

Overview of IPCC WG II Report



Energy and Climate Change
Research Seminar

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Washington, DC
May 13, 2014

IPCC Work Group II: Impacts

- Report released late March
- 5 year effort
- 30 chapters; hundreds of authors
 - 50,000+ comments
- I was a coordinating lead author on the North America chapter
- Report has received a lot of press
- I will give some highlights and some personal reflections



Report Overview

- Work Group II ably led by Chris Field of Stanford University
- Appropriately emphasized observed impacts and risks from climate change
- Downplayed specific numbers



One Important Component of AR5

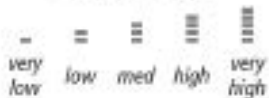
- Observed impacts of climate change
- Key: Detection and attribution
 - Detection: Is there a trend beyond baseline?
 - Attribution: Can it be attributed to climate change?



(A)



Confidence in attribution to climate change



□ indicates confidence range

Observed impacts attributed to climate change for

Physical systems



Biological systems



Human and managed systems



□ Regional-scale impacts

Outlined symbols = Minor contribution of climate change
Filled symbols = Major contribution of climate change

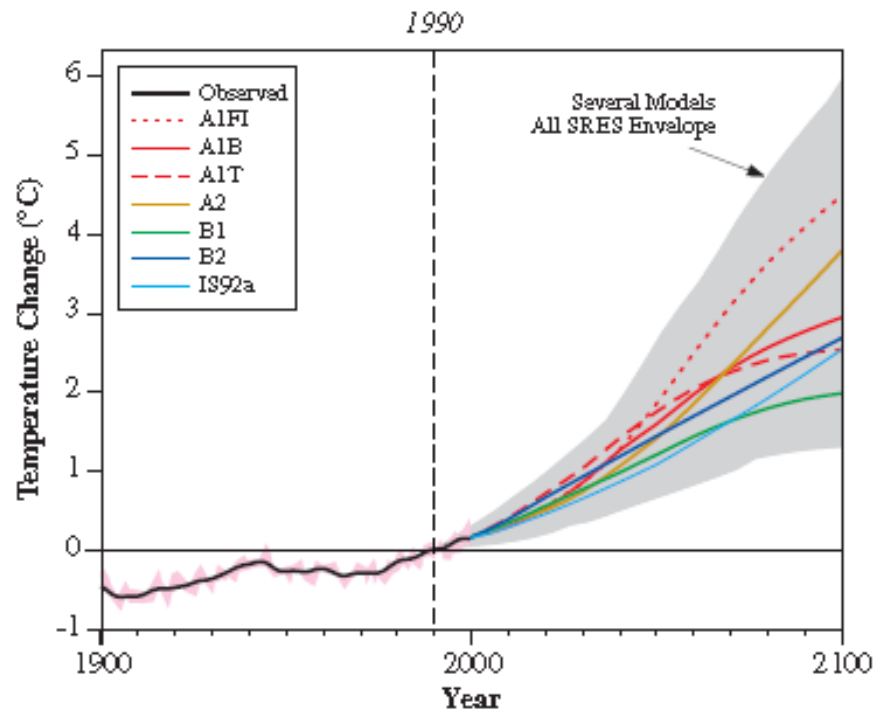


Another Key Component

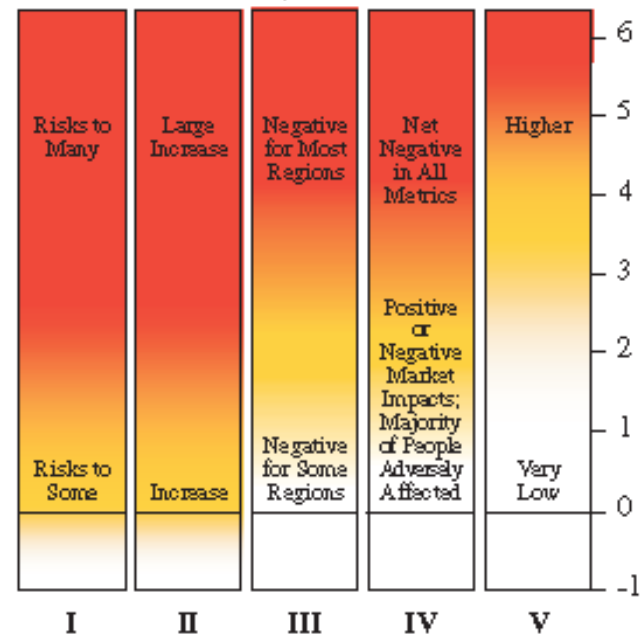
- What do we expect in the future?



IPCC TAR “Burning Embers”



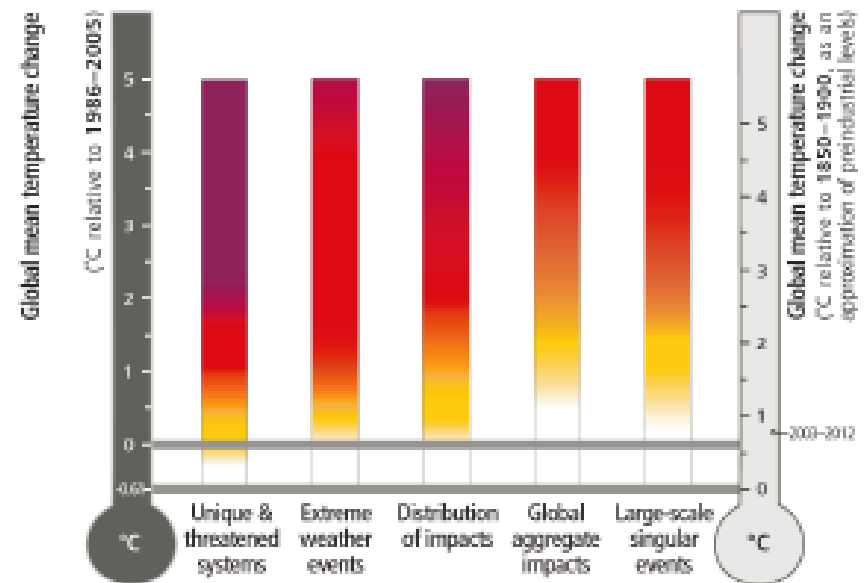
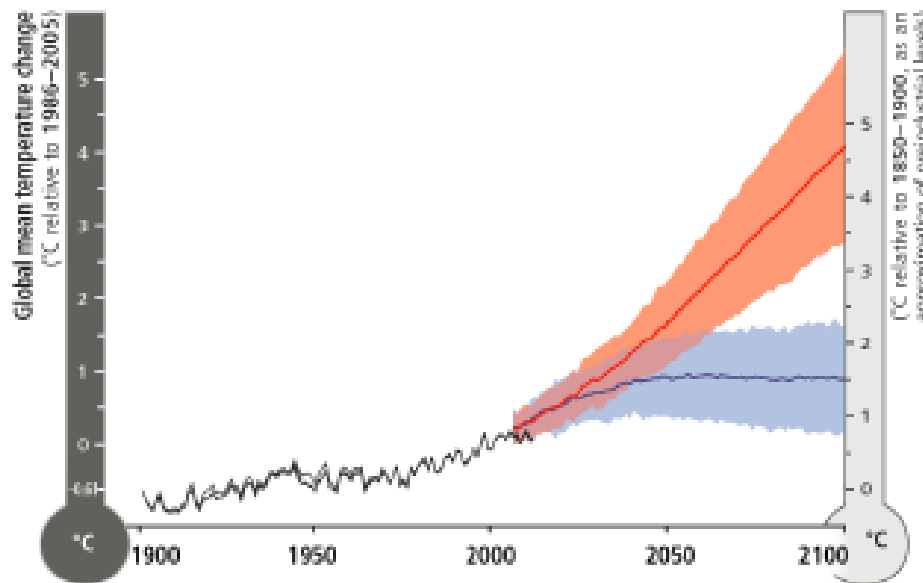
Reasons for Concern

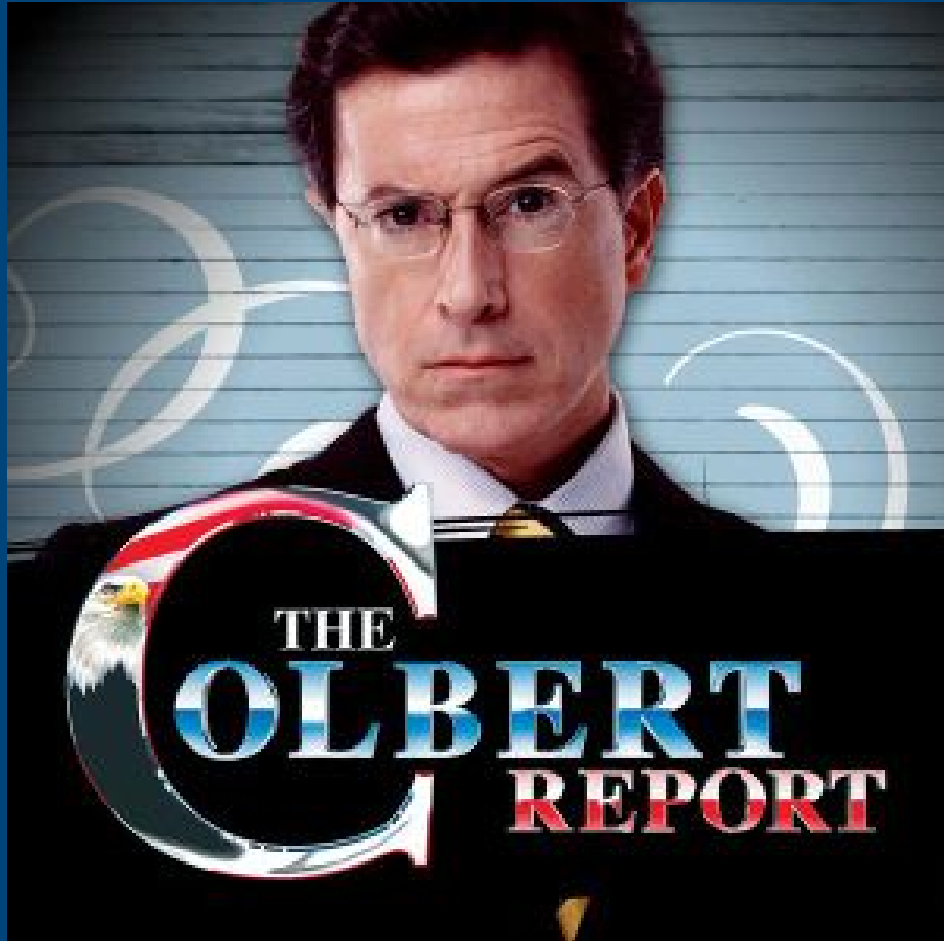


- I Risks to Unique and Threatened Systems
- II Risks from Extreme Climate Events
- III Distribution of Impacts
- IV Aggregate Impacts
- V Risks from Future Large-Scale Discontinuities



IPCC AR5 Burning Embers Update



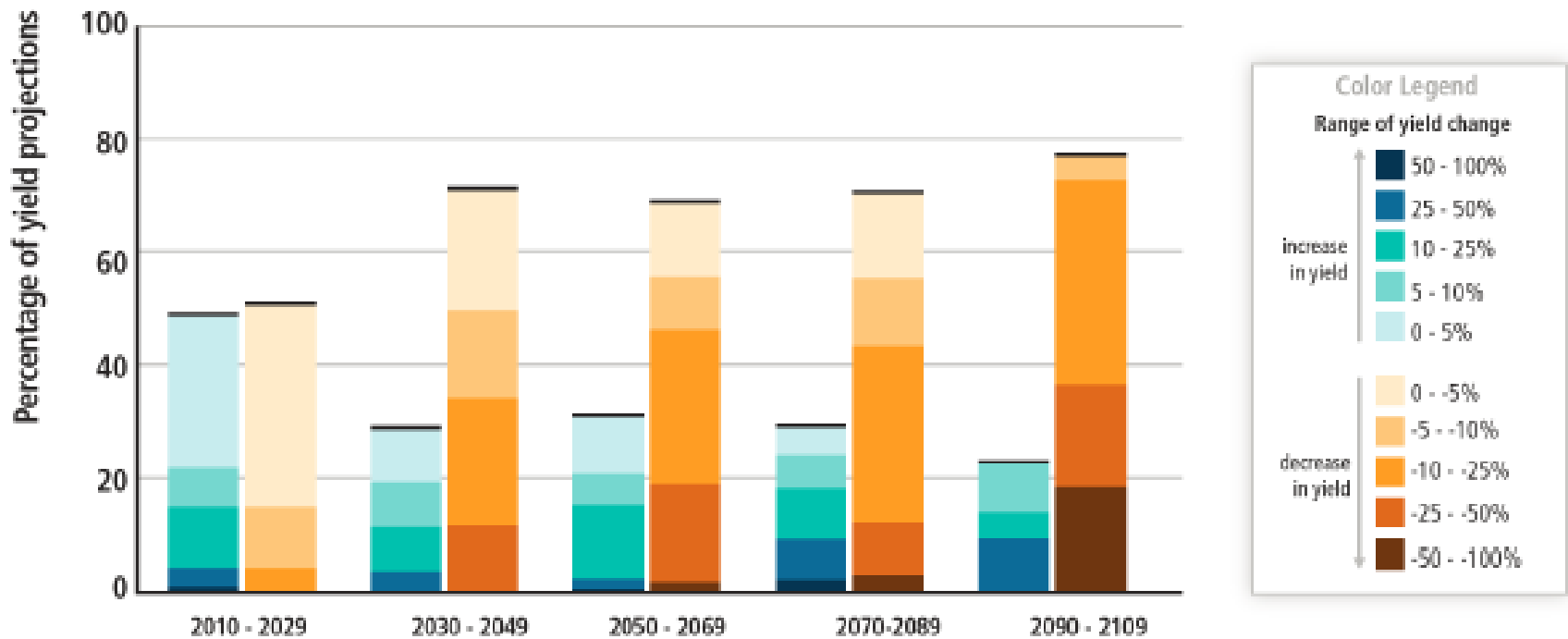


Two Findings Getting a Lot of Attention

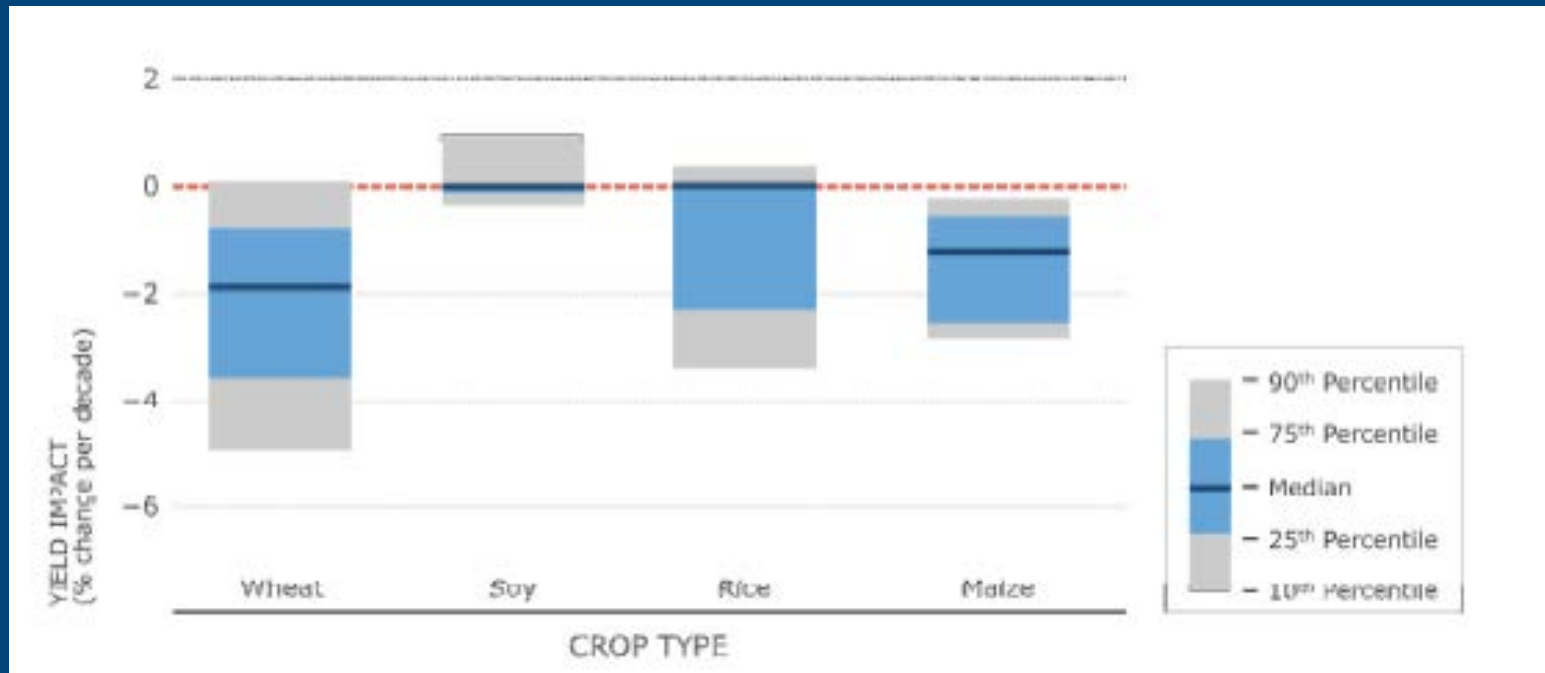
- Agriculture
- Security



Studies Projecting Increases/Decreases in Crop Yields



Projected Change in Crop Yields



Key Points on Agriculture

- Climate change projected to decrease yields 0–20% by 2100 (< 2%/decade)
- Demand grows 14%/decade by 2050
- Climate change much smaller impact on agriculture system



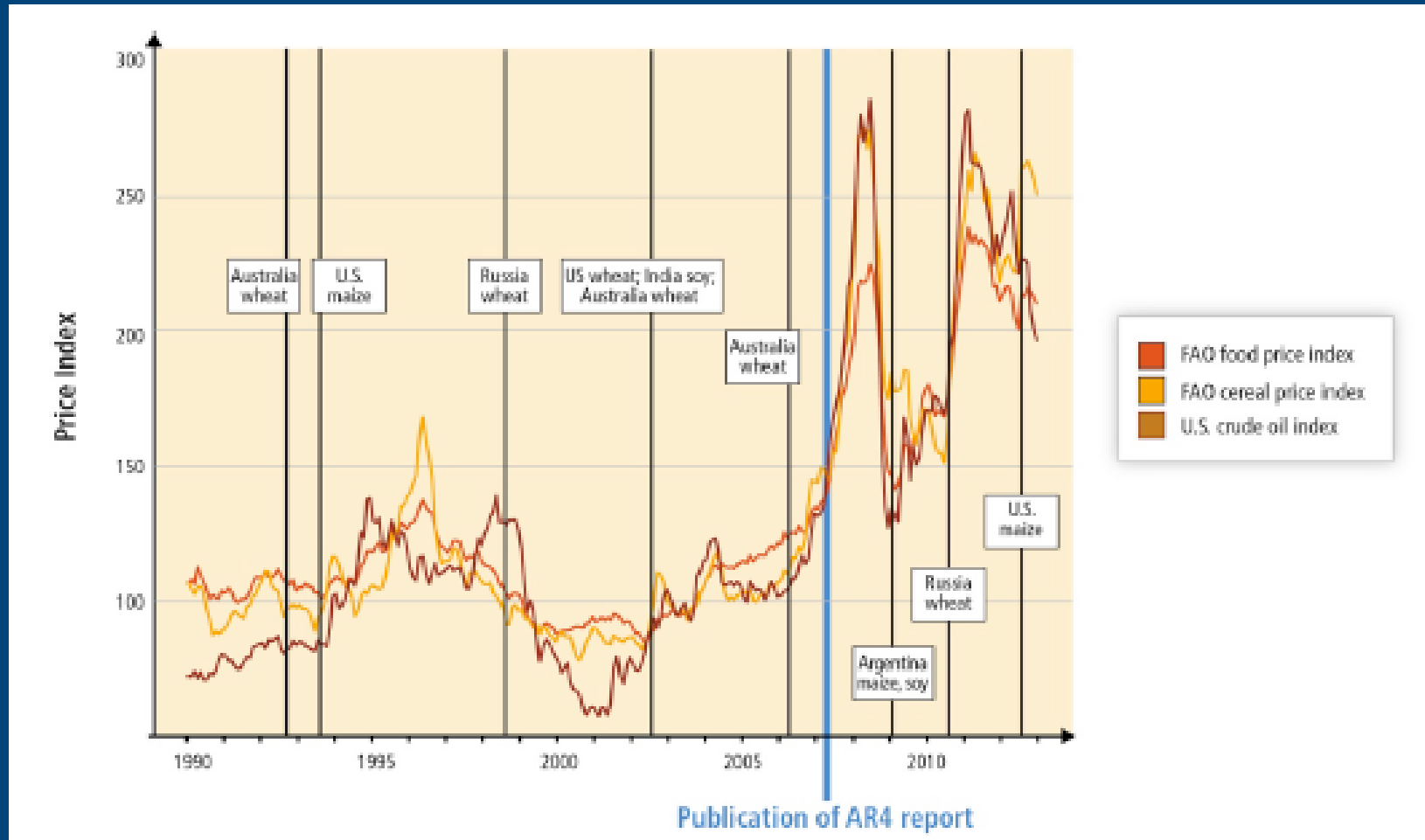
Role of Adaptation: Where Are the Farmers?



- Report addresses farm adaptation
 - Based on modeling studies
- Adaptation can offset up to 15% of yield losses
- Can we fully estimate adaptation potential?
- EPRI's research was influential in emphasizing role of adaptation



Agriculture: Bigger Story – Tightening of Markets



Could IPCC Have Emphasized This More?

- Pointed out that the global agriculture system has become more sensitive to shocks
 - Including extreme climate events
- That increases vulnerability



Security: Key Finding

Climate change can indirectly increase risks of violent conflicts in the form of civil war and inter-group violence by amplifying well-documented drivers of these conflicts such as poverty and economic shocks (*medium confidence*).



The Press

Intergovernmental Panel on Climate Change

Warming may worsen security

U.N. report predicts more fighting over resources, hunger and extreme weather

By Seth Borenstein
The Associated Press

YOKOHAMA, Japan — In an authoritative report due out Monday, a United Nations climate panel for the first time is connecting hotter global temperatures to hotter global tempers. Top scientists are saying that climate change will complicate and worsen existing global security problems, such as civil wars, strife between

nations and refugees.

They're not saying it will cause violence, but will be an added factor making things even more dangerous. Fights over resources, like water and energy, hunger and extreme weather will all go into the mix to destabilize the world a bit more, says the report by the Nobel Peace Prize-winning Intergovernmental Panel on

See REPORT, 8A

Boulder scientists have voice in global assessments

By Charlie Brennan
Camera Staff Writer

The polar bear is us. Many people associate global warming with images of polar bears adrift on broken ice floes, but on the release of a highly anticipated climate change report, one of its Boulder-based contributors emphasized that the ramifications of an altered Earth environment are growing more immediate.

"Many Americans see climate change as a hazard for some far-off polar bears years from now," Patricia Romero-Lankao, a research scientist

at the National Center for Atmospheric Research, wrote in an email from Japan.

Romero-Lankao is a coordinating lead author on the North American portion of the "regional aspects" chapter in the Working Group II installment of the International Panel on Climate Change fifth assessment. It was released in Yokohama, Japan, on Sunday.

The second coordinating lead author on that chapter is Joel Smith, a principal of Stratus Consulting, based in Boulder. This is the third IPCC assessment in which Smith has participated, having contributed to

the 2001 and 2007 reports, too.

"In our report, we find that the dangers of a warming Earth are immediate and very human," Romero-Lankao added. "... The polar bear is us. We are some of the first species to be listed as threatened by global warming.

"It's not just about melting ice, threatened animals and plants. It's about the human and everyday concerns of livelihoods, wealth, quality of life, disease and safety becoming worse with climate change."

Smith said, "I think the bottom line is that evidence on climate change is

See VOICE, 8A



IPCC present this as a consensus view

- My reading is there are two sides
- Climate security relationship is
 - Deterministic
 - Complex

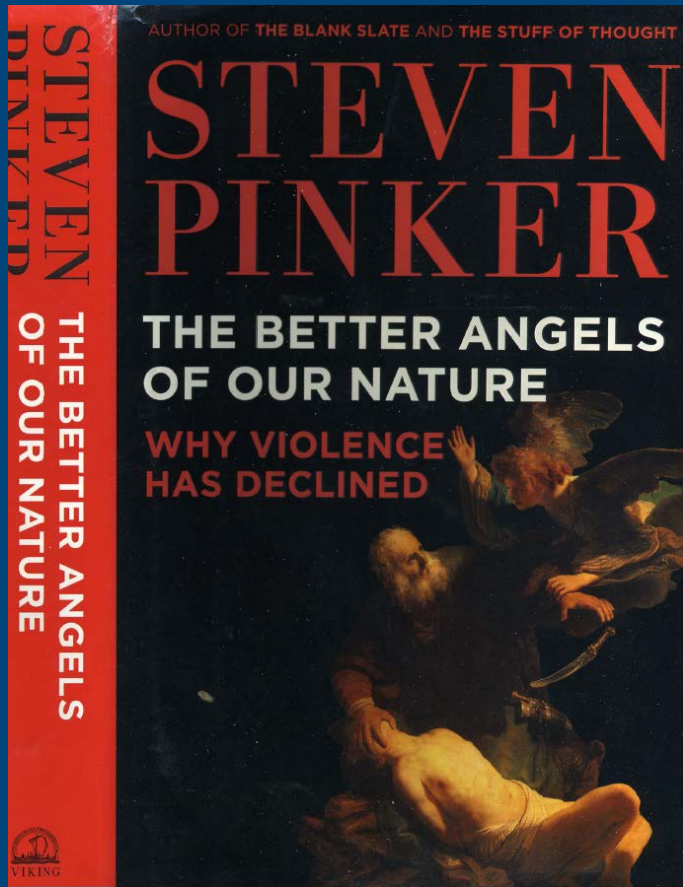


Determinists

- Burke et al., 2009. *Warming Increases the Risk of Civil War in Africa*
 - 393,000 battle deaths by 2030
- Hsiang et al., 2013. *Quantifying the Influence of Climate on Human Conflict*
 - Amplified rates of human conflict could represent a large and critical social impact of anthropogenic climate change in both low- and high-income countries



Relationship is Complex



- Liverman (2009): “...the implications are less about conflict and national security and more about questions of the ‘other’ securities – food, water, and health.”
- Some empirical studies find more complex relationships
 - Governance matters a lot
 - State of nature – or nature of the state?



Can IPCC Be Equivocal?

- Why not say there is a division of views in the research community?
 - Some studies find a link between climate and conflict
 - Many scholars think the explanations are more complicated
 - Conclusion is we do not know



Are There Gaps

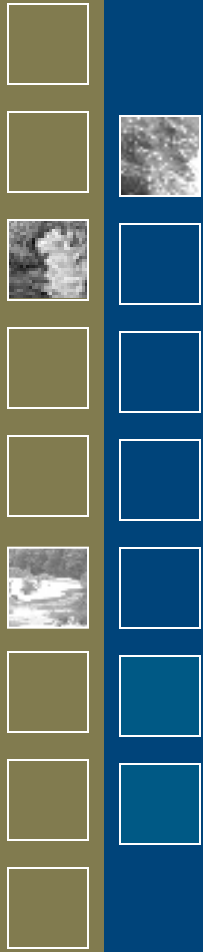
- With 30 chapters
 - 4 on adaptation
 - Urban, Rural, Sustainable Development
 - Not too many gaps
- Maybe a lack of focus is the bigger issue



Whither IPCC

- Are there declining marginal returns?
- IPCC chews up a lot of time from the research community
- Are routine assessments needed?
- A modified approach
 - 7–10 year updates for the science
 - Special reports on key topics





Thank You

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