



Ocean Acidification  
International  
Coordination Centre

OA-ICC



UNIVERSITY OF  
GOTHENBURG



THE ROYAL SWEDISH ACADEMY OF SCIENCES

KUNGL.  
VETENSKAPS-  
AKADEMIEN

## Basic training course on ocean acidification

EVT1804704

14-19 March 2022

# Communication



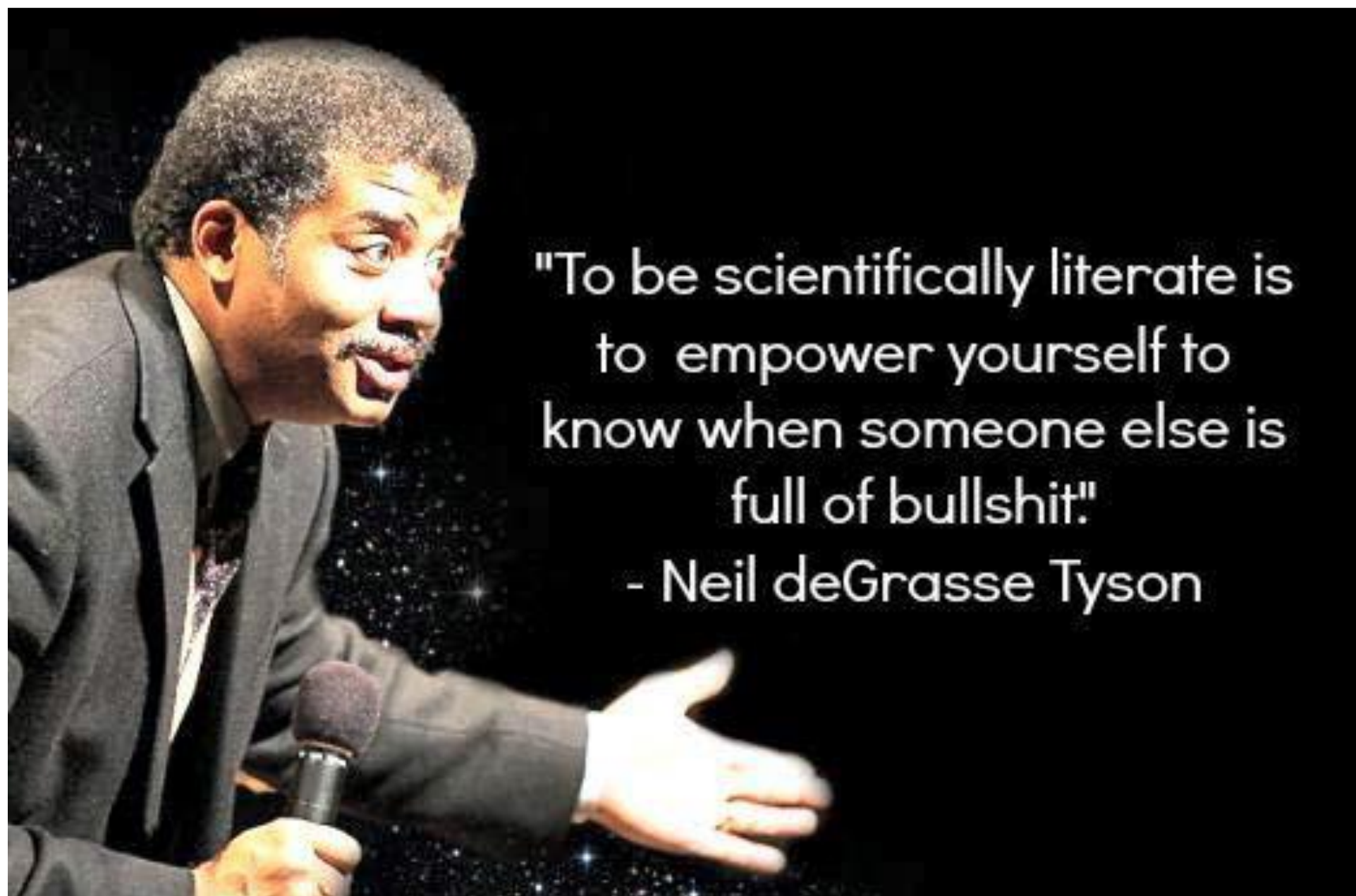
# Communicating on ocean changes

- ✓ **Why** do we need to communicate our science?
- ✓ (Some) factors **preventing** effective communication leading to change
- ✓ **How** can we successfully do it?
- ✓ ... and to **whom**?

**Success stories**

# Communicating on global ocean change

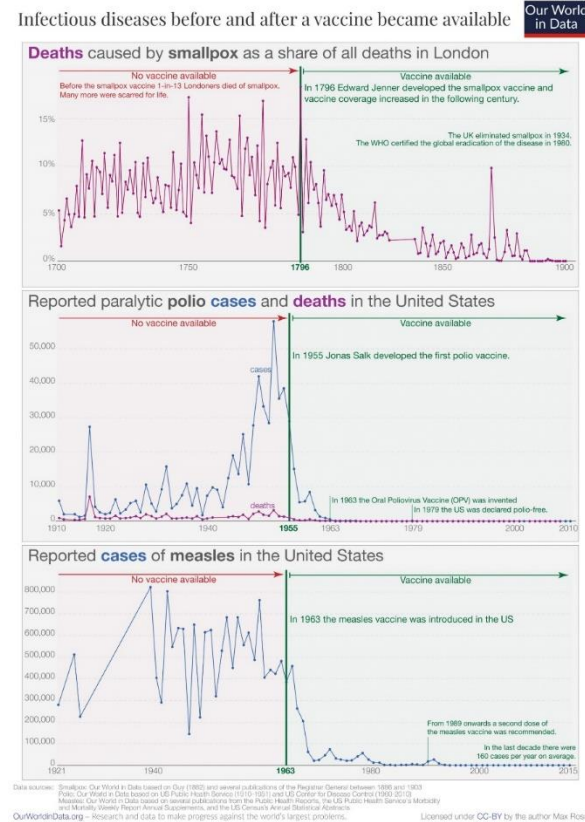
- ✓ **Why** do we need to communicate our science?
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"To be scientifically literate is  
to empower yourself to  
know when someone else is  
full of bullshit."

- Neil deGrasse Tyson

# What happens when you ignore science e.g. vaccination





# What happens when you ignore science e.g. vaccination



Early report

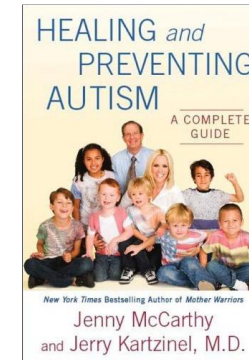
**Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and  
pervasive developmental disorder in children**

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson,  
P Harvey, A Valentine, S E Davies, J A Walker-Smith

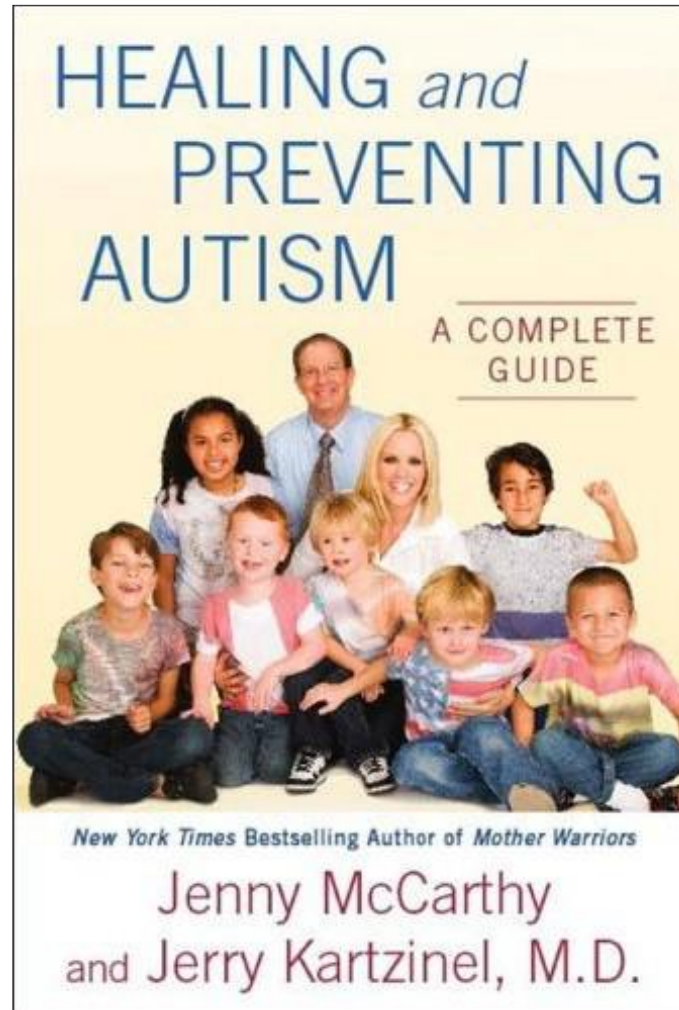
MMR (measles, mumps &  
rubella) vaccine



Fraud  
Loss MD

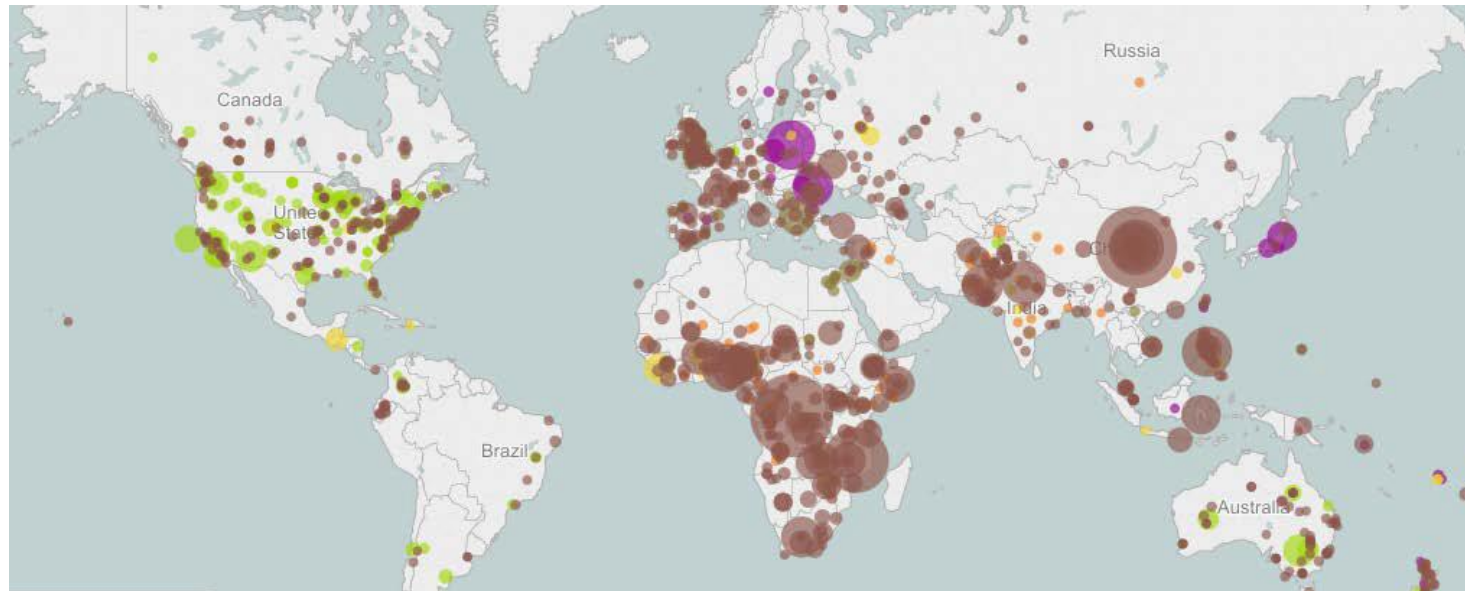


# Ambassadors / Influencers



# What happens when you ignore science e.g. vaccination

Vaccine-Preventable Outbreaks (2008-2014)



Source: <http://www.cfr.org>



# Communicating on global ocean change

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**Success stories**

# 1. Denial and dirty opponents

FROM THE DIRECTOR OF **FOOD INC.**

OFFICIAL SELECTION  
**TELLURIDE**  
FILM FESTIVAL

OFFICIAL SELECTION  
**NEW YORK**  
FILM FESTIVAL

OFFICIAL SELECTION  
**TORONTO**  
FILM FESTIVAL

*"If you can 'do tobacco,'  
you can do just about anything  
in public relations."  
-PETER SPARKER, lobbyist*

**MERCHANTS  
OF  
DOUBT**

12A Infrequent strong language

*"Entertaining, as well as enlightening"  
-THE HOLLYWOOD REPORTER*

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EDITED BY MELISSA DOBLEDU  
DIRECTED BY ROBERT KENNER

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# Deniers & Conspiraciotnists



**Breaking up with fossil fuel is hard to do**



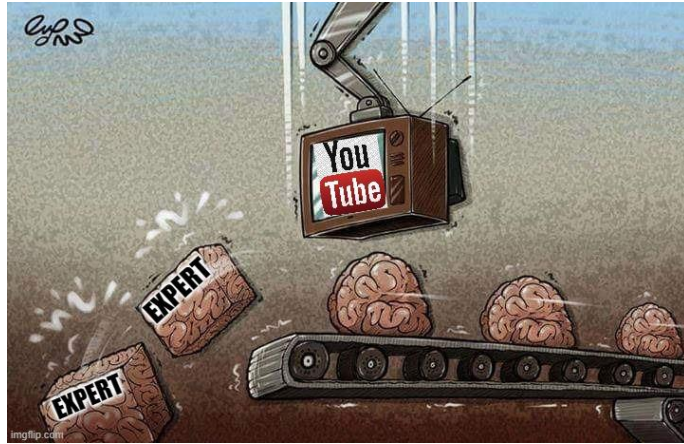
*Now, some politicians want to label Carbon Dioxide a pollutant." "Imagine if they succeed. What would our lives be like then?"*



# From science to opinion



# Dunning–Kruger effect and rhetoric



- ✓ Self-referenced and irrefutable arguments
- ✓ Poisoning the well
- ✓ Easy claim, timely to explain
- ✓ False logical links
- ✓ Yes yes yes

**Lost of trust in experts**



# 2. Psychology: Ostrich policy

## Wisconsin Agency Bans Talk of Climate Change

State treasurer convinces commissioners to pass the rule

ClimateWire

April 10, 2015 | By Evan Lehmann and ClimateWire

The state treasurer in Wisconsin declined to explain his views about climate change a day after leading the effort to ban a small state agency from talking about rising temperatures.

The ban approved Tuesday sharply divided elected officials overseeing the obscure Board of Commissioners of Public Lands, prompting the only Democrat on the three-person panel to say it symbolizes "a very dangerous trend" in state politics.

The restriction, approved by a 2-1 vote, prevents 10 staff members at the BCPL from



The restriction, approved by a 2-1 vote, prevents 10 staff members at the BCPL from communicating about climate change, including about its potential impacts on 77,000 acres of state timberland. The board uses the income from it for public education projects.

*Credit: Tori Rector/Flickr*



# Damn you evolution !



- ✓ Humans are social animals
- ✓ Natural selection to compute and seek social balance
- ✓ Apply this heuristic to environmental issues
- ✓ One “good” action balances one “bad” action  
(*I recycle plastic so I can fly*)

# Catastrophisms

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# The Guardian

Environment ► Climate change Wildlife Energy Pollution

Climate change

## We have 12 years to limit climate change catastrophe, warns UN

Urgent changes needed to cut risk of extreme heat, drought, floods and poverty, says IPCC

● Overwhelmed by climate change? Here's what you can do

Jonathan Watts *Global environment editor*

Mon 8 Oct 2018 07.23 BST



117,562

syndication.com...



most viewed



Khashoggi killing: Trump says Saudi crown prince could have been involved

# Psychology of change

Morality, fear, shame,  
etc.



Drive a positive  
attitude toward  
change and a  
commitment to  
change (empathy,  
solution, etc.)

Miller 1999



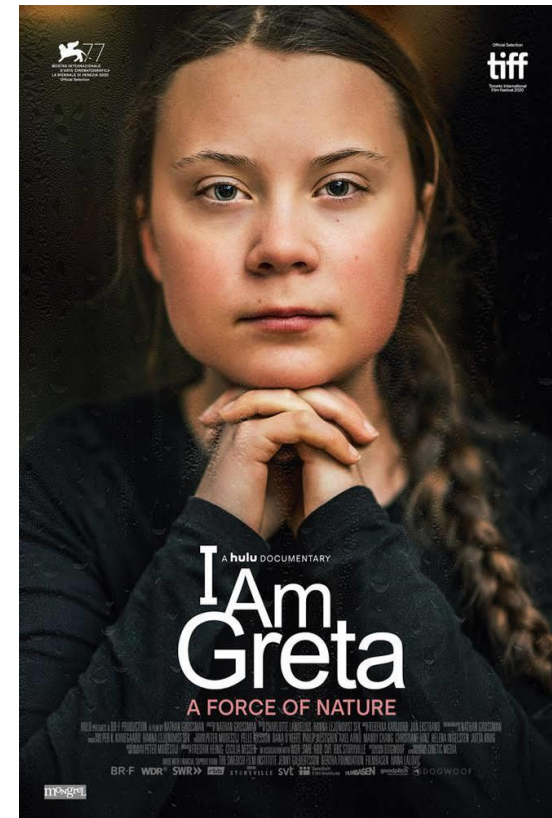
Alexander's rat park

# Anger and change

*"HOW DARE YOU?"*  
GRETAEFFEKTER PÅ SVENSK MILJÖ- OCH  
KLIMATOPINION

SVERKER C JAGERS, SIMON MATTI,  
HENRIK OSCARSSON OCH SARA PERSSON

✓No...





# Climate anxiety

**Comment**

---

## Climate anxiety in young people: a call to action

Climate change poses a major threat to human health. Emerging studies are elucidating the physical health effects of climate change, such as increased rates of heat-related illnesses and infectious diseases

hottest ever recorded. To compensate, the lifetime carbon dioxide emissions (or carbon budget) of the average young person today will need to be eight times less than that of their grandparents to restrict global warming to



Published Online  
September 9, 2020  
[https://doi.org/10.1016/S2542-5196\(20\)30223-0](https://doi.org/10.1016/S2542-5196(20)30223-0)

- ✓ Negative effect on health
- ✓ Preclude actions

# Communicating on global ocean change

- ✓ Why do we need to communicate our science?
- ✓ (Some) factors **preventing** effective communication leading to change
- ✓ **How can we successfully do it?**
- ✓ ... and to **whom?**

**Success stories**

# Communicating on environmental issues

- ✓ Why do we need to communicate our science?
- ✓ **How can we successfully do it?**
- ✓ ... and to **whom?**

”Our house  
is on fire”

We need  
action





# We know what to do



Demography



CO<sub>2</sub> emissions

*WHY NO MORE ACTIONS???*



We need strong policy but...



... need to be ready for the change

# A failure to communicate?



Tim Minchin

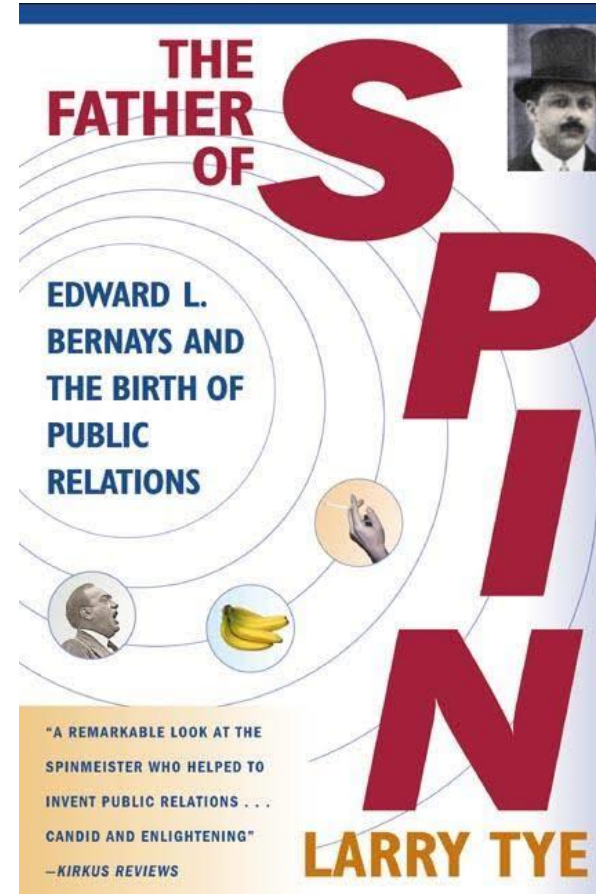
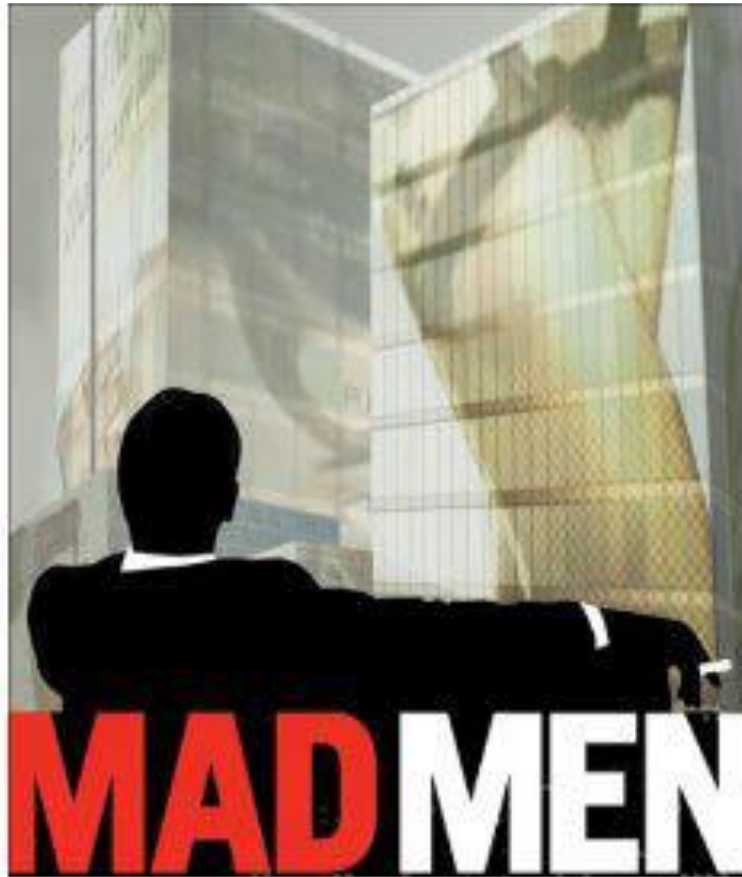
*The idea that (...) the science of anthropogenic global warming is controversial is a powerful indicator of the extent of our **failure to communicate**.*

# A failure to communicate?

*Scientists are  
sometime poor  
communicators...*



# Marketing & Advertising





# A failure to communicate?

*Scientists are  
sometime poor  
communicators...*

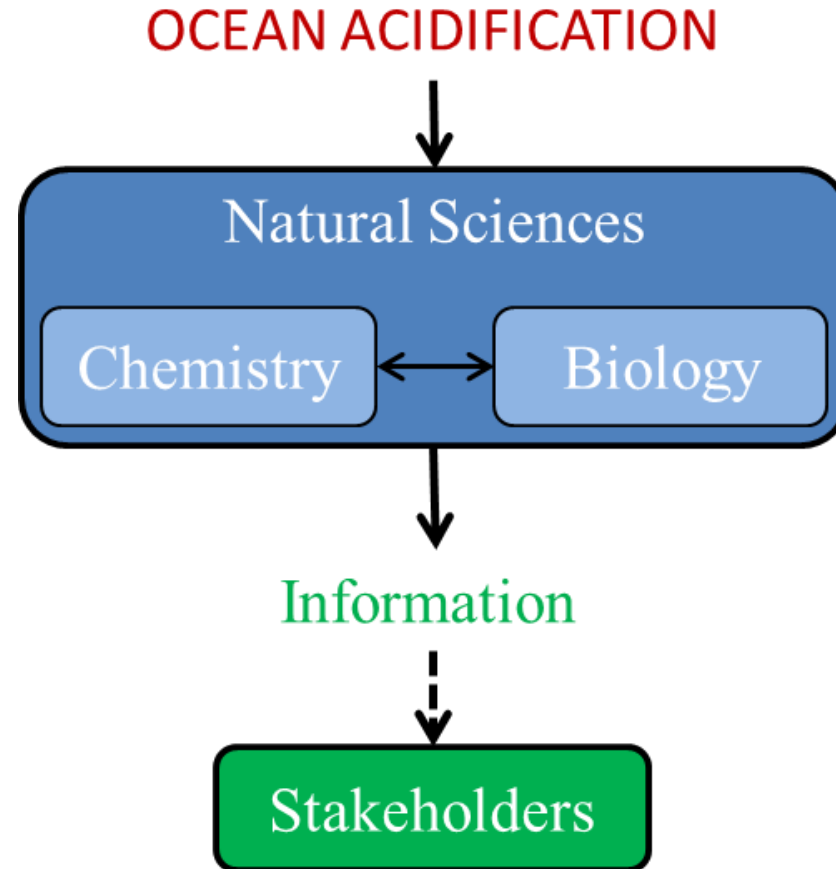


*... and nerds*



# Efficient communication...

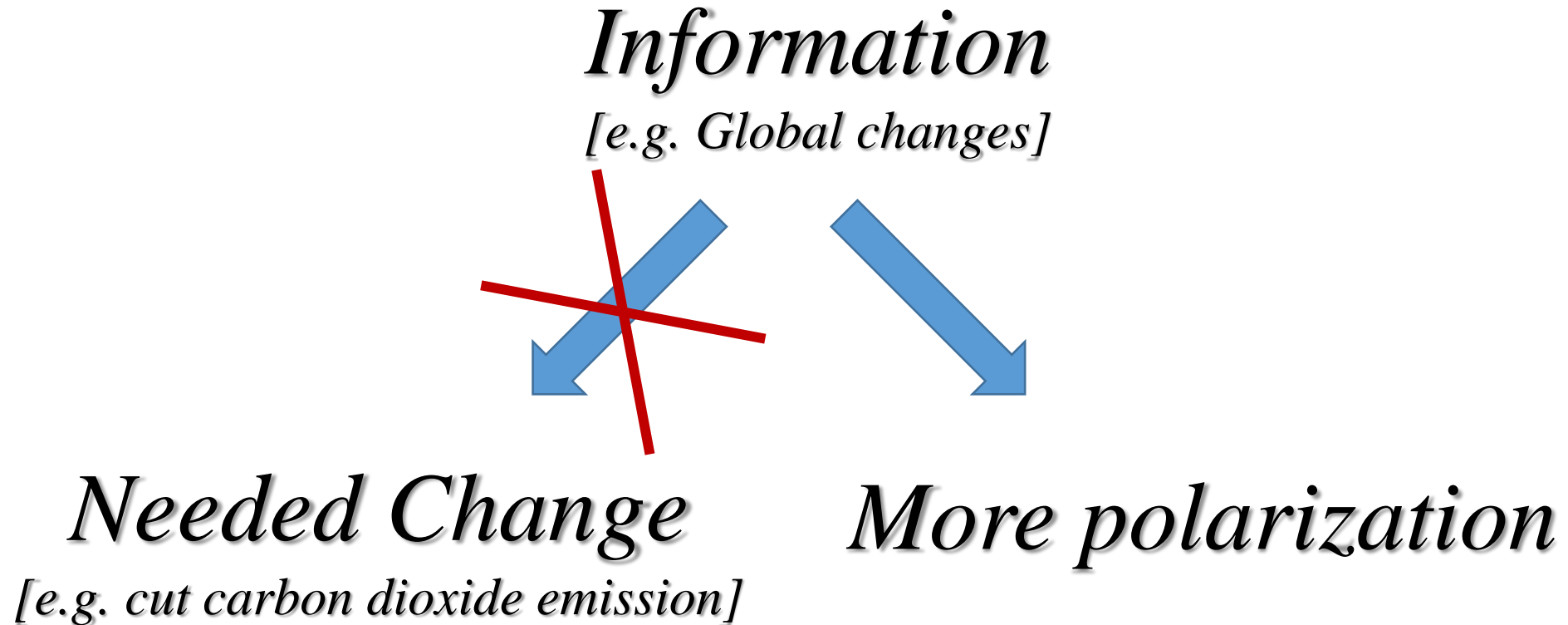
... a need for a new strategy



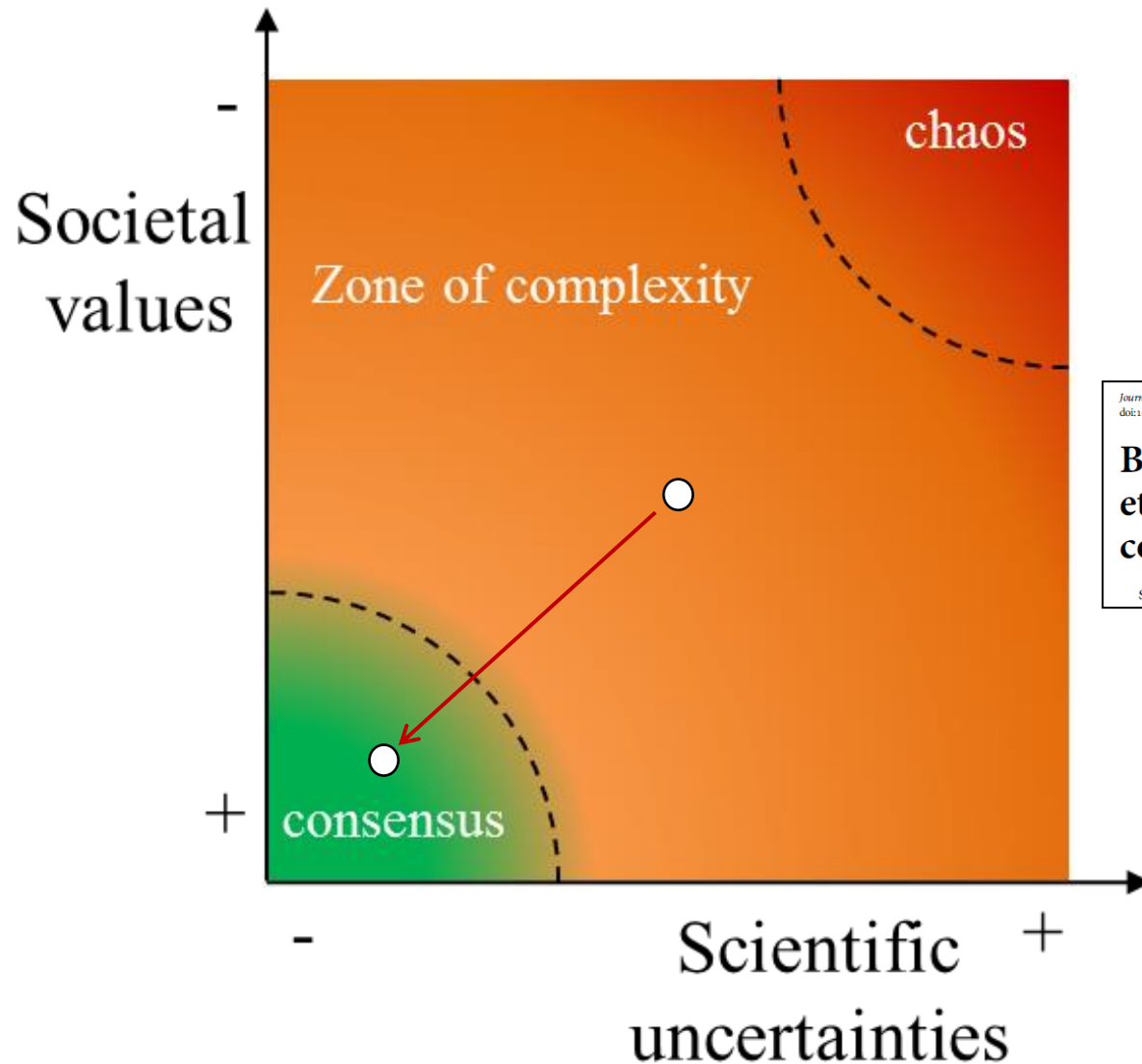
*Science supply paradigm*

# Efficient communication...

... a need for a new strategy



# 1. Focus on values



Journal of the Marine Biological Association of the United Kingdom, page 1 of 2. © Marine Biological Association of the United Kingdom, 2015  
doi:10.1017/S0025315415000193

**Bird is the word – on the importance of ethical and effective scientific communication**

SAM DUPONT<sup>1</sup>, GREGORY PUNCHER<sup>2</sup> AND PIERO CALOSI<sup>3</sup>

## 2. Connect with the issue through physical experience



*Dupont (2017) I am the ocean* – arts and sciences to move from ocean literacy to passion for the ocean. Submitted JMBA UK

# Taste and cooking as an agent of change



*a recipe as a social gesture  
(Massimo Bottura)*

**Reconnect with nature through taste**



# Can you taste ocean acidification



# I am the ocean

**Henrik Wallgren** är musiker, allkonstnär och äventyrare. Han arbetar med musik, film, teater, som författare, tidningskrönikör med mera. Henrik har samarbetat med TILLT kring en rad olika utvecklingsprojekt av olika längd och innehåll.

**Sam Dupont** är forskare vid Institutionen för biologi och miljövetenskap vid Göteborgs Universitet. Han forskar framför allt på den ökade mänskliga aktiviteten på de marina ekosystemen.



Henrik Wallgren



Sam Dupont



**No limit:  
think out of the box**



*Tim Minchin*

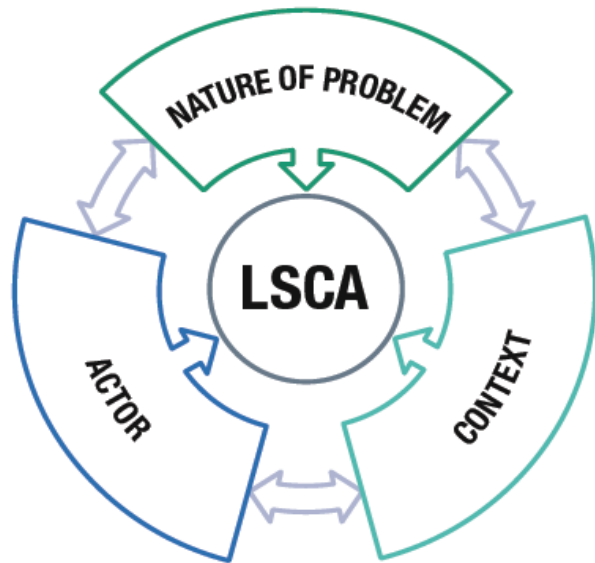
*Please don't make the mistake of thinking the arts and sciences are at odds with one another. That is a recent, stupid, and damaging idea.*

*(...)*

*The arts and sciences need to work together to improve how knowledge is communicated.*

# Not a hobby... a real research topic

CENTRE FOR COLLECTIVE ACTION RESEARCH



## Social dilemma:

Action, acceptance and compliance linked to psychological factors, values, beliefs, norms, policy-specific beliefs, freedom, fairness, effectiveness, personal outcome, trust and reciprocity, etc.

# Communicating on global ocean change

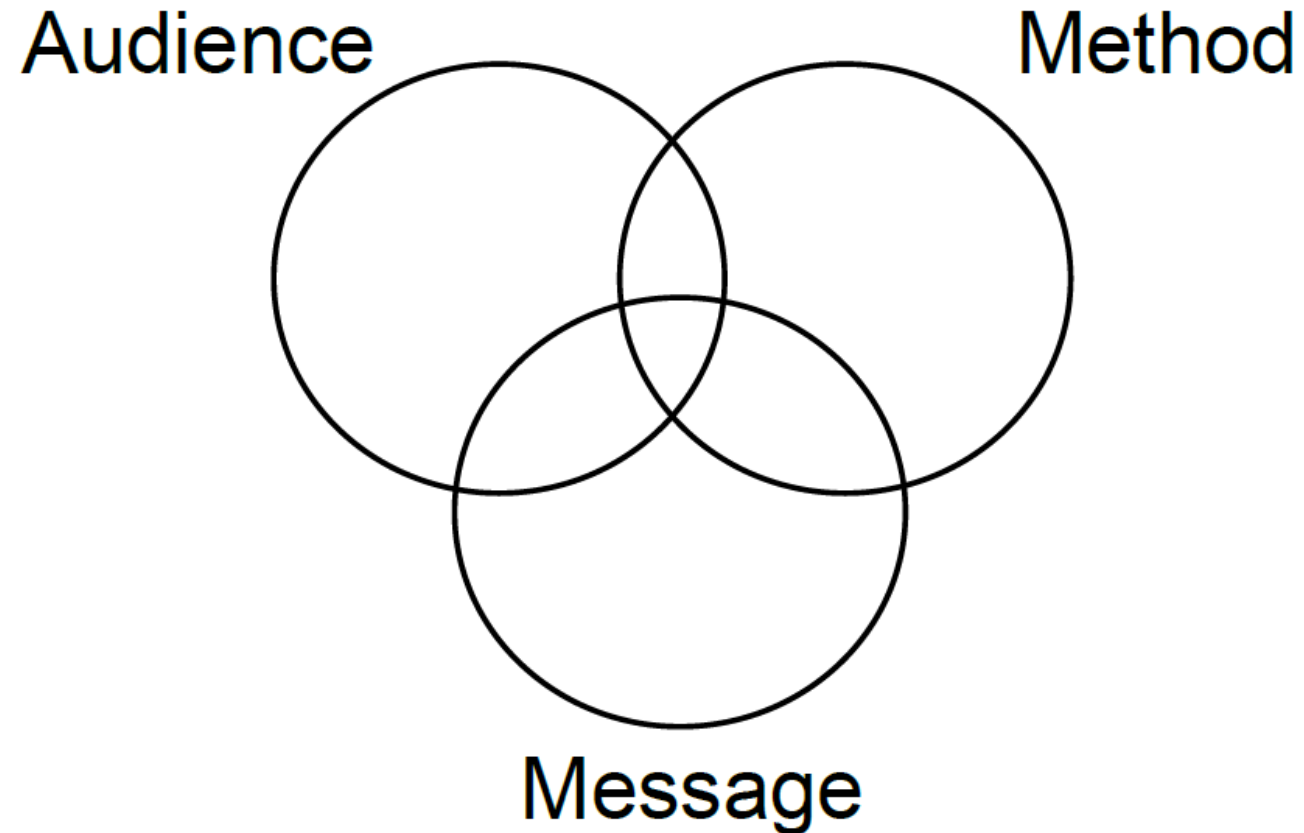
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Success stories



# 3 key aspects to consider

What is the **IMPACT**?



# 1. The audience

- ✓ Different cultures / languages
- ✓ Different needs

Need to build some mutual understanding and trust



Kids



Scientists



Economists



Policy makers



Citizens



Journalists

# What does a journalist want?

THE SACRAMENTO BEE sacbee. **Oysters at Risk From Ocean Acidification, as Are Farmer Livelihoods | Commentary**  
By Margaret Pilaro Barrette and Bob Rheault  
Sept. 9, 2013, 4:16 p.m.

**Viewpoints: Ocean acidification threatens California**  
By Terry S. **BOISE STATE PUBLIC RADIO**  
Special to **BOISE STATE PUBLIC RADIO**  
With Climate Change, No Harm

Originally published on Fri June 14, 2013 2:13 p.m.

**NewScientist** **ROLL CALL**  
THE SOURCE FOR **ENVIRONMENTAL NEWS**  
difying sea

**Ocean Acidification: Oysters as the New Canary in the W&T SEAFOOD**

**STORIAN**  
How **acidification alters Pacific**  
**Coal Mine**  
Posted by **Crystal Cun** on August 10, 2012  
MAGAZIN  
Home / News

**Ocean Acidification Eats Oysters**  
Hits Home at Bill Dewey's Dabob Bay Farm

Oysters may struggle to build shells as carbon dioxide rises  
Ocean acidification could hamper larvae's growth

Wednesday, March 13, 2013  
by **MATT KETTMANN (CONTACT)**



Stories

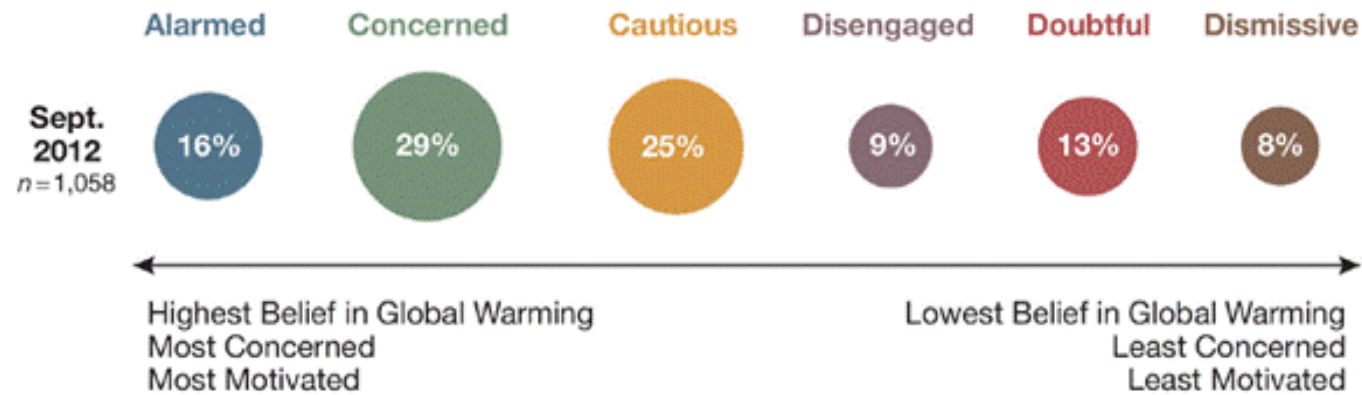
# What does a policy maker want?



Solutions... to take decisions



# What is a citizen?



(6 Americas)

Chose your fight...



## 2. The method

- ✓ Formal education
- ✓ Informal education / Outreach / Communication
  - ✓ Scientific literature
  - ✓ Talks
  - ✓ Meetings
  - ✓ Internet / Social Medias
  - ✓ Press
  - ✓ Art
  - ✓ Documents
  - ✓ Ambassadors
  - ✓ etc.

**Need to be  
adaptated to your  
audience !**

# Example: social medias

Computers & Education 82 (2015) 60–73



Contents lists available at [ScienceDirect](#)

Computers & Education

journal homepage: [www.elsevier.com/locate/compedu](http://www.elsevier.com/locate/compedu)



Can Facebook be used to increase scientific literacy? A case study of the Monterey Bay Aquarium Research Institute Facebook page and ocean literacy



G. Fauville <sup>a,\*</sup>, S. Dupont <sup>b</sup>, S. von Thun <sup>c</sup>, J. Lundin <sup>d</sup>

# 3. The message

- ✓ Simple
- ✓ Adapted to the audience
- ✓ Accurate (no over-simplification)

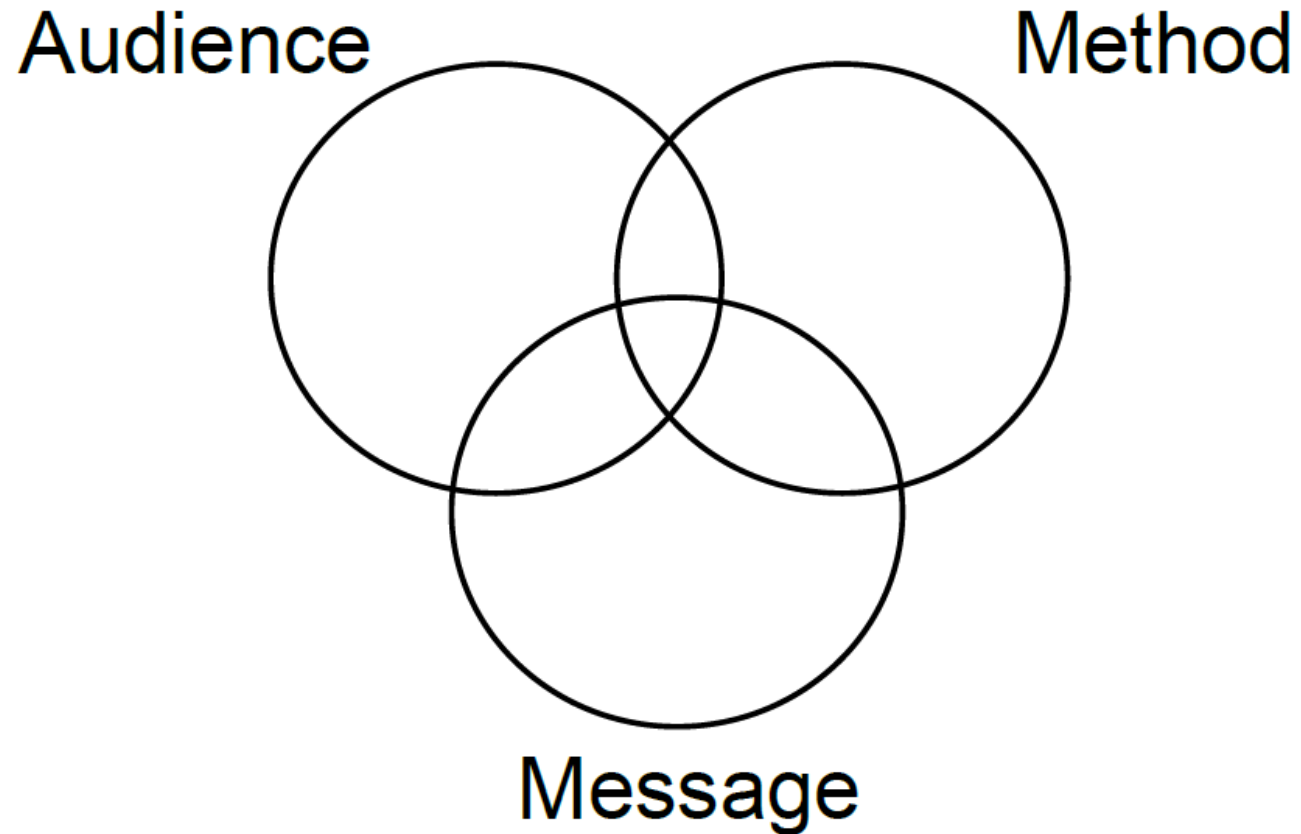


RESEARCH ARTICLE

Simple Messages Help Set the Record  
Straight about Scientific Agreement on  
Human-Caused Climate Change: The Results  
of Two Experiments

Teresa A. Myers<sup>1</sup>, Edward Maibach<sup>1\*</sup>, Ellen Peters<sup>2</sup>, Anthony Leiserowitz<sup>3</sup>

# 3 key aspects to consider



# Why communicating science?

- ✓ Not everyone needs to be a communicator
- ✓ It is important BUT think about yourself too
- ✓ So if you do it... do it well (real impact)
- ✓ **IT IS FUN, REWARDING, CREATIVE  
and PASSION CAN LEAD TO CHANGE**