human activities affect its ability to do so in the future is one of the greatest intellectual challenges facing humanity. It is also one of the most important challenges for society as it seeks to achieve prosperity, health, and sustainability."

National Research Council 200"

Supporting Organizations

- University Corporation for Atmospheric Research
- Weather Coalition
- American Meteorological Society
- American Geophysical Union
- Consortium of Universities for the Advancement of Hydrologic Science
- National Association of State Universities and Land-Grant Colleges
- Consortium for Ocean Leadership
- Alliance for Earth Observations

More than 75 percent of natural disasters around the world are triggered directly or indirectly by weather and climate. In the U.S., more than a quarter of our gross national product (+$2 trillion) is sensitive to weather and climate events, which affect our health, safety, economy, environment, transportation systems, and national security. Each year, the U.S. sustains billions of dollars in weather-related damages associated with hurricanes, tornadoes, forest fires, flooding, heavy snows, and drought.

All 50 states are impacted by these events and it isn't fully clear how these impacts will change as the climate changes. The threats associated with extreme weather and climate change are substantial and adapting to climate change will be crucial to economic and social stability, for example by making future water, food and energy supplies reliable and sustainable.

Our concern is that our nation is not prepared to adapt to climate change and related severe weather. Decision makers need local and regional scale information, but our models are hampered by the lack of research, observations, and computing at this scale.

Recommendations

If we are to improve our nation's resilience to severe weather and climate change, the next Administration and Congress must:

1. *Observations.* Fully fund the Earth observing system from satellite and ground-based instruments as recommended by the National Research Council.

2. *Computing.* Greatly increase the computer power available for weather and climate research, predictions, and related applications.

3. *Research and Modeling.* Support a broad fundamental and applied research program in Earth sciences and related fields to advance present understanding of weather and climate and their impacts on society.

4. *Societal Relevance.* Support education, training, and communication efforts to use the observations, models, and application tools for the maximum benefit of society.

5. *Leadership and Management.* Implement effective leadership, management, and evaluation approaches to ensure that these investments are done in the best interest of the nation.

Resource Needs and Implementation Details

This document is intended to ensure that the new Administration and Congress understand this challenge our nation is facing.

Implementing these recommendations over the next five years will cost roughly $9 billion beyond what our nation is planning to invest in this area between 2010-2014 and will require the involvement of all sectors of the weather and climate enterprise (private, public, and academic).

Given the substantial impact severe weather and climate change are projected to have on our nation, we believe these are critical investments toward better local and regional information and a nation that is more resilient to severe weather and climate change impacts.

For more specific details on the organizations involved in this effort, the recommendations, budget estimates, and nominations for key weather and climate leadership positions in the new Administration see www.ucar.edu/id.

UCAR FORUMS:

- 2008Tools and information.
- 2009 Public-private-academic partnerships.
- 2011 Workforce.

Public Landscape

June 2010 Yale/George Mason University American Opinion Poll(1024 nationally representative adults)

- Since January 2010: Public belief in
  - global warming rose 57% to 61%, that it is caused by humans rose 47% to 50%, and that it should be a high priority rose 38% to 44%.
  - the Adm/Congress making developing sources of clean energy a high priority rose 60% to 71%,
  - the US making a large or medium effort to reduce global warming even if it incurs large or moderate economic costs rose 62% to 69%.
  - signing an international treaty that requires the United States to cut its emissions of carbon dioxide 90 percent by the year 2050 rose from 61% to 65%.
- The survey authors believe the slight rebound in public opinion is due to signs of economic recovery and fading memories of snowstorms and scientific scandals.
- There remains a major gap between how the public and the science community thinks about the climate change problem.
- All indications is that political cues are shaping public opinion on global warming, not science – thus strong political leadership speaking truthfully to the public about climate change could help develop public support for taking more action on this issue.

Political Landscape

- House. The House voted 219-212 last year for a "cap and trade" plan featuring economic incentives to reduce carbon emissions from power plants, vehicles, and other sources. Republicans slammed the bill as a "national energy tax" that would kill jobs, result in higher electricity and fuel costs for consumers, and force manufacturers overseas. Moderate House Democrats who voted for the bill are among the Republicans' top takeover targets in the November election.

- Senate. In late July 2010, Senate Majority Leader Harry Reid gave up plans to pass an energy bill that caps greenhouse gases since no Republicans are willing to back such a bill (need 60 votes).

- Administration. Obama wanted to add a climate bill to his health care and financial reform legislative successes, but he really hasn't provided that much leadership on this issue – climate legislation is dead for the foreseeable future!