

Travelling the Last Mile: Communicating Cryospheric Knowledge



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MORGAN
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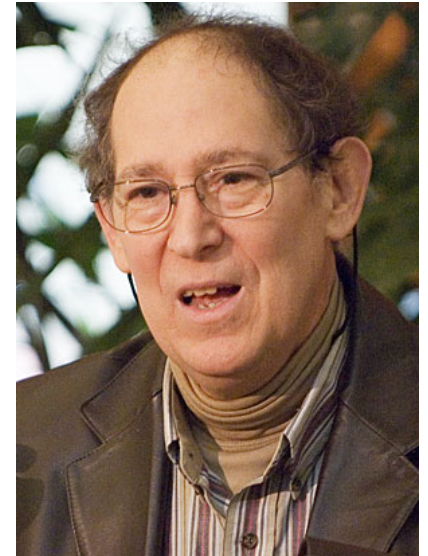
WHAT WE HAVE HERE

is a *failure*
to communicate

motifake.com

The Captain (Strother Martin), *Cool Hand Luke* (1967)

Stephen H. Schneider : “Is the Science of Global Warming Settled Enough for Policy?”



Concept of the “Last Mile”

Science must clarify the choices

Scientists cannot make the choices

If science doesn't attain clarity,
wise choices are unlikely



Traveling the “Last Mile”
requires we speak to
decision makers at all
levels: legislators to voters

Information & Knowledge Delivery

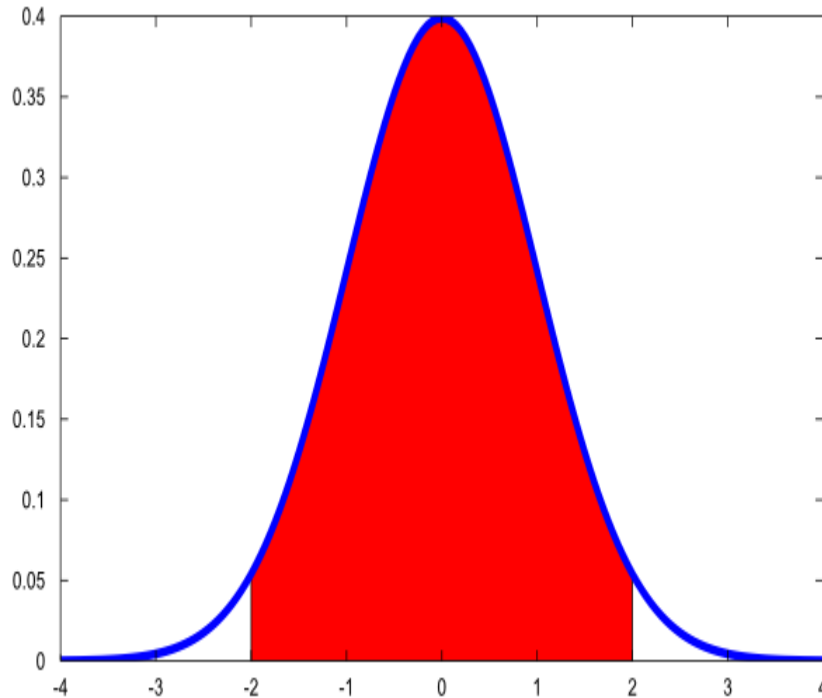


- Must be in a form that is useful

“Our understanding is only as valuable to society as society’s capacity to use it.”

(Jane Lubchenko, former head of NOAA)

Uncertainty

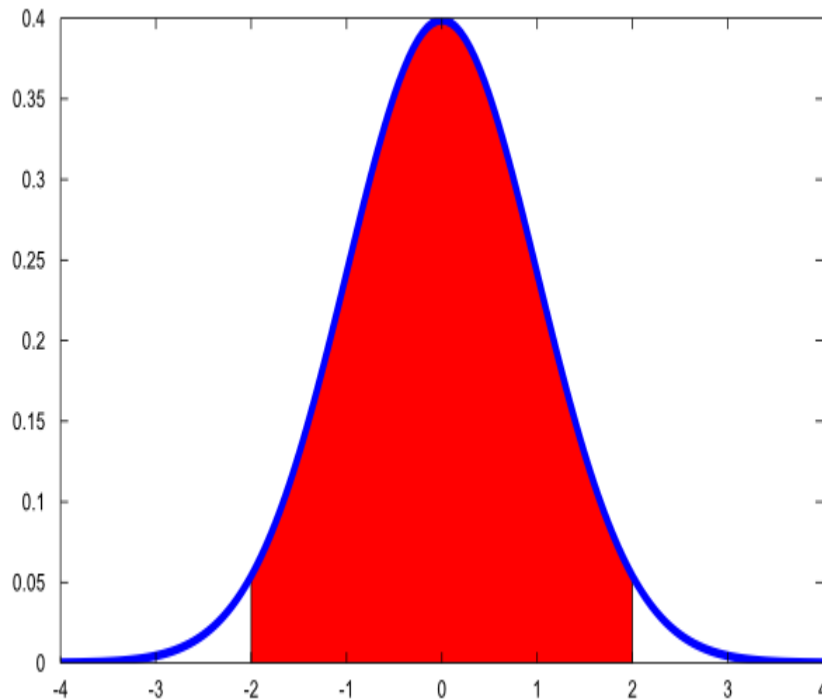


- Scientists love to talk about it--reducing it energizes us
- Climate-change skeptics also love to talk about it—emphasizing it motivates inaction
 - Deniers must only “neutralize” the issue to maintain the status quo

Numeric uncertainty also quantifies certainty, i.e., it measures how well we know what we know

Certainty

Semantics
matter!!



- Scientists love to talk about it--reducing it energizes us
- Climate-change skeptics also love to talk about it—preserving it motivates inaction
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Numeric uncertainty also quantifies certainty, i.e., it measures how well we know what we know

Information & Knowledge Delivery



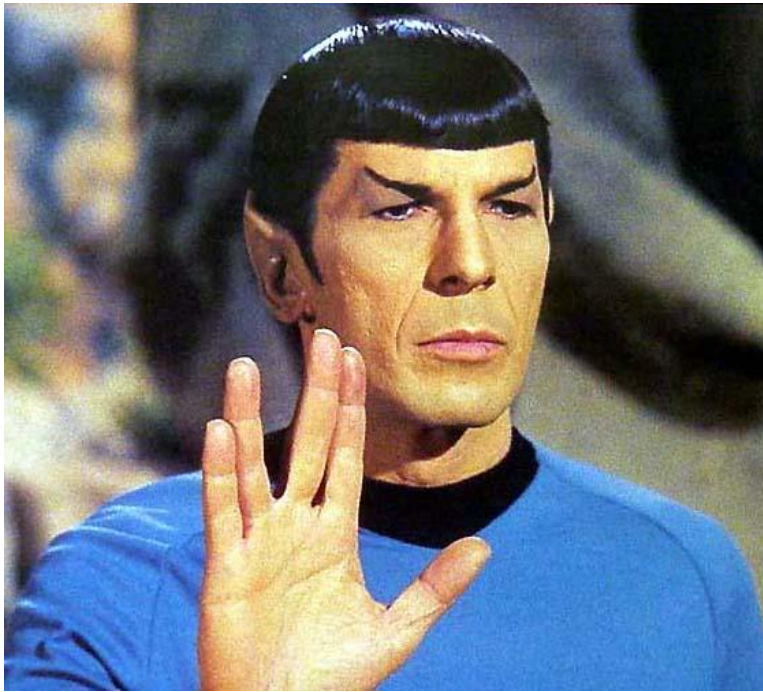
- Must be in a way that others can trust
 - We must be trusted

Building Trust



- Requires
 - Time
 - Personal contact
 - “Human”ness
- Common sense works better than authoritativeness

Scientist in Training: an exercise in “dehumanization”



- No emotion allowed
- Let the data speak for itself
- Error analysis essential
- Speak “science-ese”
- “Third person” communication

MUST ADD: Effective communication to non-scientists

Approaches to Effective Public Communication of Science

- Simplify, simplify, simplify
- Emphasize the “known knowns”
- Use the “familiar”
- Use more pictures and fewer words
- Exercise “graphobia”
- Use humor
- Employ the “power of community”

Verbal storytelling is still the most effective means of communication

Land-Ice Loss → Sea Level Rise is a climate change “winner”

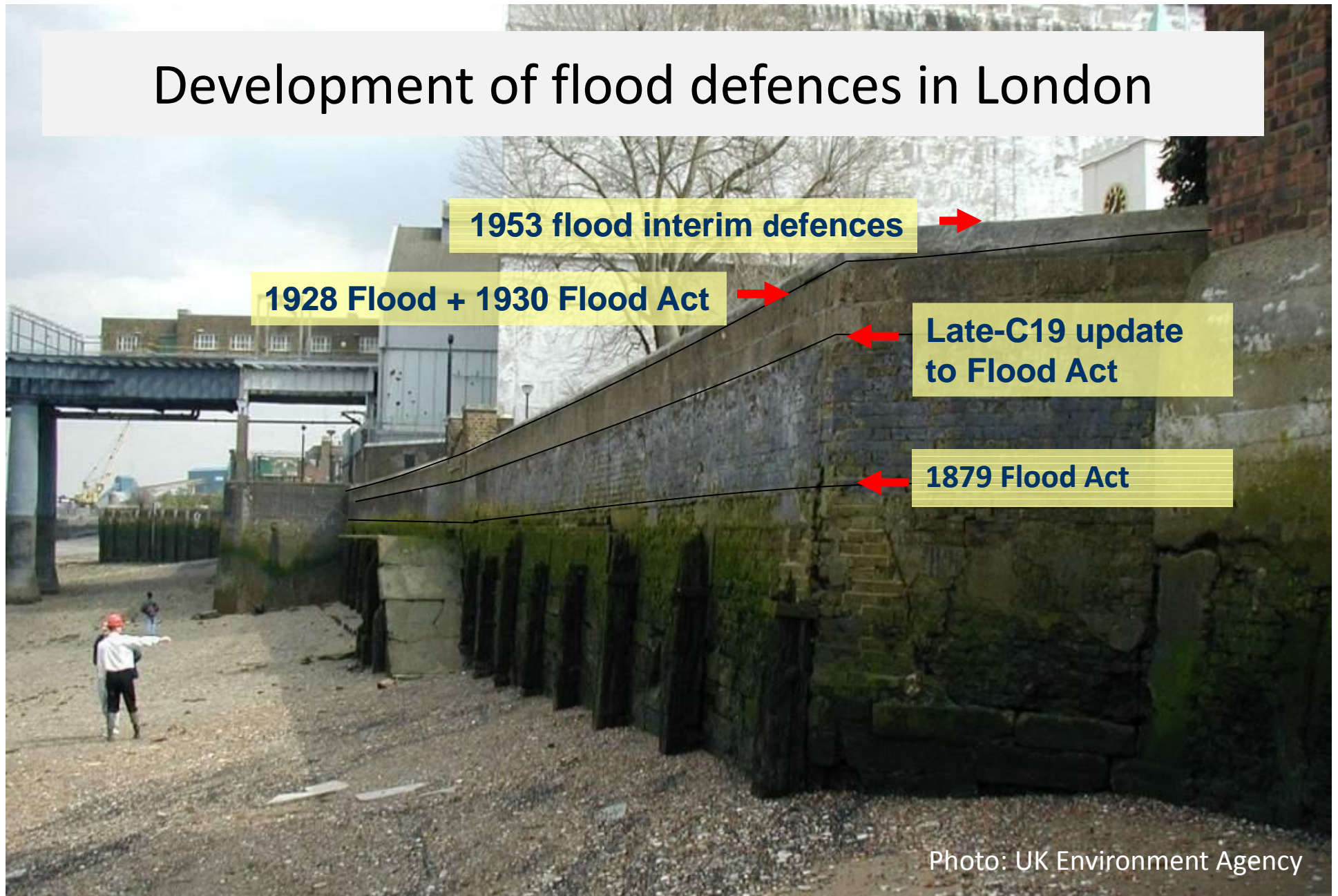
- Unequivocal connection
 - Public “gets” it
- It’s happening
 - Public acknowledges it
- It matters
 - Public understands it
- Adaptation is inescapable
 - Most planners/policy makers will act if they get information they **trust** in a form they can **use**





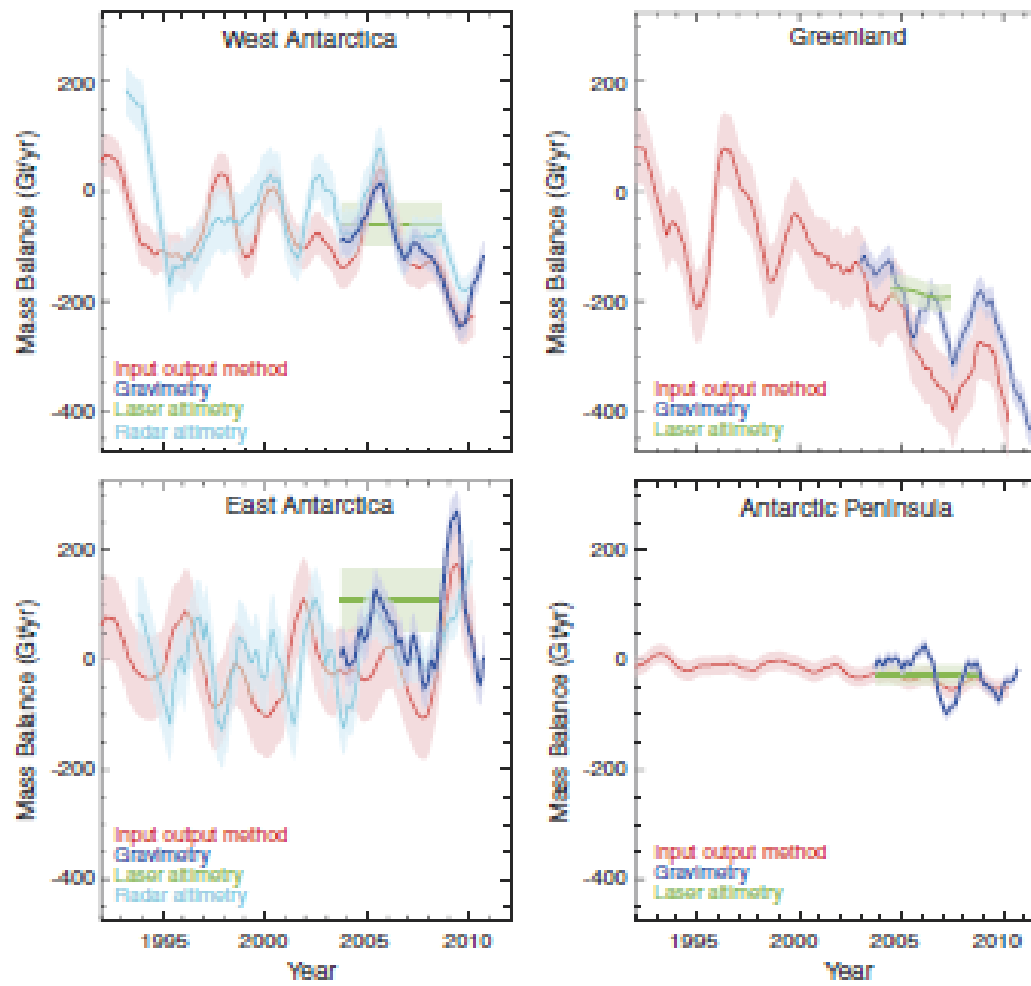
Courtesy of S. Arsenoff

Development of flood defences in London



Slide courtesy of D. Vaughan

The Power of Community



A Reconciled Estimate of Ice-Sheet Mass Balance

Shepherd et al., 2012

Get out there!!!



- Make your information useful to decision makers
 - Legislators to voters
- Become a trusted source of scientific information knowledge
- Become an effective messenger of this knowledge
- Yes, you
- Now

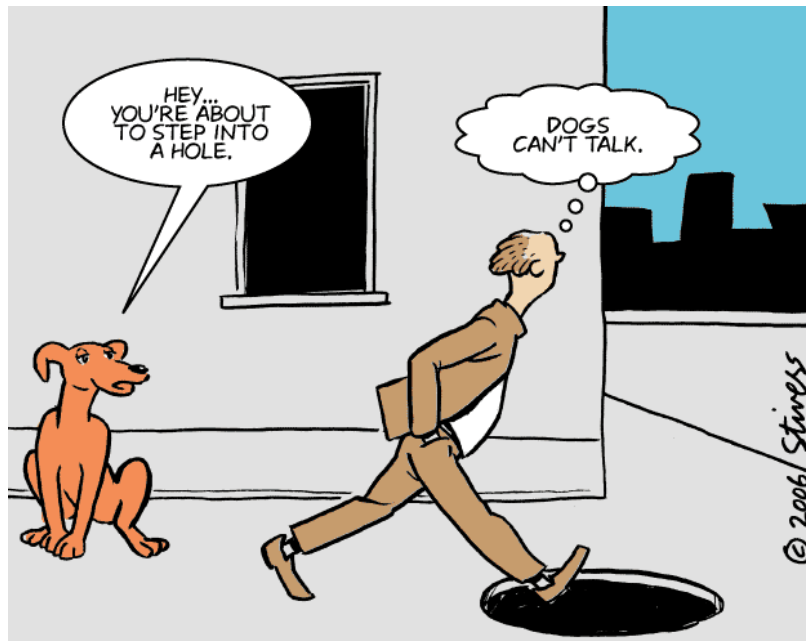
Thank you!



Questions?

Scientists debated Climate Change poorly

Contrarians said:



- Scientific conclusions force us to give up something more valuable
 - Usually a false choice
 - Juxtaposed with values held more dear (quality of life, economy, religion) science will always lose
 - SOLUTION: respect the other values but diffuse the false choice
- Can't trust the science (evidence, conclusions or the scientists)
 - SOLUTION: build trust and argue from common sense
- Science is incomplete
 - Delay is a win for contrarians
 - SOLUTION: talk "certainty", not "uncertainty"



In a Nutshell

- Get their attention
- Connect
- Hold their attention long enough
- Deliver a simple message
- Reinforce the message
- BONUS!: give them a reason to tell others

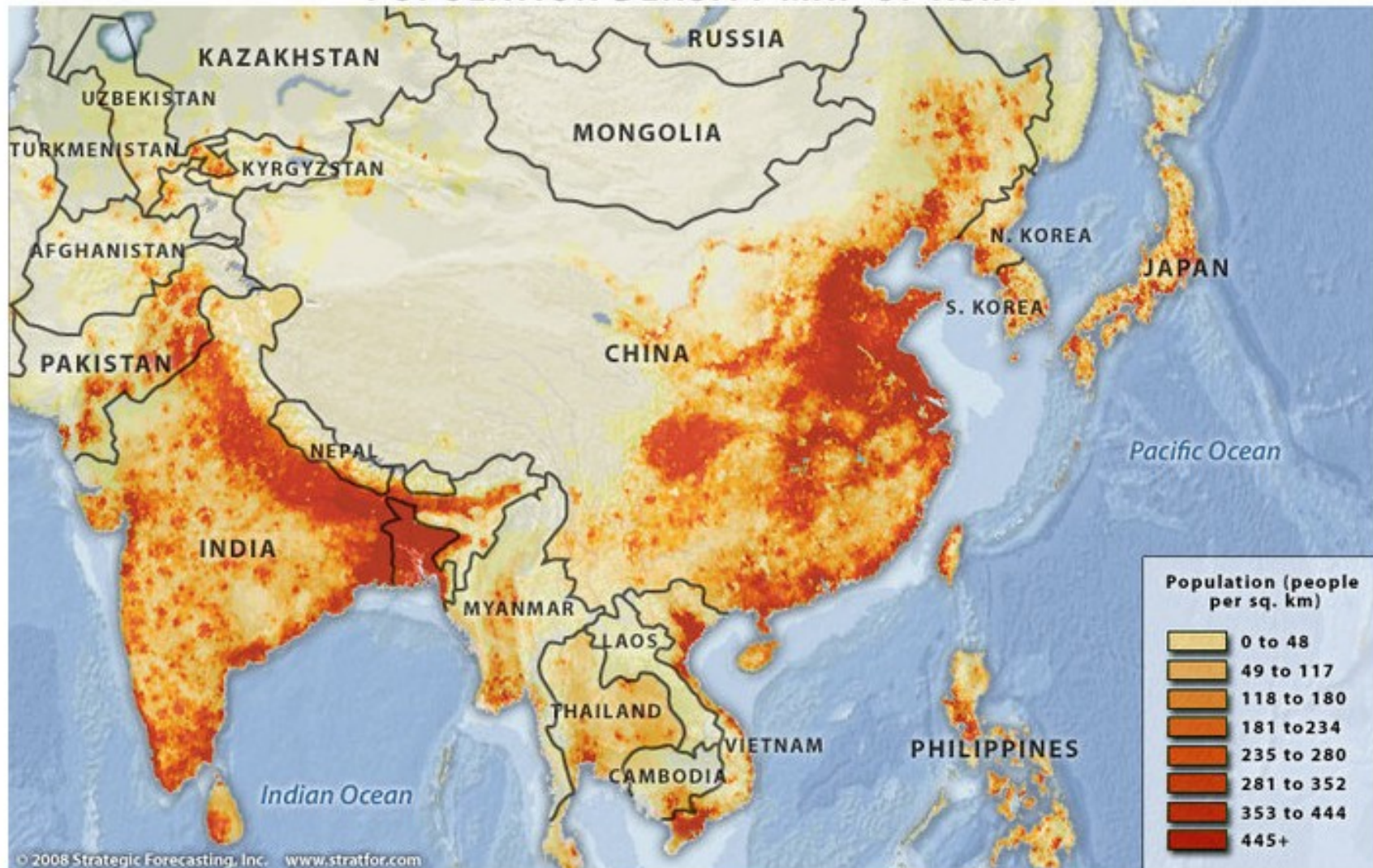


Shanghai, China 1990



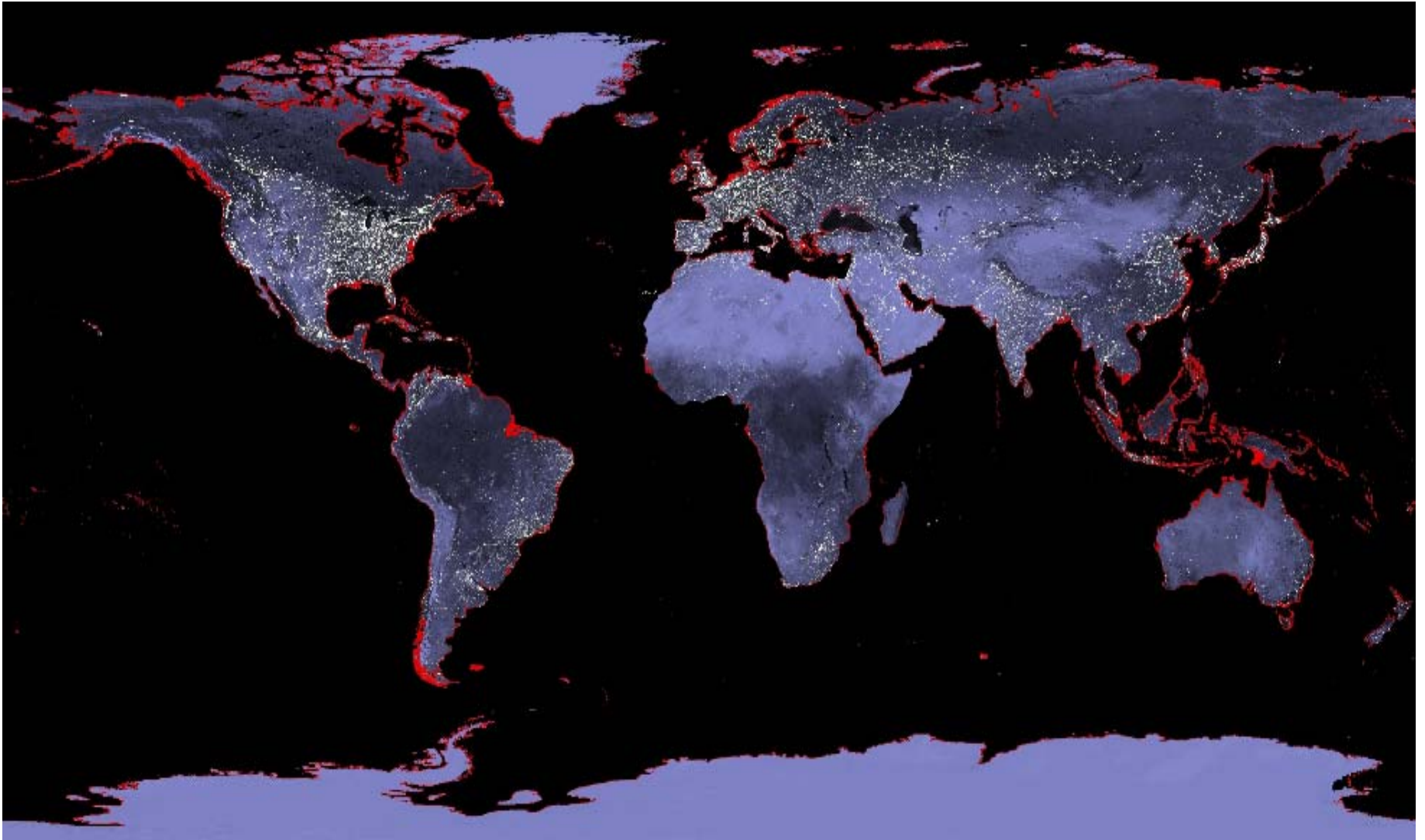
Shanghai, China 2012

POPULATION DENSITY MAP OF ASIA



50% of the world's population lives here





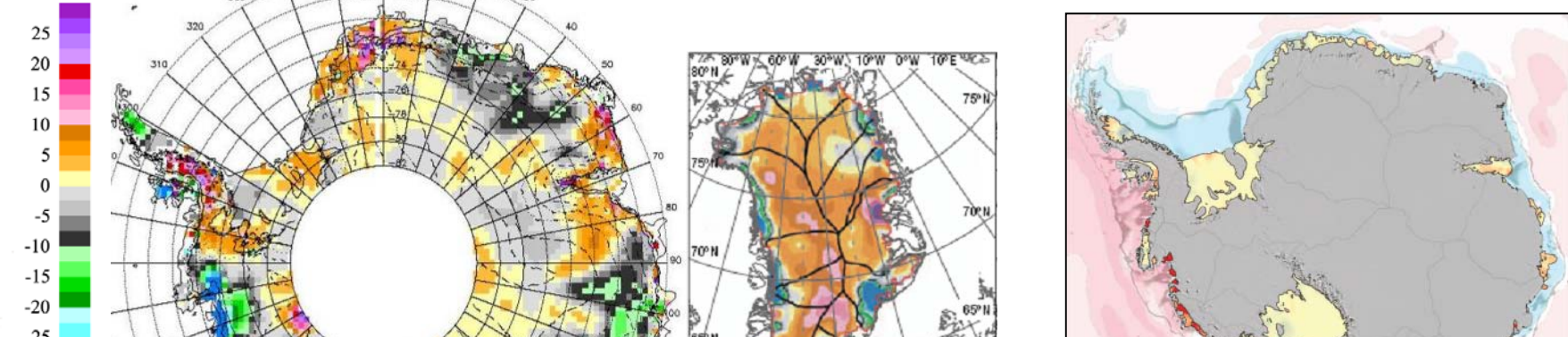
Source: CReSIS and NASA

Land area lost by 1-meter rise in sea level

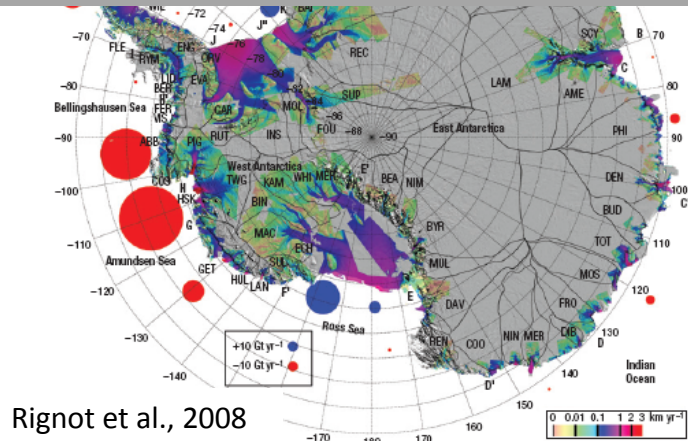
The Power of Community

- Conflict is part of the scientific process but so is consensus building
- Community consensus legitimizes new knowledge and prepares it for broader dissemination
- Dissemination of consensus is “the last mile”

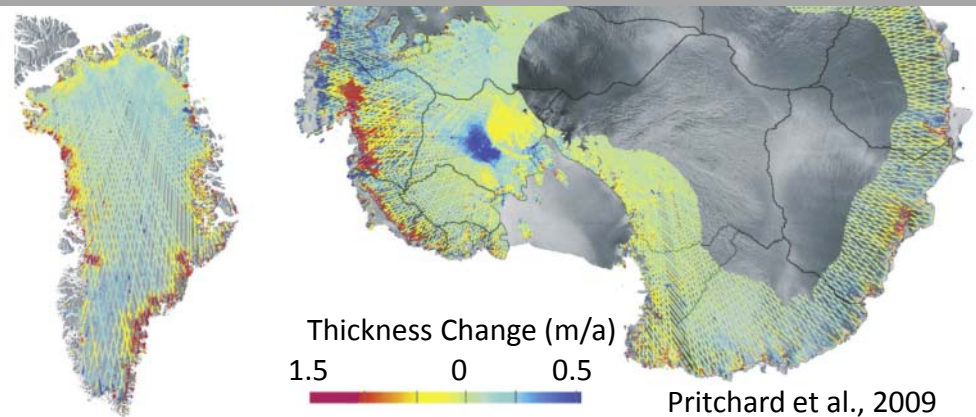
dH/dT (cm/year)



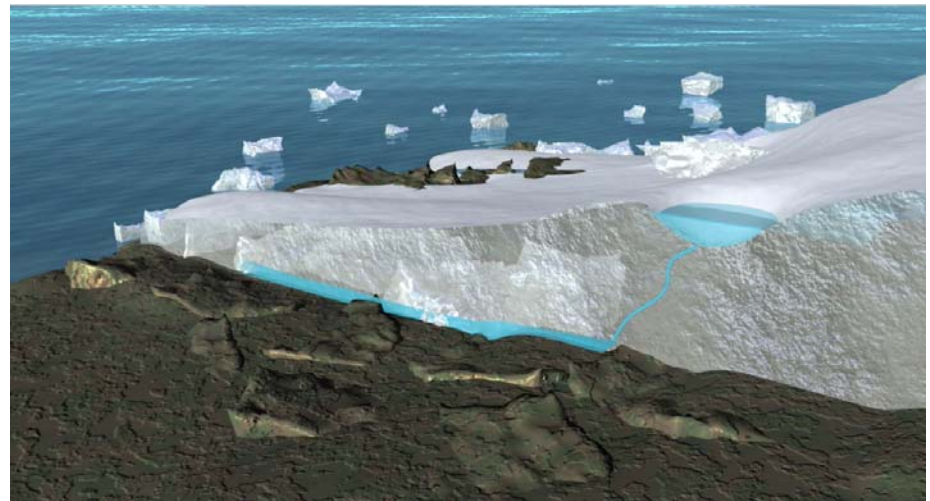
We see the same signal here, but non-scientists can view it as disagreement:
Our discussion of differences can be used to support the view that we disagree

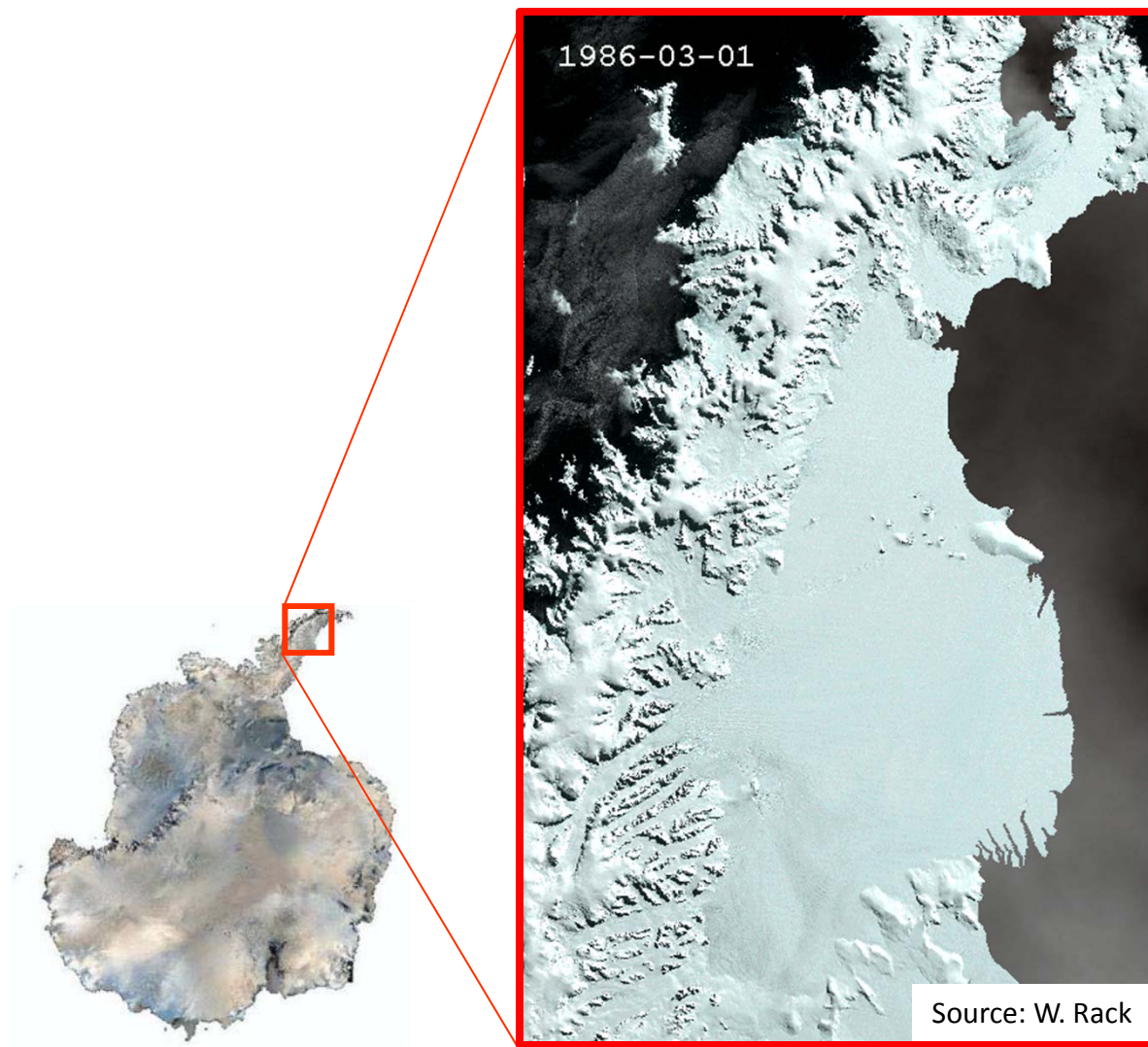


Rignot et al., 2008



Pritchard et al., 2009



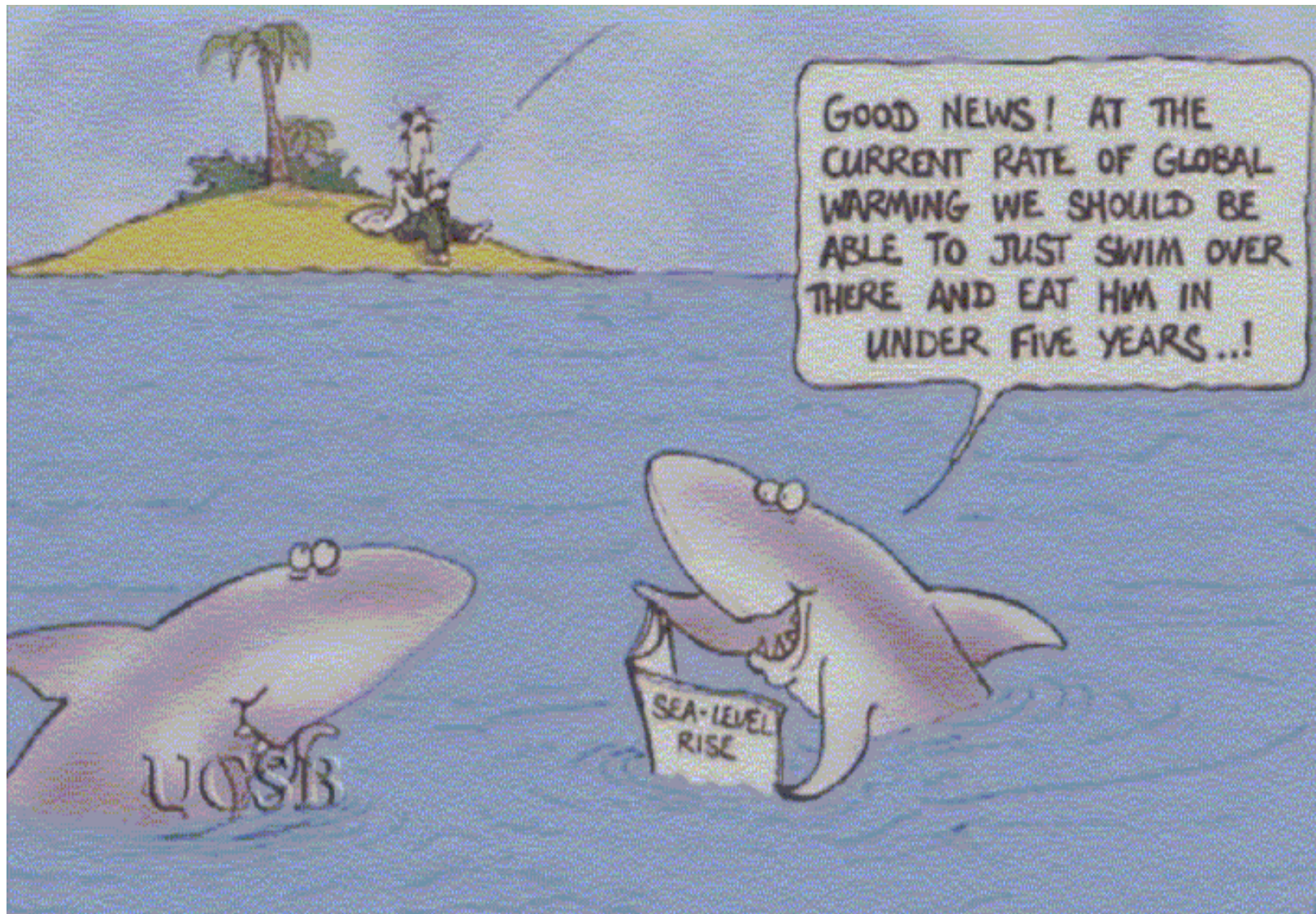


200 miles: Baltimore to
New York City

proof of global warming



Courtesy of O. Orheim



Courtesy of S. Schneider

STATE OF WASHINGTON VIEWS.



Ruffer, Photo.

Tacoma, Wash.