

# The rugged path to effective decision support

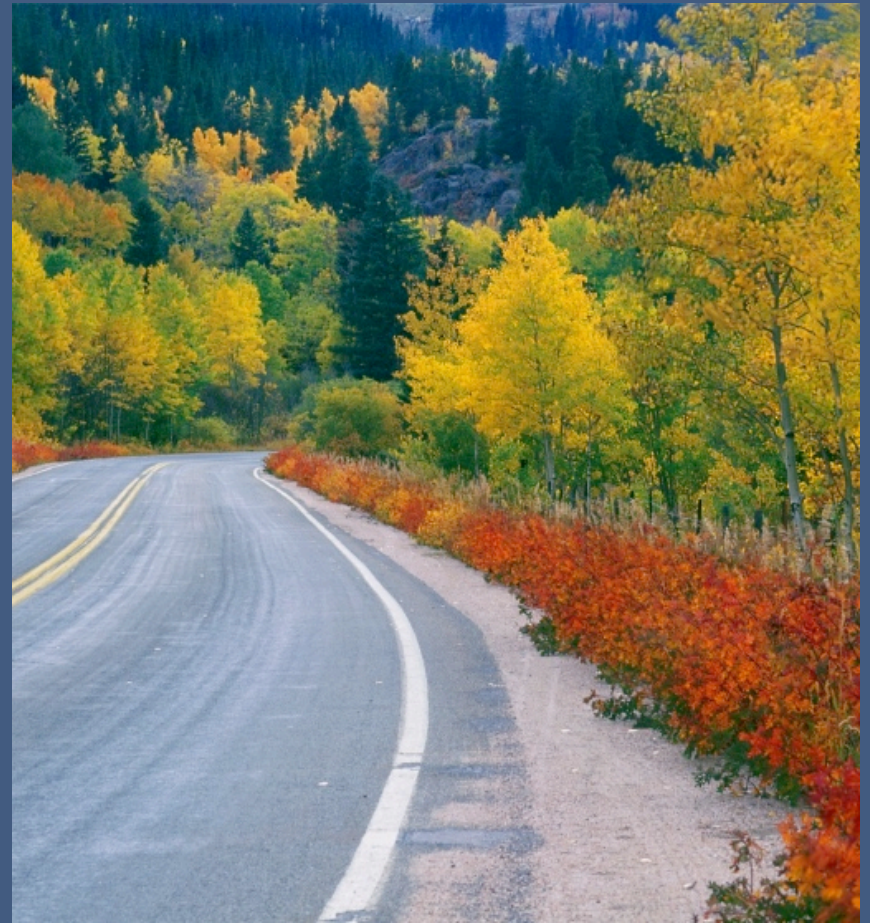
Insights from users, practice, and theory in mountain and coastal areas



James Arnott • ICCS4 Montevideo • December 11, 2014

# Roadmap

- I. The co-production challenge
- II. Lessons from a transatlantic dialogue
- III. Opportunities for climate services (partnership)

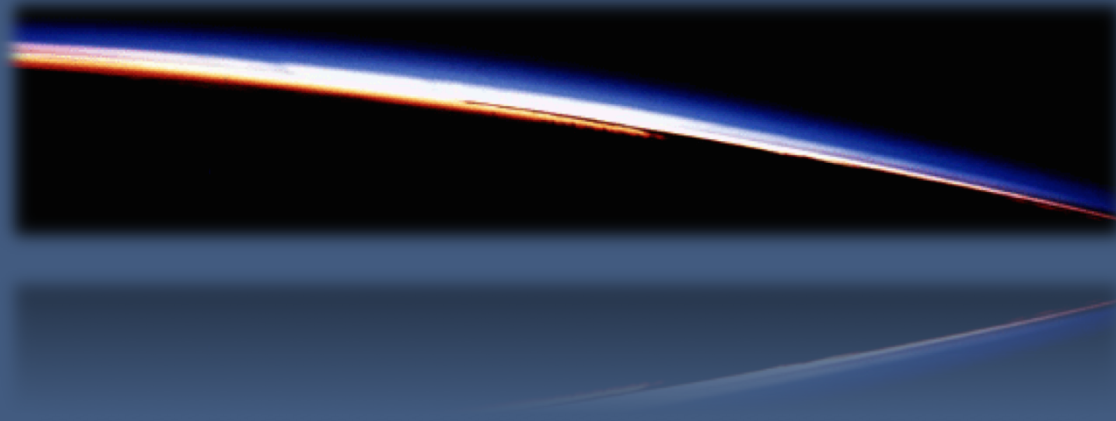


# Acknowledgements



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Guy Brasseur, John Katzenberger, Jill Jäger, Grit Martinez,  
Susanne Moser, Michael Orbach, Michaela Schaller,

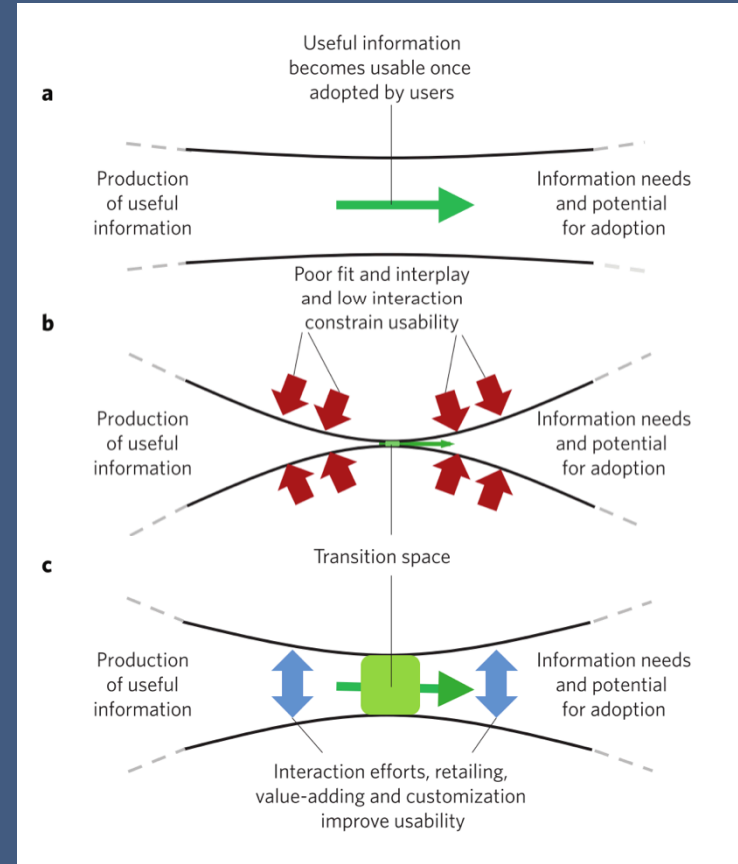


## **AGCI Mission**

To further the understanding of the science of global environmental change

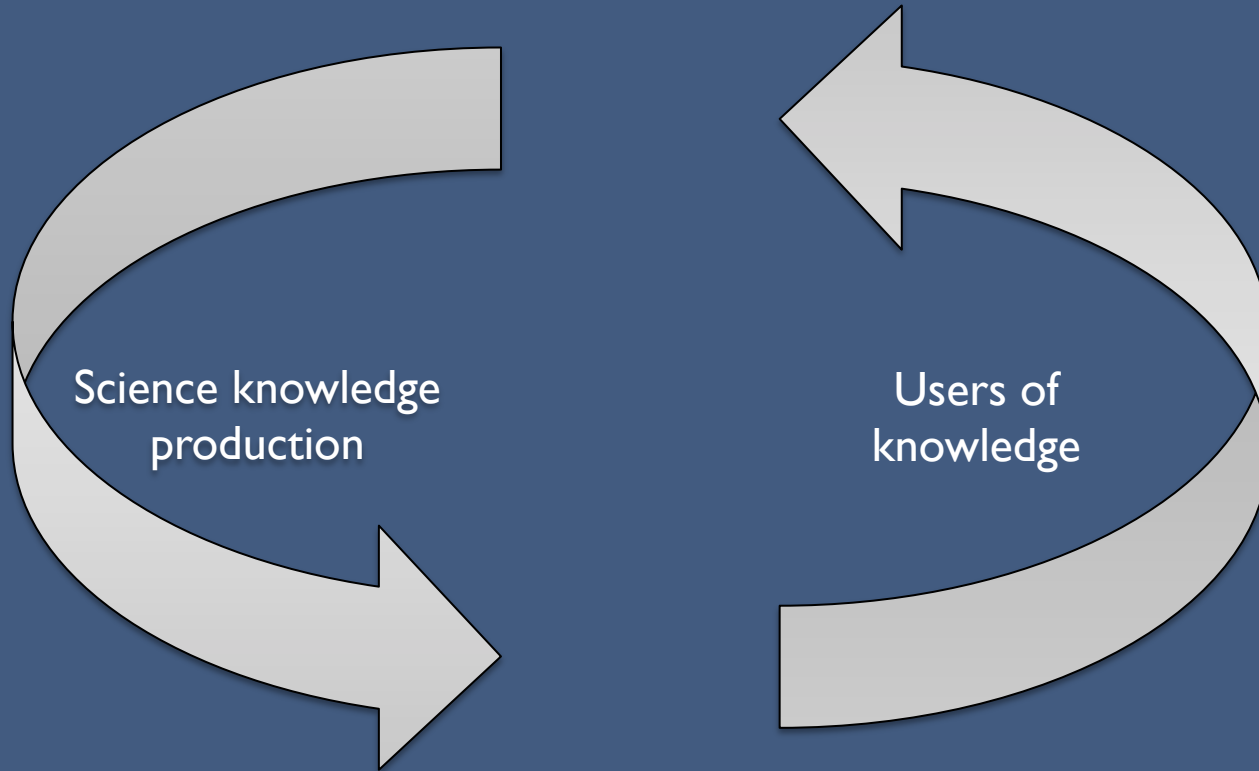
# The Rugged Path

- In theory, information—once produced—should (and will) be utilized
- In practice, the transition from production to utility faces roadblocks
  - Fit, interplay, interaction
- Efforts on both sides of the boundary expand the transition space

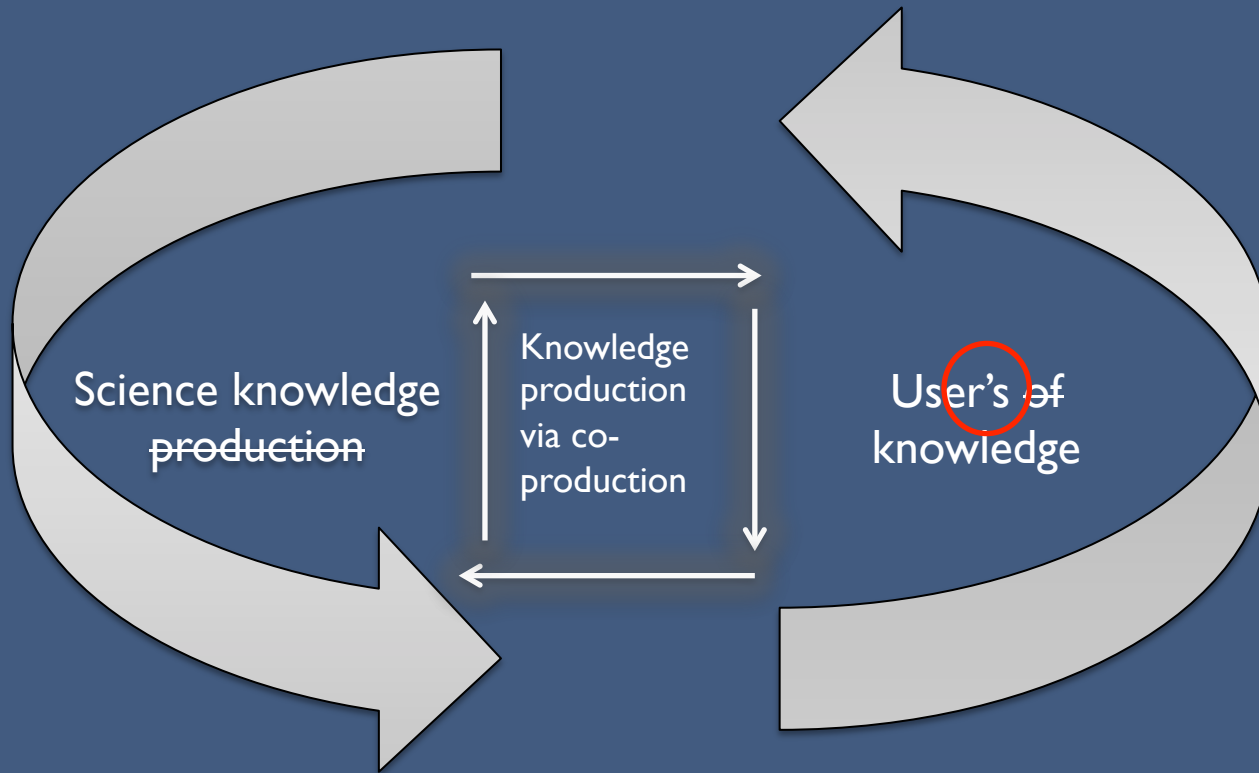


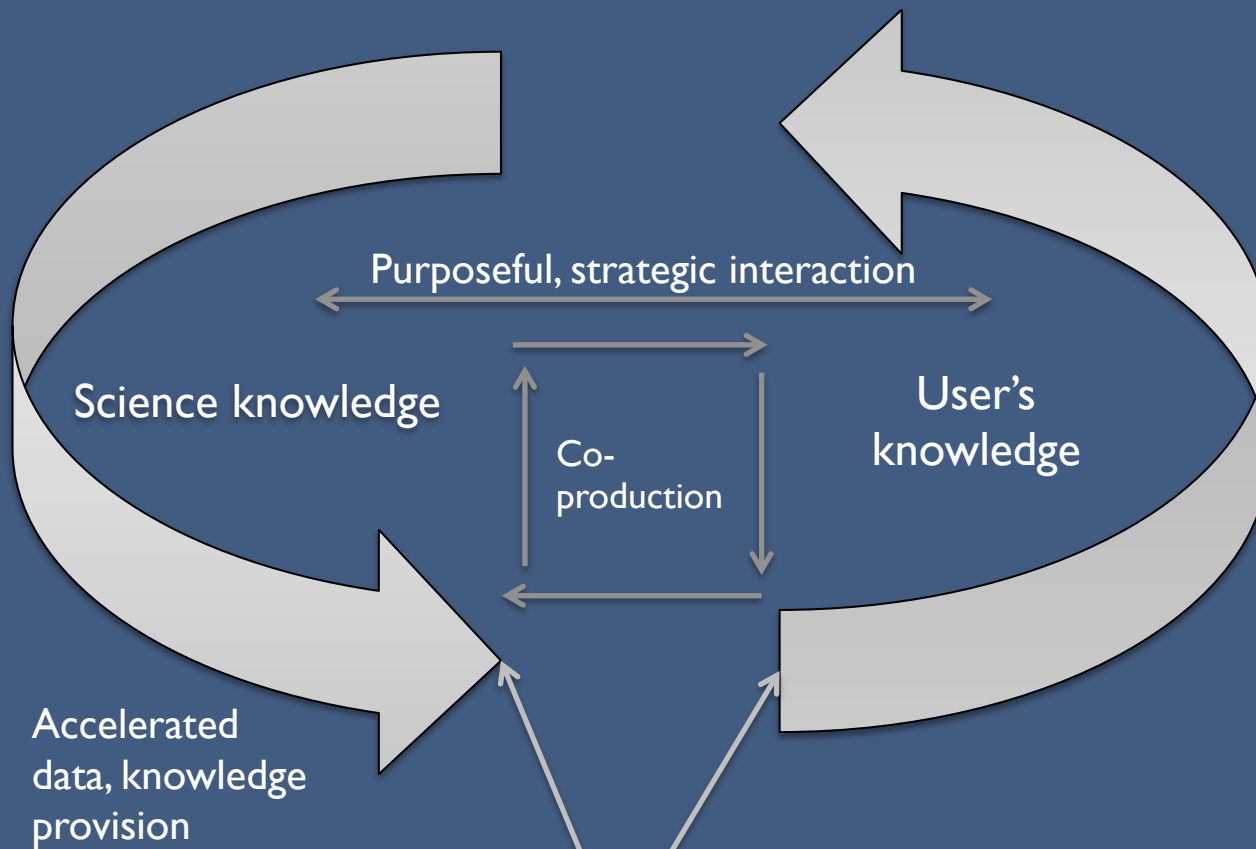


# Getting to co-production



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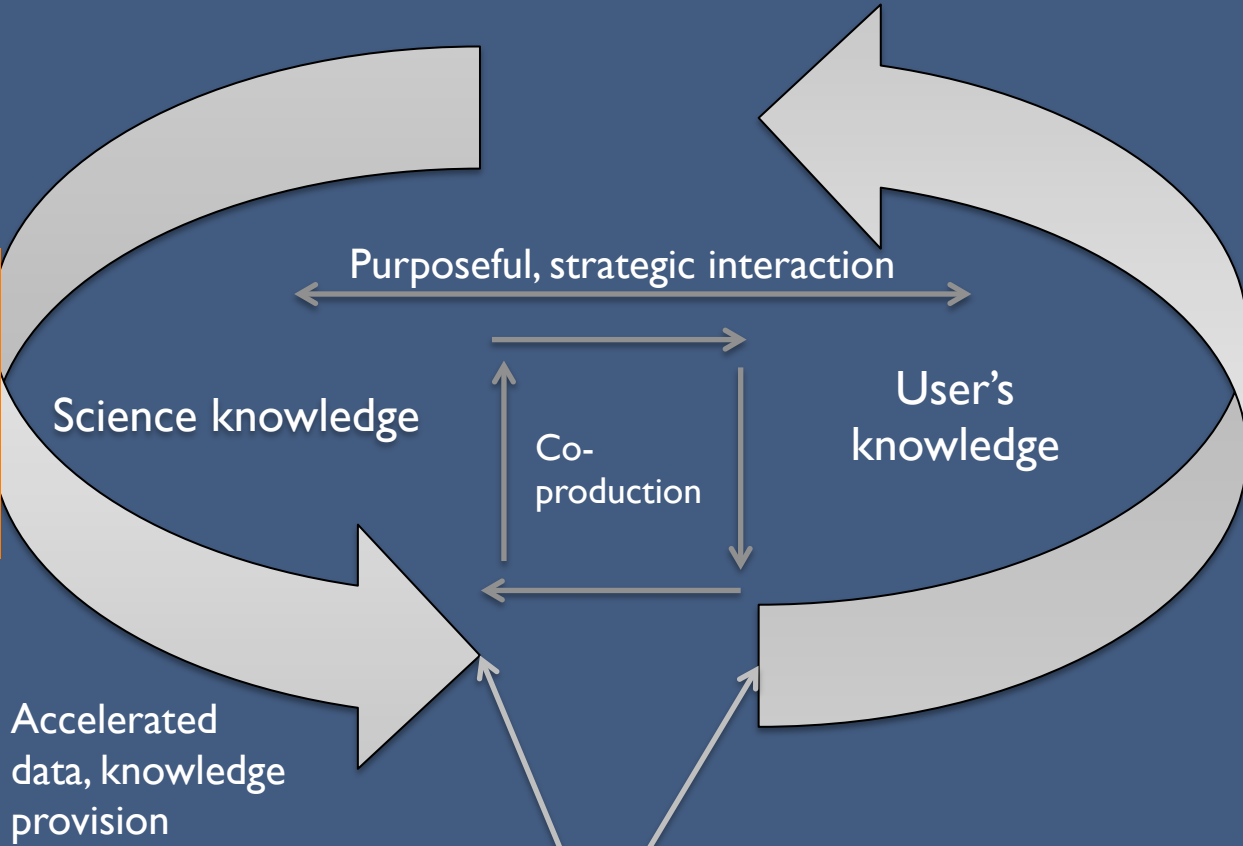




Professionalization



Fundamental constraints to knowledge; e.g. irreducible uncertainties

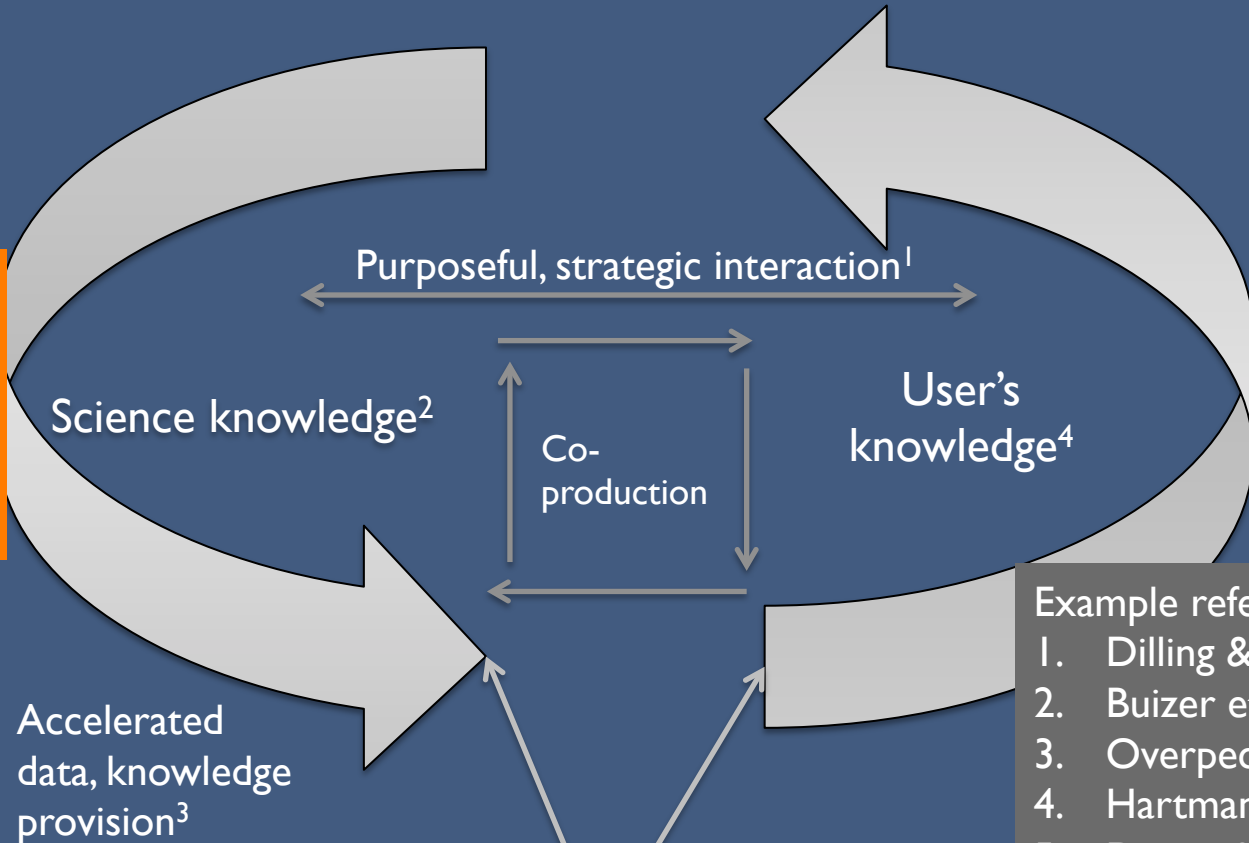


Capacity, politics, & competing priorities

Professionalization



Fundamental constraints to knowledge; e.g. irreducible uncertainties<sup>5</sup>



Science knowledge<sup>2</sup>

User's knowledge<sup>4</sup>

Co-production

Purposeful, strategic interaction<sup>1</sup>

Accelerated data, knowledge provision<sup>3</sup>

Capacity, politics, & competing priorities<sup>6</sup>

Example references

1. Dilling & Lemos 2011
  2. Buizer et al. 2012
  3. Overpeck et al. 2011
  4. Hartmann et al. 2002
  5. Dessai & Hulme 2004
  6. Adger et al. 2008
- ...and many more

Professionalization



# Biophysical & Social Context

External events, trends

Policy

Awareness, education, communication



Fundamental constraints to knowledge; e.g. irreducible uncertainties<sup>5</sup>

Science knowledge<sup>2</sup>

Purposeful, strategic interaction<sup>1</sup>

Co-production

User's knowledge<sup>4</sup>

Capacity, politics, & competing priorities<sup>6</sup>

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Professionalization



# *Adaptation to climate change in mountain and coastal areas: A transatlantic dialogue*



Aspen, CO



Timmendorfer Strand,  
Germany



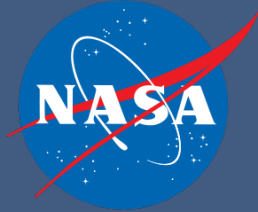
Virgen, Austria



Outer Banks, N. Carolina

April 2013 • Hamburg, Germany  
August 2013 • Aspen, Colorado

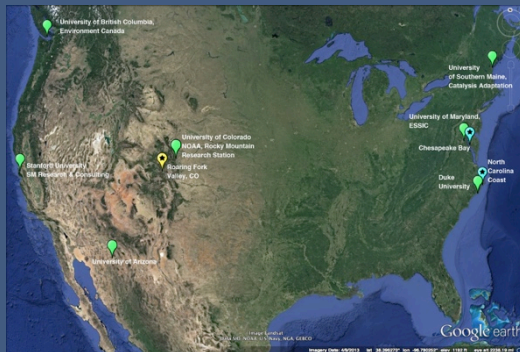
# Supporters & Organizers



# Participating Communities

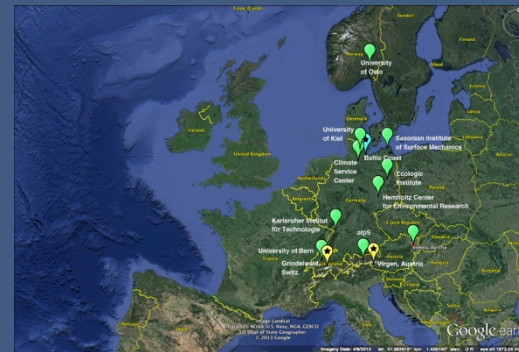
## Mountains

- Aspen, Colorado, US
- Denver, Colorado, US
- Grindelwald, Switzerland
- Virgen, Austria



## Coasts

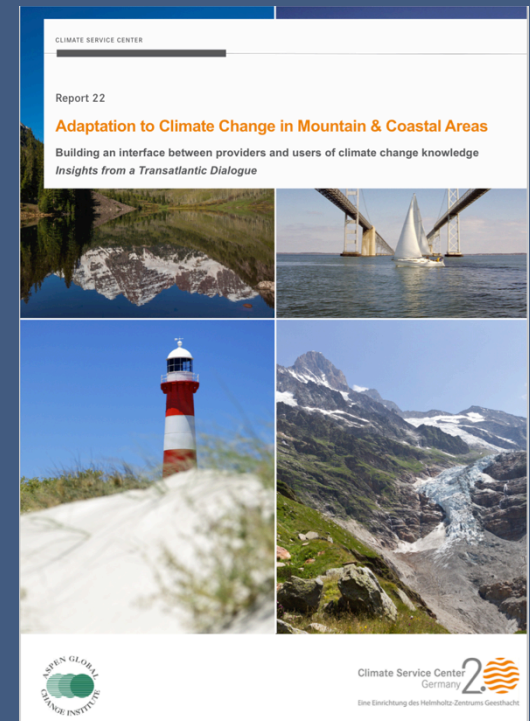
- Outer Banks, N. Carolina, US
- Chesapeake Bay, Maryland, US
- Baltic Coast, Germany
- Bay of Kiel, Germany





# Crossing three boundaries

- Providers and users of climate change knowledge
- Mountain and coastal geographies
- U.S. and EU cultural and governance contexts



Moser, Jäger, Arnott, and Schaller 2014

# Participants: bringing together research and practice

## Research

## Practice



Impacts/Adaptation

Impacts/Adaptation

Integrated Assessment



Water Management

Coastal Planner

Coastal Developer



Geographer

Student

Impacts/Adaptation



Mayor

County Commissioner

City Planner



Geographer

Atmospheric Scientist

Impacts/Adaptation



City Staff

Tool Developer

Conservation Planner



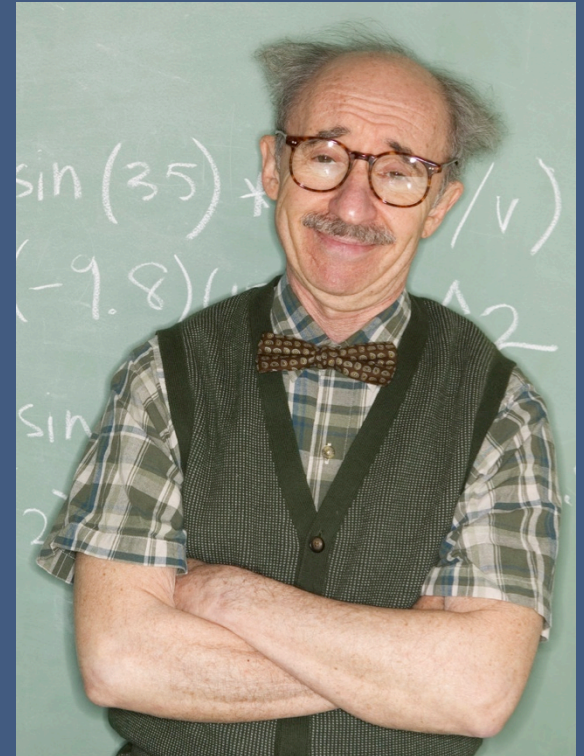
# Lessons Part I: Things your mother told you

- Listen first, speak second
- Learn to “stand in their shoes”
- Don’t be condescending
- Honesty, politeness
- Trust will take time to build;  
undoing distrust will take even  
longer



# Lessons Part II: Things your professor told you

- Changes needed in both science and governance processes
- Understanding of and attention to initial conditions is key
- Be observant, self-reflective, adaptable
- Avoid “inconsequential” science-practice interaction (e.g., paralysis by analysis, conspicuous consumption of information)



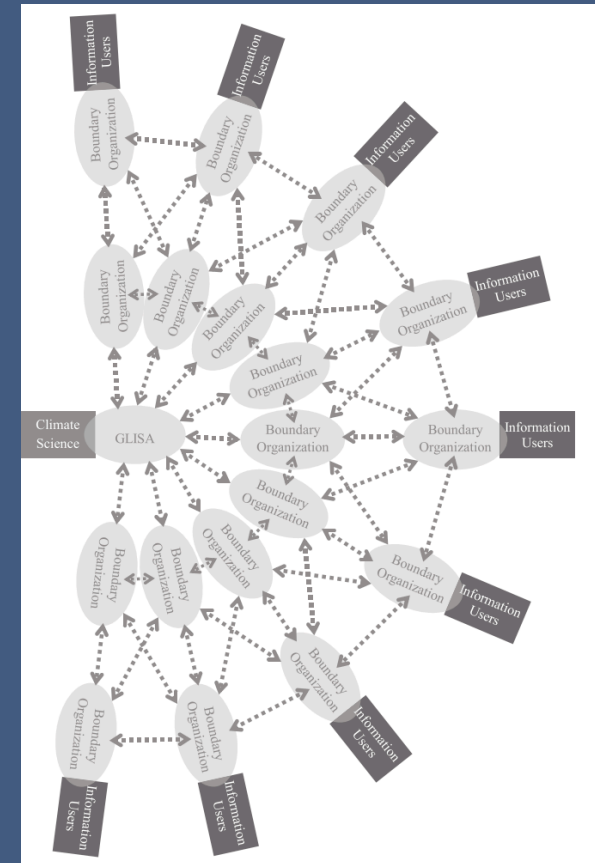
# Why is the path still rugged?

- Incentives misaligned
- We do not bring the user into the room nearly enough
- “User” still too often a vague concept
  - Ergo, poor fit
- Science-practice interaction often a sequence of exchanges (see boundary chain concept; Lemos, Kirchoff, and Kalafatis)
- Capacity to take risks; go outside comfort zone



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Networked boundary chain concept: Lemos, Kirchoff, and Kalafatis 2014



# Ideas for CSP

- Typology of “users”
  - Getting beyond the phrase “user”
- Best practices and trainings for science-user interactions at regional to local levels
- Professionalization opportunities for young scientists and practitioners—  
—to mainstream science-practice interactions
  - See “Earth Academy” concept (Brasseur et al.)





**Thank you!**

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# Takeaways for co-production

- Co-production is an effort for the long haul
- Requires going outside comfort zone; taking risks
- Need to find efficient pathways for interaction; alternative modalities for interaction
- “Dialogue support” in addition to decision support



Mayors of Virgen, Austria (left) and Aspen, Colorado (right)

# North Carolina Case Study

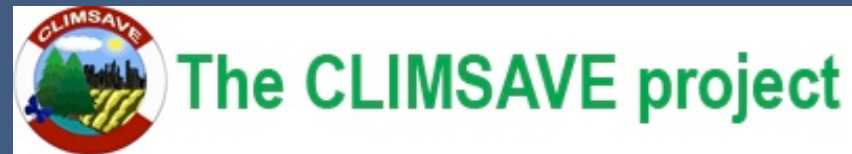
- Background of distrust and resentment
- Planning document utilized one meter sea level rise as baseline
- Real estate development community alarmed
- Movement to ban use of climate science in sea-level rise forecasting





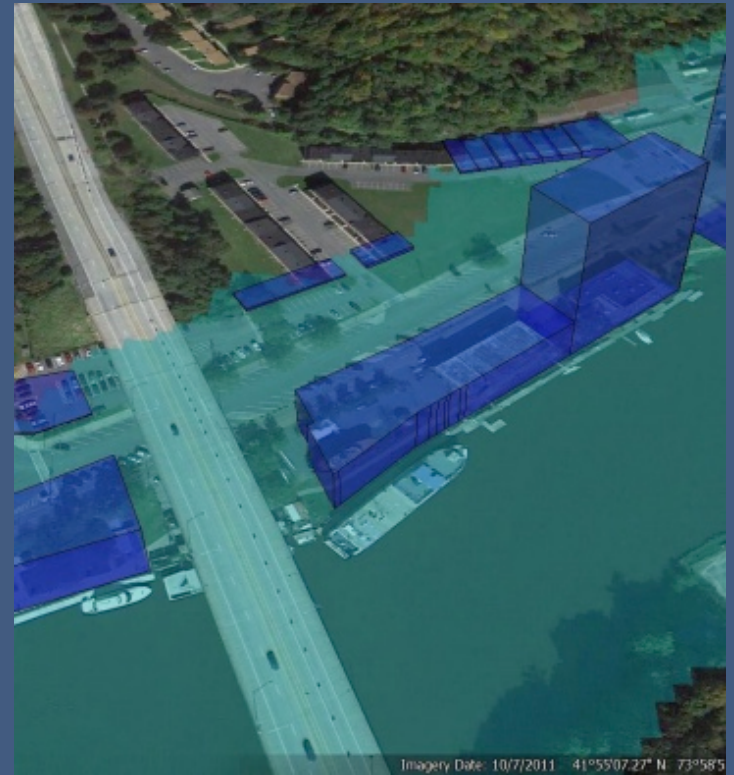
# Decision support tools

- BalticClimate Toolkit
- Coastal Adaptation Sea Level Rise Tool (COAST)
- Community-based risk assessment tool for mountain communities (ORTIS)
- CLIMSAVE Integrated Assessment Platform



# Different tools for different purposes

- Supporting dialogue among stakeholders
  - “dialogue support, not decision support”
- Supporting deliberation and decision-making
- Monitoring effectiveness



Credit: COAST tool, Catalysis Adaptation



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# Feedback on what makes a good tool

- Visually engaging
- Demonstrate possibilities and *opportunities*
- Make uncertainties clear
- Logical, transparent, interesting, reliable