

# Climate Communication Skills

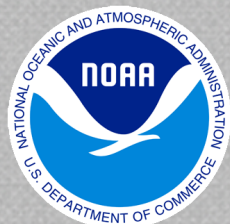
Susan Buhr (CIRES)

Climate Communications Training -  
Engaging with the Media



April 25, 2013

NOAA David Skaggs Research Center



# What level of push back have you experienced?

- A. Questions or comments, easily handled
- B. Pushback that impaired discussion
- C. Significant challenges-discussion not possible
- D. What controversy?



# Why is climate communication complicated?



# Two types of publicly controversial topics

## how to apply science

- human reproduction
- embryonic stem cells
- endangered species
- nuclear energy
- responding to climate change

## validity of the science

- origin of life
- evolution
- human-caused climate change

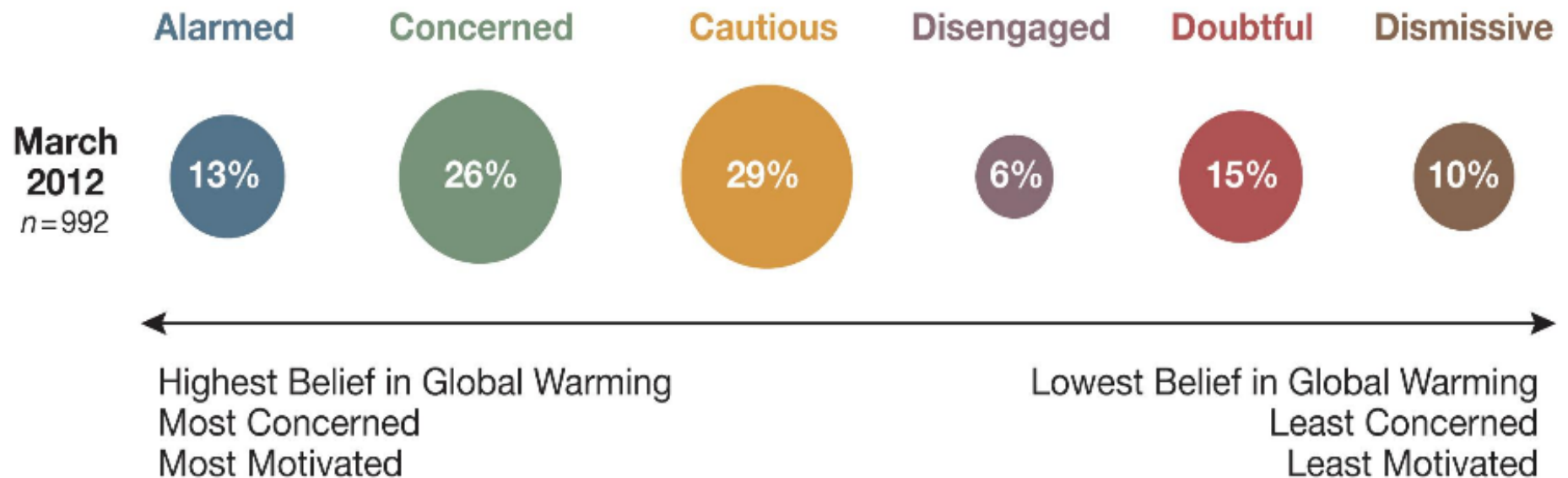
***How should you approach these two types?***

For a more detailed description see: [http://undsci.berkeley.edu/article/0\\_0\\_0/sciencetoolkit\\_06](http://undsci.berkeley.edu/article/0_0_0/sciencetoolkit_06)



# Know your audience(s)

**Figure 1: Proportion of the U.S. Adult Population in the Six Americas, March 2012**



*Proportion represented by area*

Source: Yale / George Mason University

# challenges to communicating climate change

## barriers to understanding science:

- **climate science is non-intuitive:**  
geological time, complex interactions, non-linear processes
- **“two sides”, a media outlet for everyone**
- **climate science and scientific uncertainty has been mischaracterized in popular media, politicized**

Fortner et al., 2000

Introduction, Dilling and Moser, 2007

Leiserowitz, in Dilling and Moser, 2007

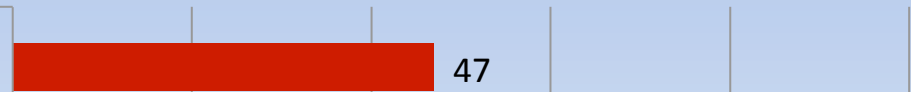


# Answer me this:

- How long does it take for the Earth to go around the Sun?

# Public understanding

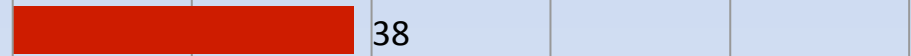
Human beings developed from earlier species of animals. (True)



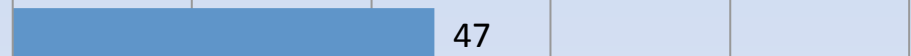
Antibiotics kill viruses as well as bacteria. (False)



The universe began with a huge explosion (True)



Lasers work by focusing sound waves. (False)



Electrons are smaller than atoms. (True)



All radioactivity is man-made. (False)



How long does it take for the Earth to go around the Sun? (One year)



Does the Earth go around the Sun, or does the Sun go around the Earth? (Earth around Sun)



The continents on which we live have been moving and will continue to move in the future. (True)



The center of the Earth is very hot. (True)



# Barriers to acceptance and action

- solutions not known, or may be perceived as threats
- perceived to affect people and animals far away
- fear of problem may result in “shut down mode”
- mass communication engenders awareness without action



Leiserowitz, in Dilling and Moser, 2007

Moser, in Dilling and Moser, 2007

Ungar, in Dilling and Moser, 2007

Dunwoody, in Dilling and Moser, 2007

# Sources of climate concepts (good, bad and ugly)

**“It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.”**

Mark Twain

- Everyday experience
- Parents, friends
- Vicarious experience-movies
- Internet-blogs, websites
- School, textbook graphics



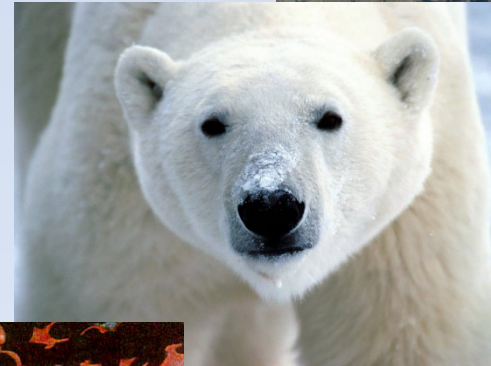
Help or hindrance?



# Do misconceptions matter?

- **happening far away** (it's not urgent)
- **happening to non-humans** (it's low priority)
- **it's pollution** (don't use spray bottles)
- **it's weather** (can't affect it)
- **it's an apocalypse** (it's too late!)

**appropriate mental  
models involve a  
global systems  
perspective**



hearing the consensus repeated

clarification about the scientific process

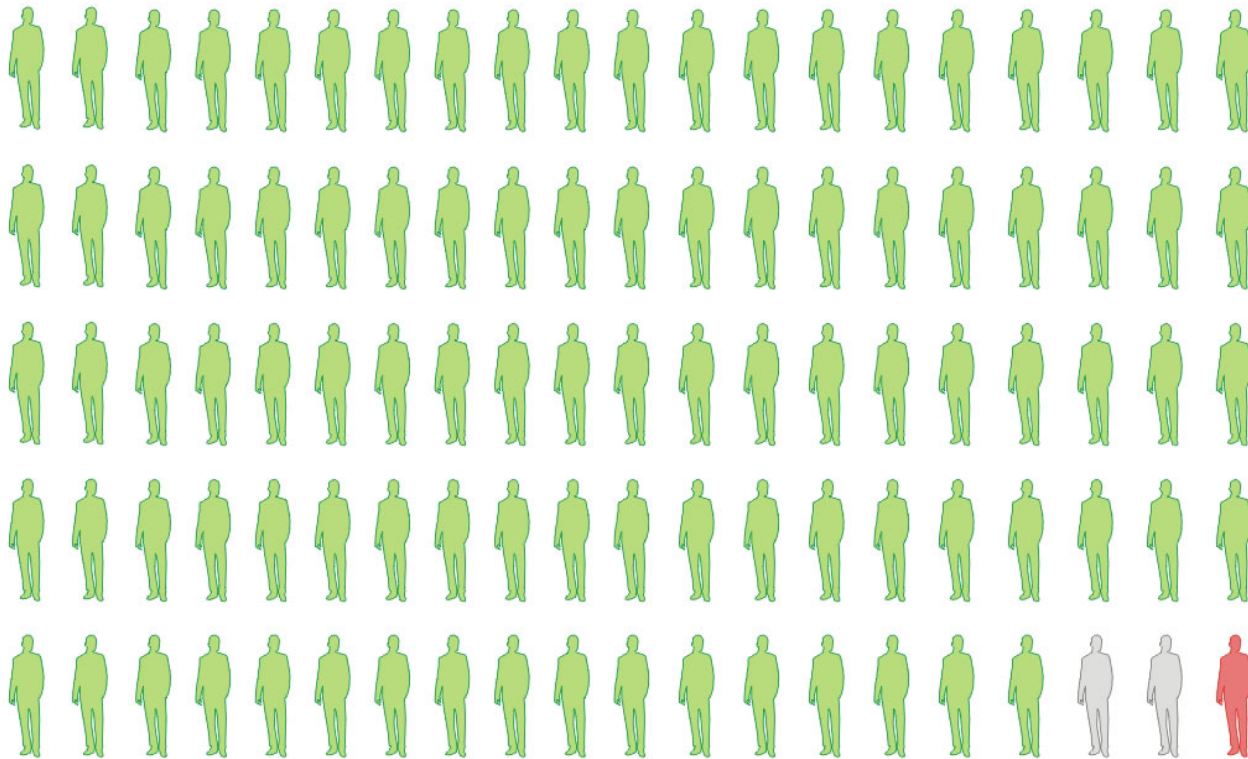
framing-clear, relevant evidence for  
change

respectful responses to disagreement

exposure to info about solutions

# Scientists consensus

**97 out of 100 climate experts think humans are causing global warming**

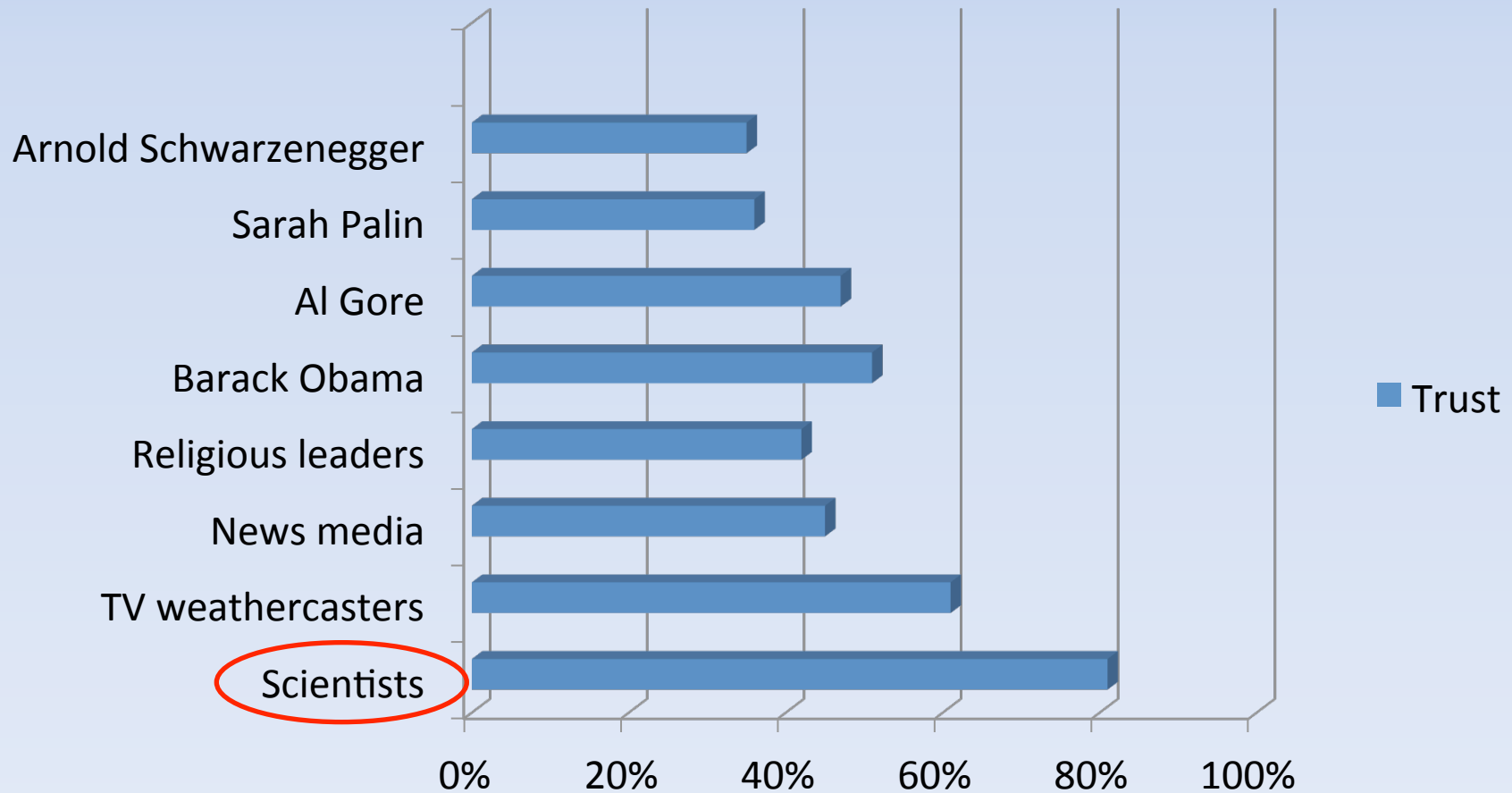


Doran and Zimmerman, 2009;  
Anderegg, 2010

# Some Climate Assessment messages

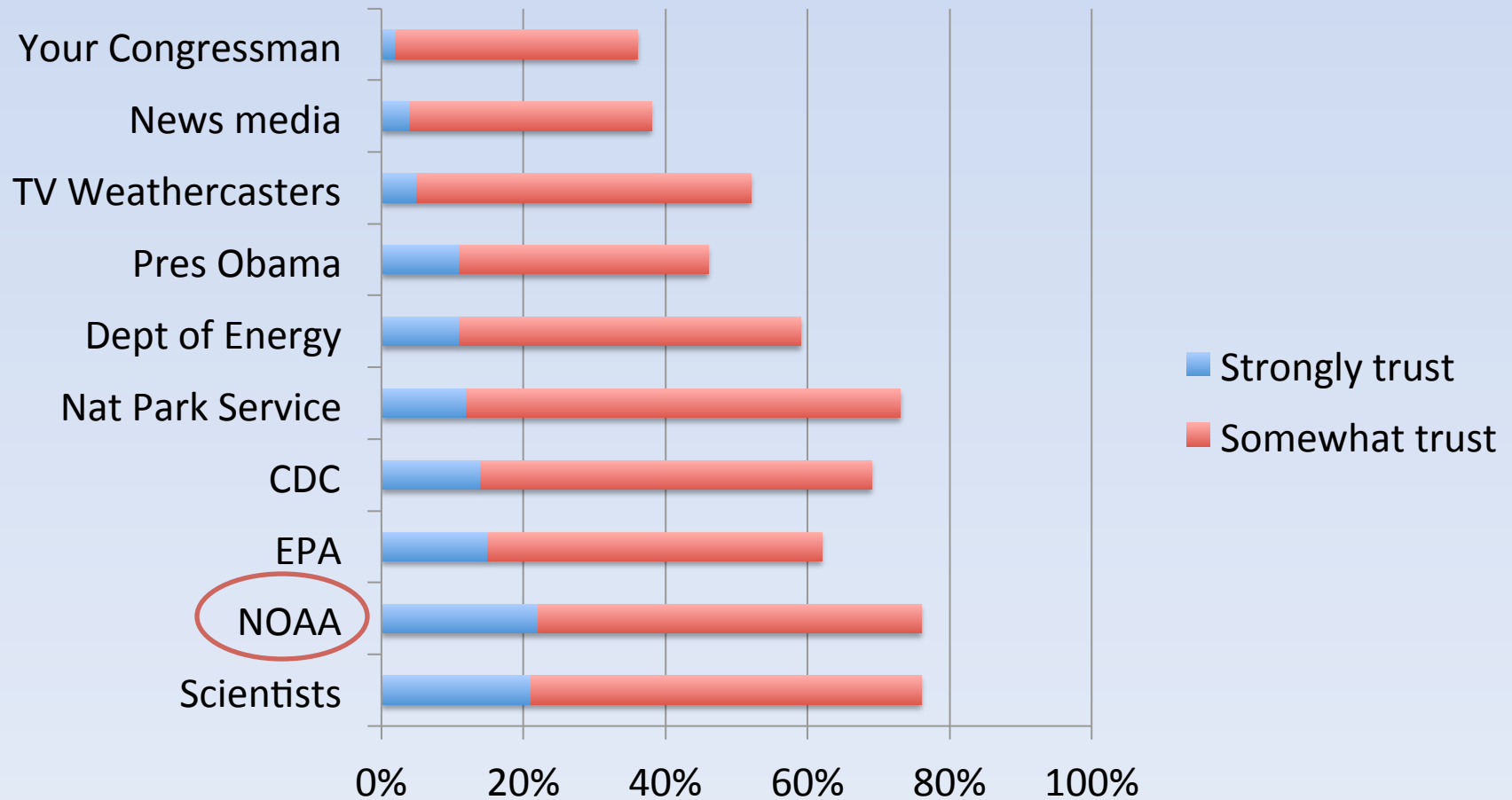
- Human activities are the dominant agents of change.
- Human increases in heat-trapping gases are the main cause of change over past 50 years.
- The U.S. is warming and expected to continue warming.
- Impacts are increasing.

# Trust in Sources of Information about Climate Change: *General Public*



Source: Leiserowitz, A., Maibach, E., & Roser-Renouf, C. (2010) *Climate change in the American Mind: Americans' global warming beliefs and attitudes in January & June 2010*. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change.

# Trust in Sources of Information about Climate Change: *General Public*





hearing the consensus repeated

clarification about the scientific process

clear, relevant evidence for change

respectful responses to disagreement

exposure to info about solutions

# Answer me this:

Which answer below best represents carbon dioxide levels in the atmosphere today?

A. 450 ppmv

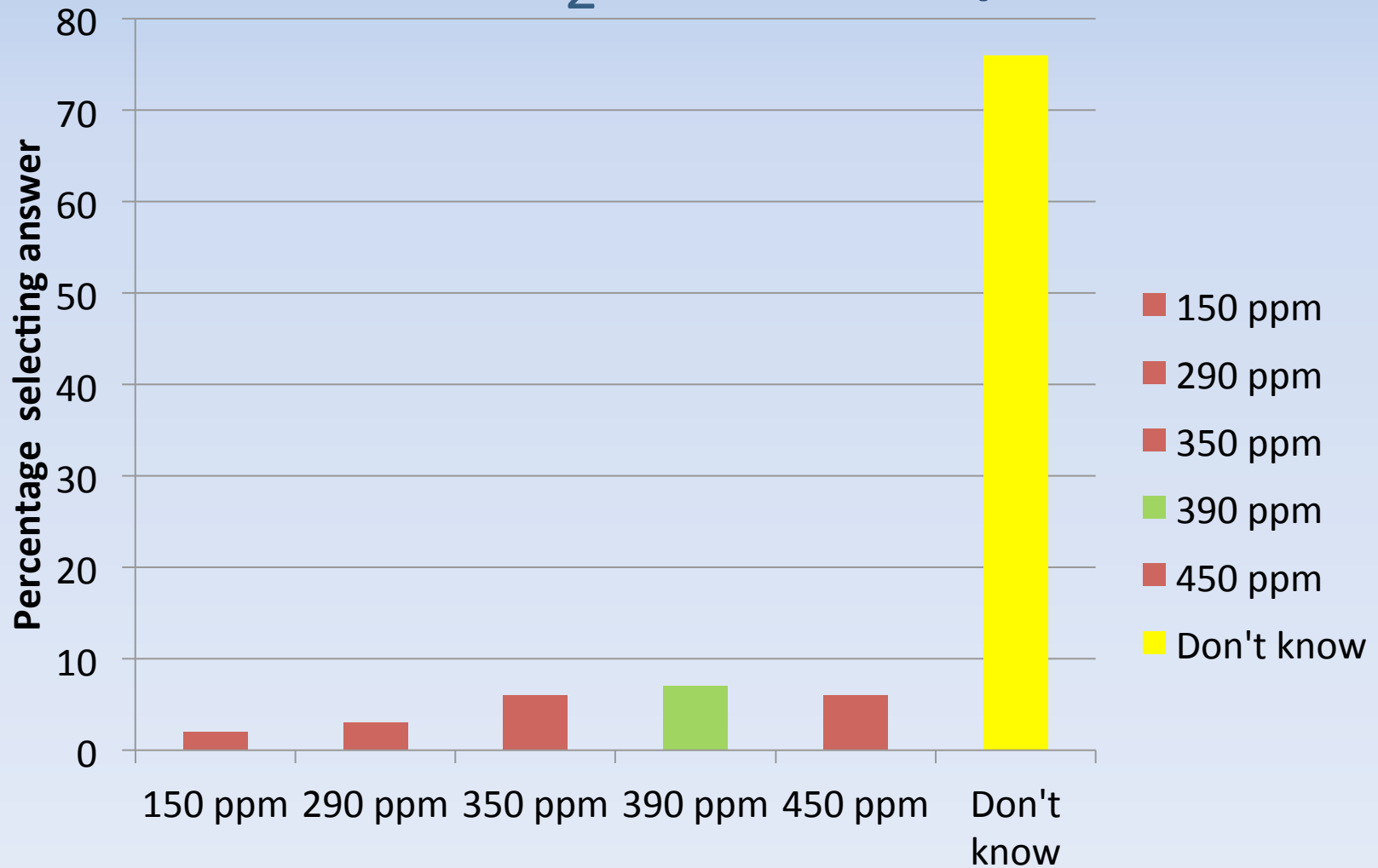
B. 390 ppmv

C. 280 ppmv

D. 180 ppmv

How do you know?

# Amount CO<sub>2</sub> in atmosphere?

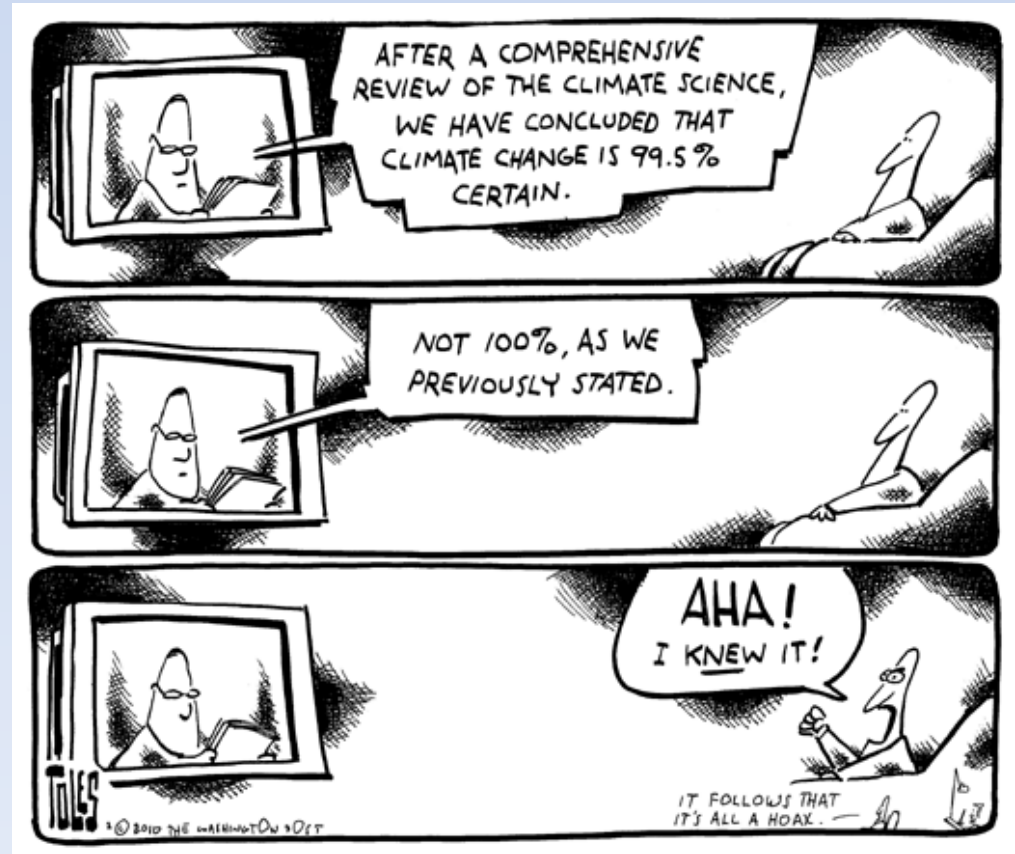


**Concentration CO<sub>2</sub>**

Leiserowitz, 2010

# Communicate uncertainty

- Humans need predictability
- Language issues
- Use precise words
- Precautionary principle
- Group discussion



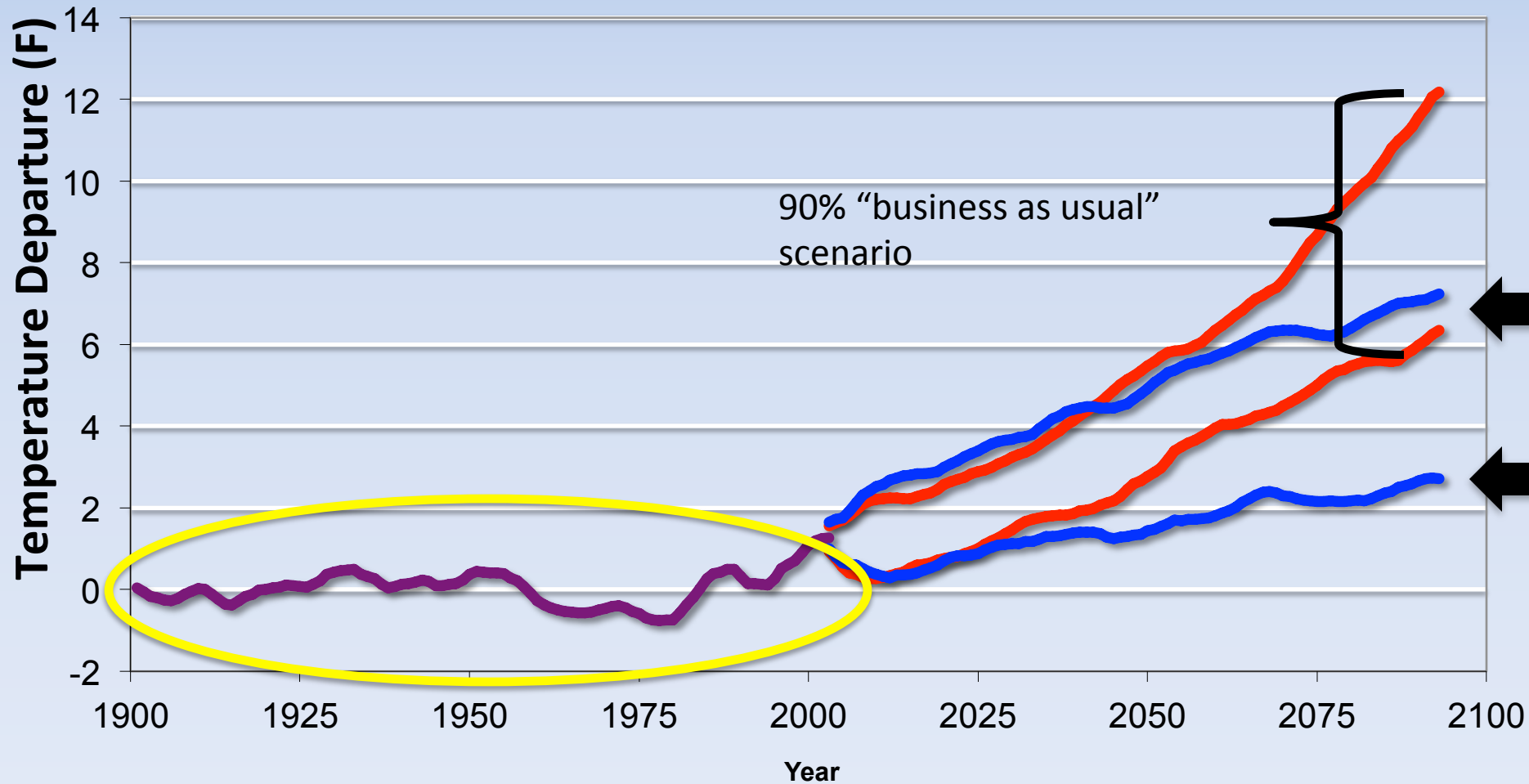
# the scientific process: scientific uncertainty

---

- **What we know**
- **Where we are uncertain**
- **What we infer**

*The job of science is to construct the understanding that best explains the evidence.*

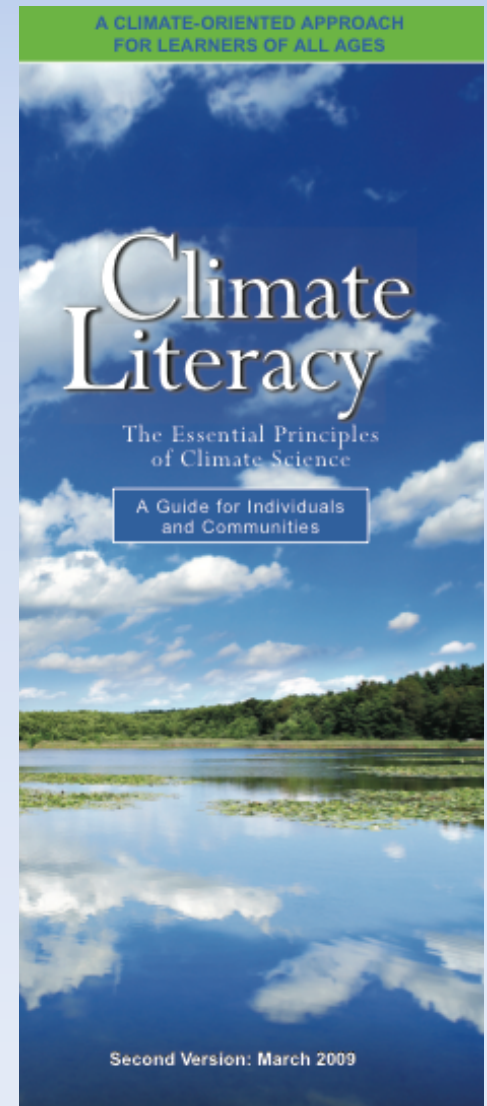
# Great Lakes Annual Temperature Departure from 1971-2000 Normal





# climate literacy

- NOAA, AAAS sponsored framework aligns with National Science Education Standards
- understanding fundamental concepts develops appropriate mental models
- Approved as US Global Change Research Program document



# Some things people should know

- The nature of geoscience
- The mechanism of the greenhouse effect.
  - 400 word intervention leads to more acceptance\*
- Impacts exist now
- Future warming depends mostly on present and future emissions.
- We have useful technology-with caveat

\*<http://morenumerate.org/downloads/RanneyEtAl-ICLS2012.pdf>

hearing the consensus repeated

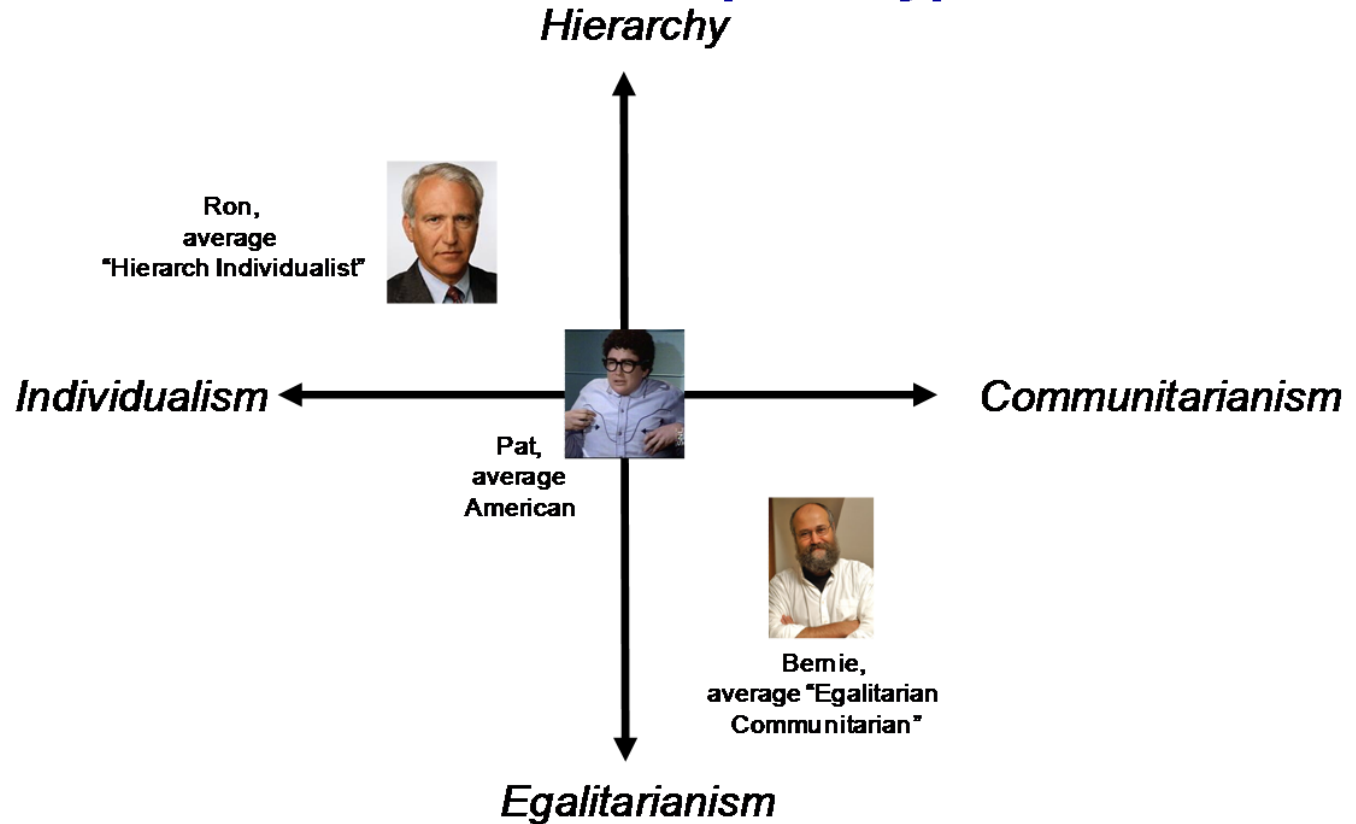
clarification about the scientific process

**clear, relevant evidence for change**

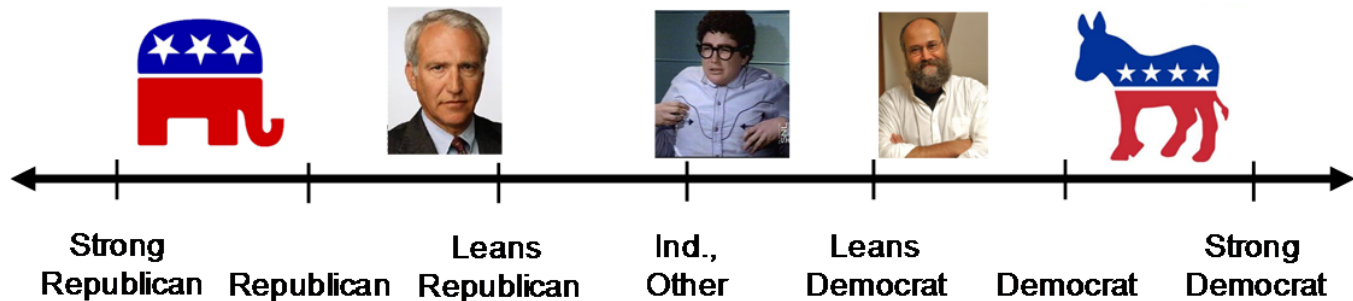
respectful responses to disagreement

exposure to info about solutions

# Cultural worldview prototypes...



## ... and their political affiliations



# Frame for your audience

---

- tailor examples to your audience
- impacts on your region
  - economics
  - way of life
  - species
- global impacts
  - polar species
  - developing nations
- personal interests
- People like them



# Framing

- Promotion vs. Prevention
- Local framing
- Now vs. Future
- Gain vs. Loss
- National Security
- Human Health



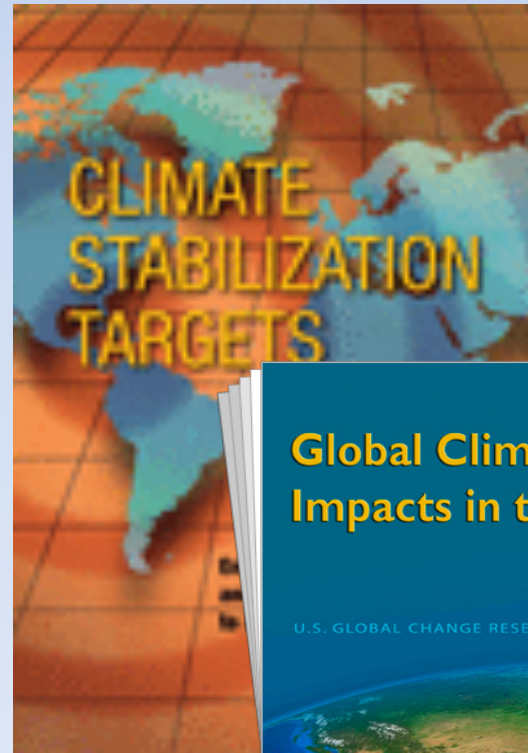
[http://  
earththeoperatorsmanual.com/  
landing/watch-share](http://earththeoperatorsmanual.com/landing/watch-share)



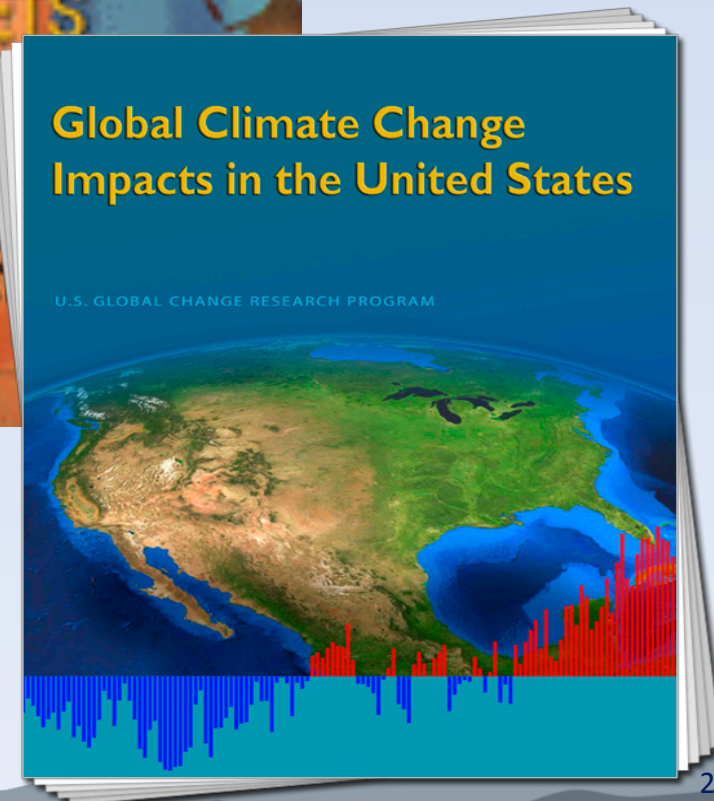
# Framing resources

- Impacts quantified by degree
- Impacts by region and sector
- Precipitation, snow, temperature and heat waves
- Hurricane force, sea level change
- Crop loss, wildfires

National Academies



US Global Change Research Program



hearing the consensus repeated

clarification about the scientific process

clear, relevant evidence for change

**respectful responses to disagreement**

exposure to info about solutions

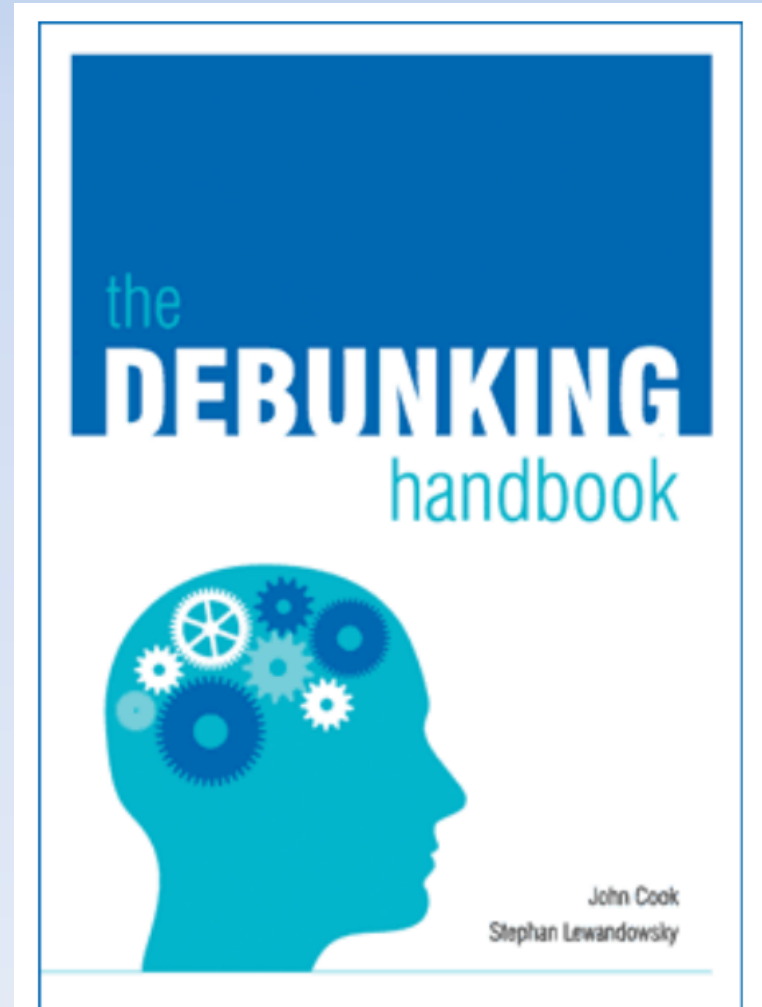
# respectfully responding to disagreement

---

- use dialogue: listen to understand root concerns, defuse emotions.
- Be intentional: use debunking format, clear language
- be patient: misinformation comes from trusted sources
- your viewpoints might overlap

# Avoid backfire

- Core fact
- Evidence
- Acknowledge myth
- Provide simple alternative explanation



[www.skepticalscience.com/docs/Debunking\\_Handbook.pdf](http://www.skepticalscience.com/docs/Debunking_Handbook.pdf)

# Controversy as a teachable moment



Increased CO<sub>2</sub> in the atmosphere is a good thing. Since more CO<sub>2</sub> is better for plants won't it be better for crops?

Really!? I thought you were educated. How could anyone really think large scale global change will be better for crops?

\*Taub, D. (2010) Effects of Rising Atmospheric Concentrations of Carbon Dioxide on Plants. Nature Education Knowledge 1(8):21



...Overall, the carbon, hydrogen and oxygen assimilated into organic molecules by photosynthesis make up ~96% of the total dry mass of a typical plant (Marschner 1995). Photosynthesis is therefore at the heart of the nutritional metabolism of plants, and increasing the availability of CO<sub>2</sub> for photosynthesis can have profound effects on plant growth and many aspects of plant physiology.\*



# Controversy as teachable moment



Increased CO<sub>2</sub> in the atmosphere is a good thing.  
Since plants need CO<sub>2</sub> won't more be better for crops?

Great question. Let's look at the data.  
Under field conditions plants quickly become limited by some other factor, such as water.

Because plants do need CO<sub>2</sub>, scientists studied how plants grow with increased CO<sub>2</sub>. The studies found increased growth at first, but then more vulnerability and limits.



# Controversy as a teachable moment



In my view global warming is just part of a natural cycle. The climate has changed before and it will change again.

The IPCC says today's climate change is caused by human activities.



Tell me more about how you came to that conclusion....

At one time climate scientists weren't sure about the causes either...





# Sources for sound information

- climate.gov
- IPCC
- US Global Change Research Program
- CLEAN collection
- *Skeptical Science*
- *Real Climate* “Start Here”



Cleanet.org

hearing the consensus repeated

clarification about the scientific process

clear, relevant evidence for change

respectful responses to disagreements

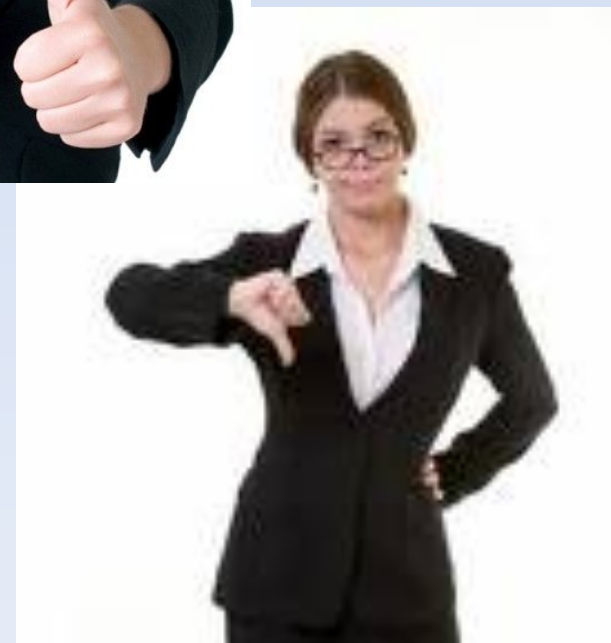
**exposure to info about solutions**

# talking about solutions

- **fight or flight reaction to climate change**
  - “when scary weather is the problem, SUV’s are the solution”
- **choice is affected by perceptions of:**
  - whether individual actions make a difference
  - losing what is personally valued
- **pairing science with solutions wards off denial, engenders hope**
- **How should solutions figure in your communication?**

# Talking about solutions

- Two groups, just world view
- Same IPCC facts, different endings
- One positive ending-solutions
- One negative ending-dire warnings
- Which group accepted the facts?

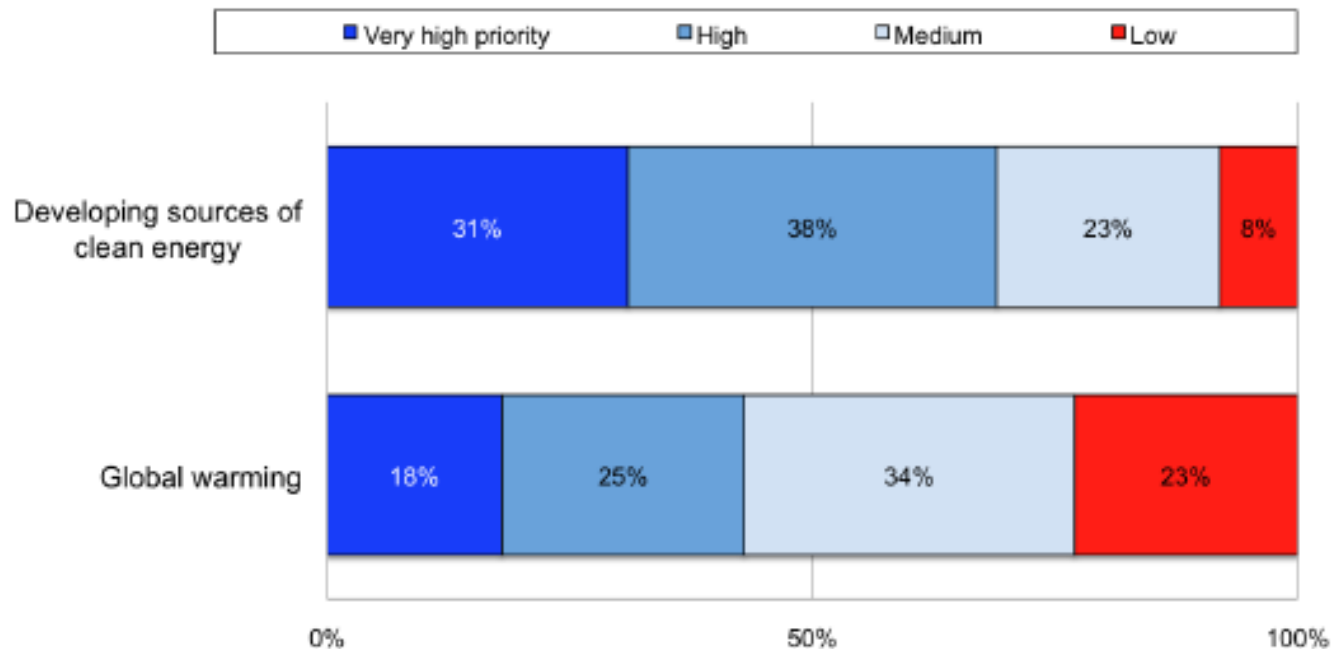


Feinberg and Willer, *Psychological Science* January

2011 vol. 22 no. 1 34-38

# talking about solutions

## Majority of Americans Say Developing Clean Energy and Global Warming Should Be Priorities for the President and Congress



Do you think that global warming should be a low, medium, high, or very high priority for the president and Congress?  
Do you think that developing sources of clean energy should be a low, medium, high, or very high priority for the president and Congress?

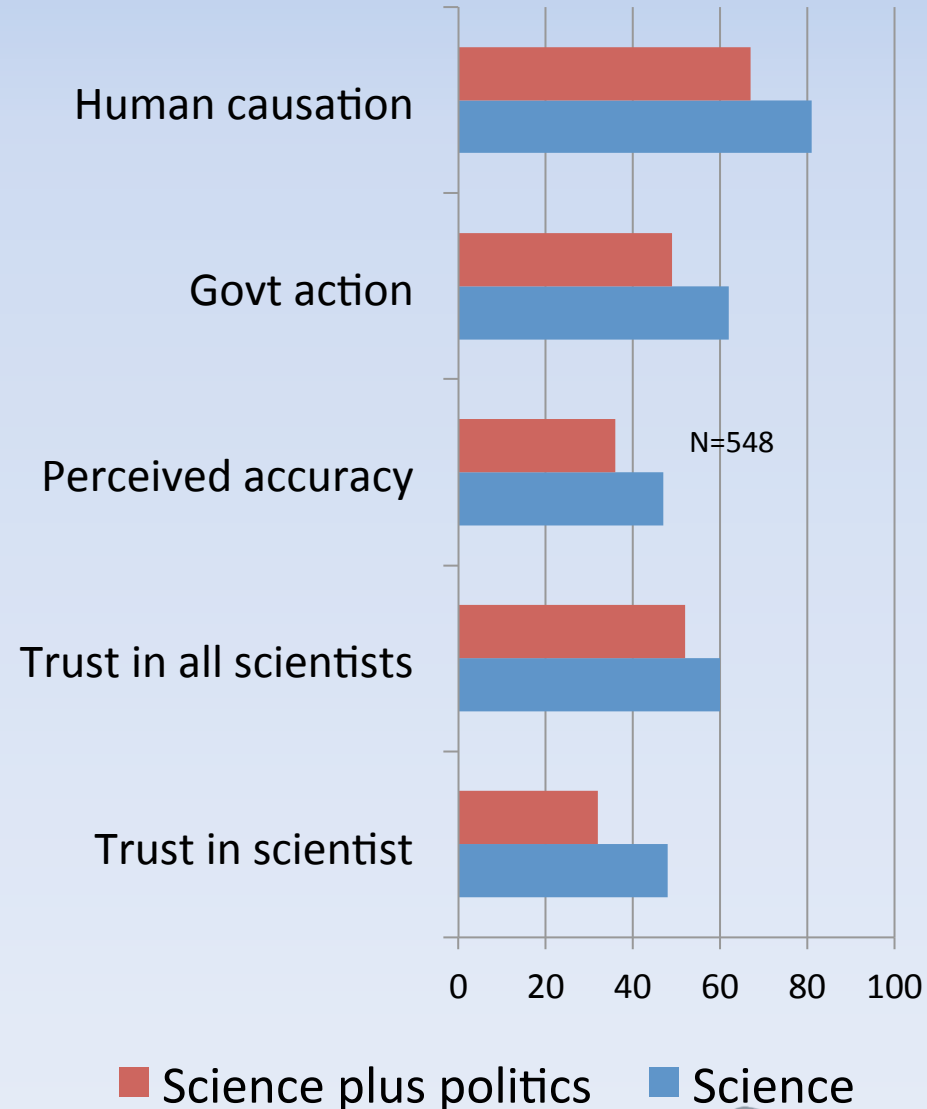
Base: Americans 18+.

Source: Yale/George Mason



## But tread carefully

- Remain an honest broker
- Talk about changes in your own life
- Don't answer questions you don't know
- Send reporters to another expert source



# effective climate change communication

is:

- palatable, relevant to audience
- evidence-based
- uses plain language
- explains scientific process
- includes solution info

is not:

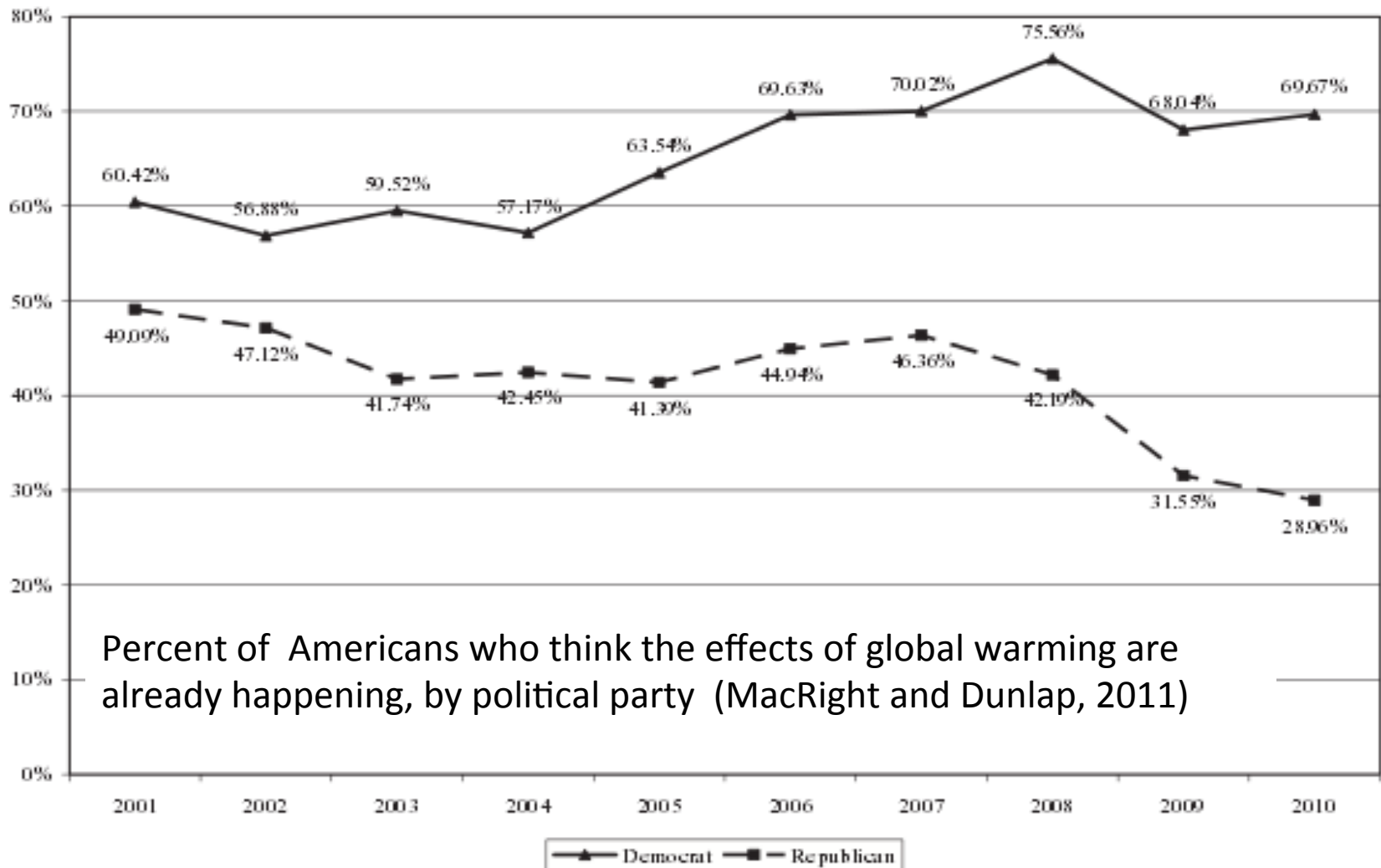
- overwhelmingly detailed
- privileging authority over reasoning
- intended to trigger fear, guilt

# Thank you!



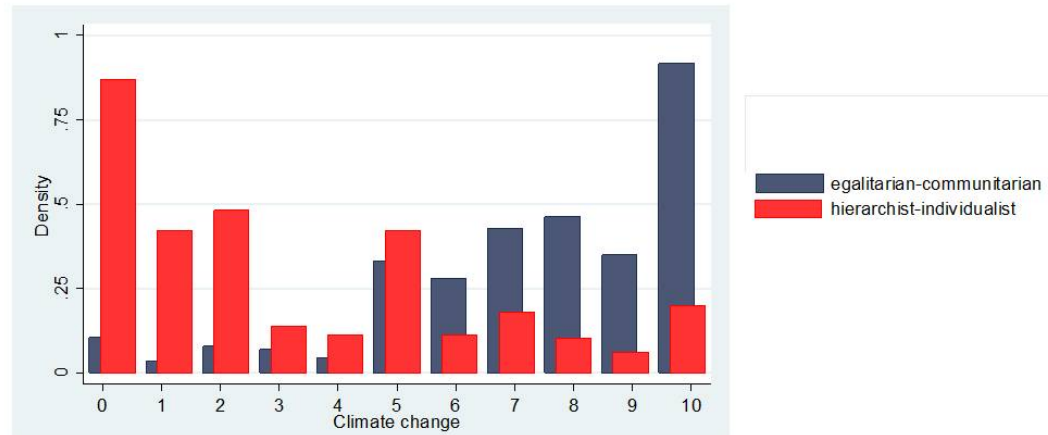
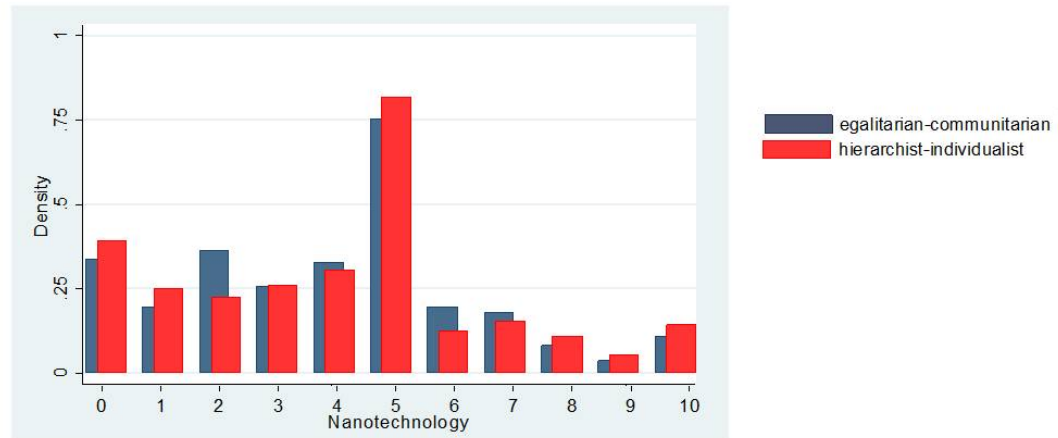
# backups

# Politicization/polarization



# Polarization by world view

*"How much risk do you believe ... poses to human health, safety, or prosperity?"*



Cultural Cognition Project. U.S. general population survey,  $N = 1,500$ . Knowledge Networks, Feb. 2010. Scale 0 ("no risk at all") to 10 ("extreme risk").