Evidence-based Communication Techniques for Talking about Climate Change

EA Moberg for NJHEPS and AASHE

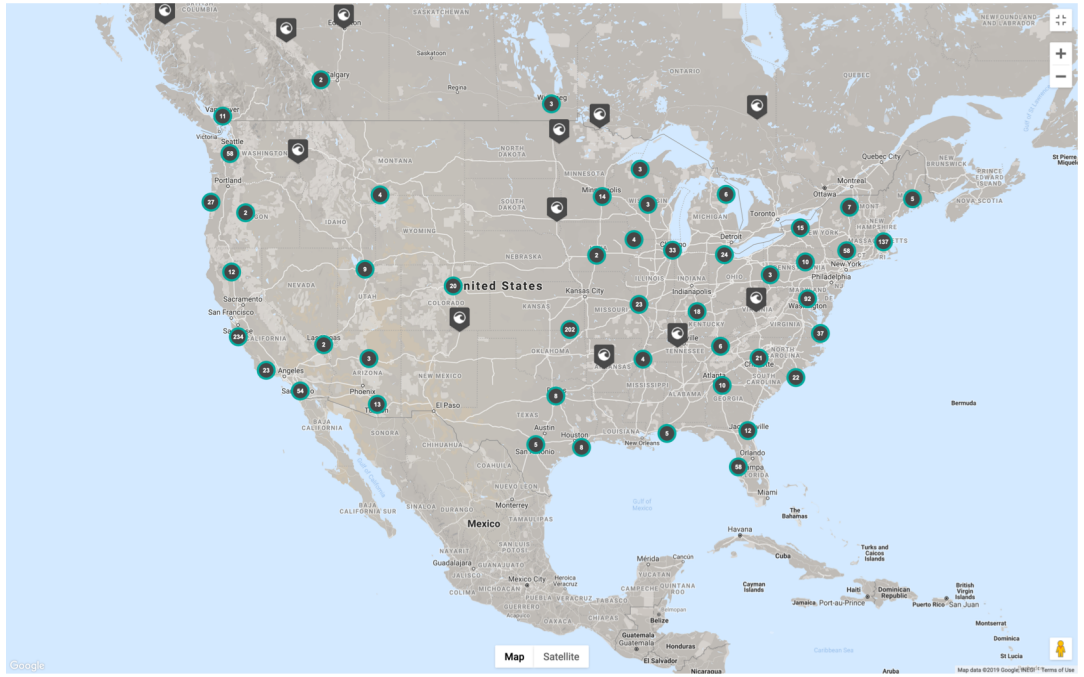
July 28, 2020

NNOCCI National Network for Ocean and Climate Change Interpretation

What is NNOCCI?

- National Network for Ocean and Climate Change Interpretation
- Originally funded by NSF; research conducted by the Framework Institute
- Network of scientists and informal science educators
- Aim to “change the national conversation around climate change to be positive, civic-minded, and solutions focused”

- Climateinterpreter.org

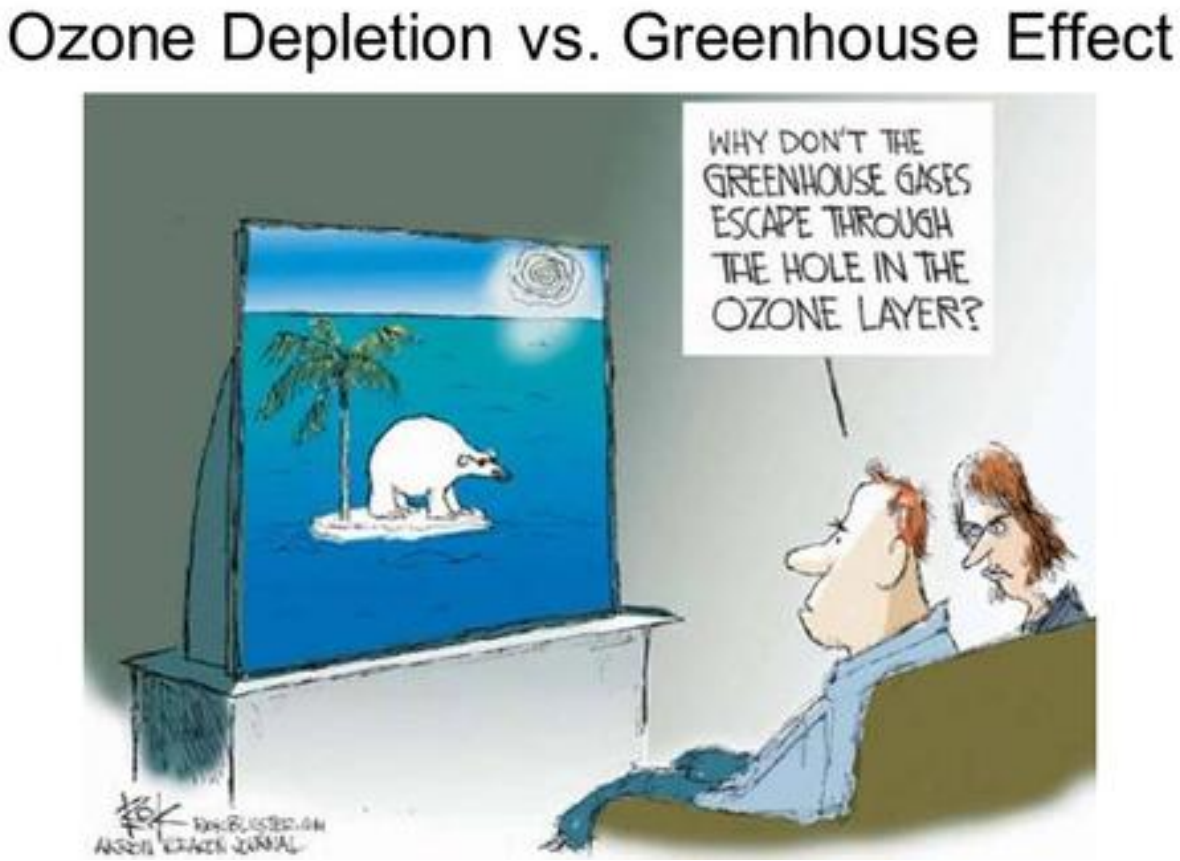


NNOCCI National Network for Ocean and Climate Change Interpretation

Climate change is often communicated in a way that leads to inaction.

Image: Climate.nasa.gov/effects

Cognitive holes (you fill them, or they will!)



How climate change works is a common cognitive hole for the American public

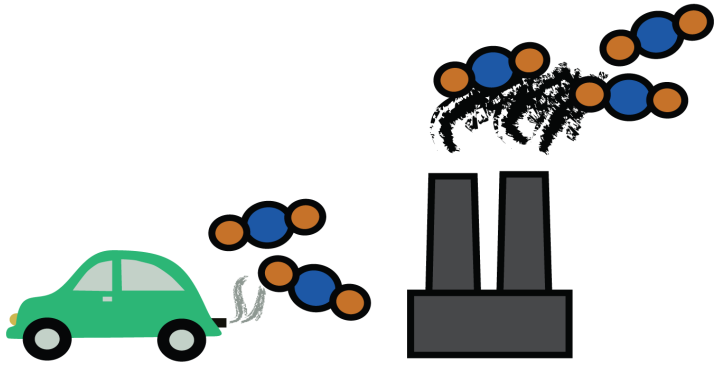
Accurate knowledge of the causes of climate change has been shown to be…

...the “most significant predictor” of climate change policy support - with a greater effect on behavioral intentions than knowledge of impacts
(Bord et al 2000).

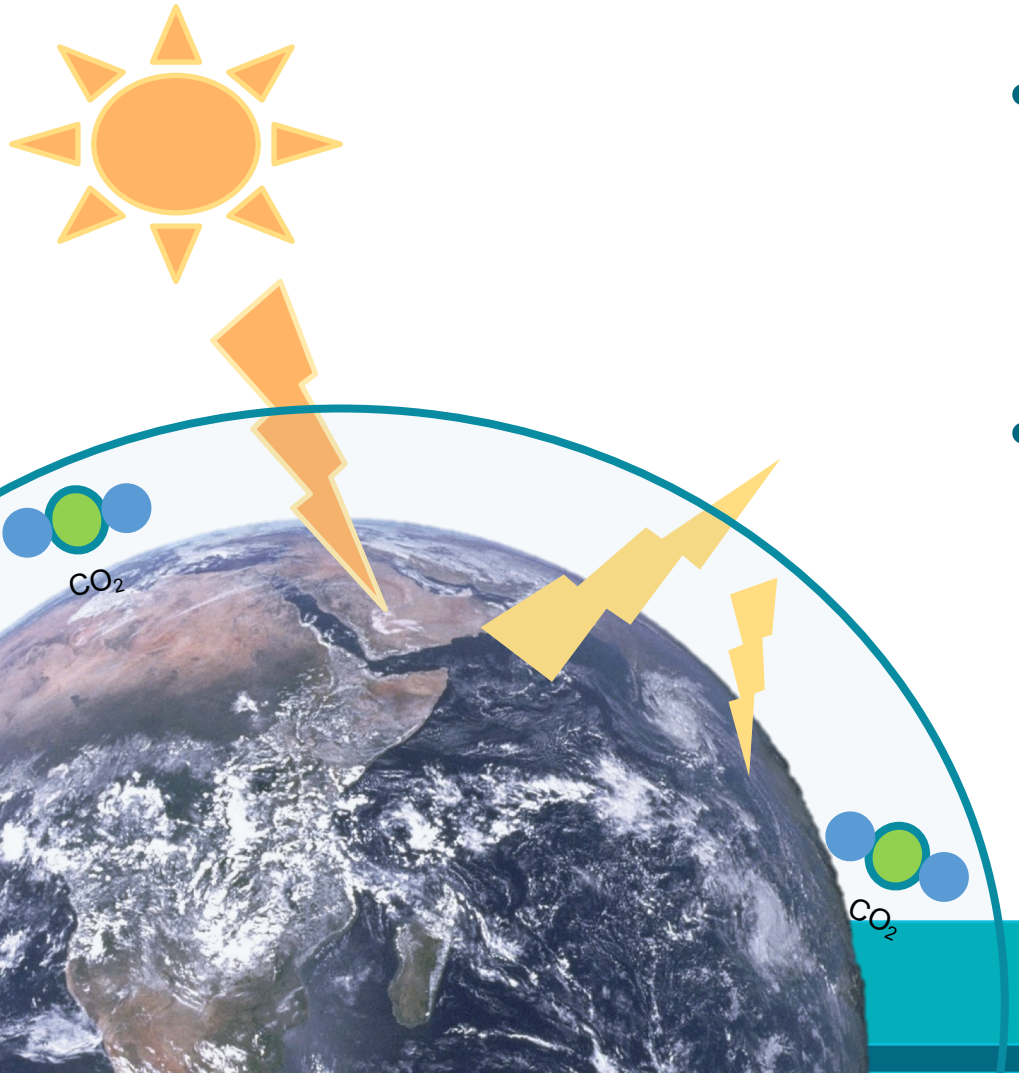
...a “powerful predictor of behavioral intentions, independent from believing that climate change will happen and have bad consequences” (O’Connor et al 1999).

Fill the cognitive hole of ”how climate change works” with the Heat-trapping blanket metaphor

- The atmosphere acts like a blanket around the earth, keeping in heat that would normally escape to space.
- When we burn fossil fuels like oil, coal, and natural gas, we add carbon dioxide to the atmosphere, which is li the blanket.
- This thicker blanket traps more heat.

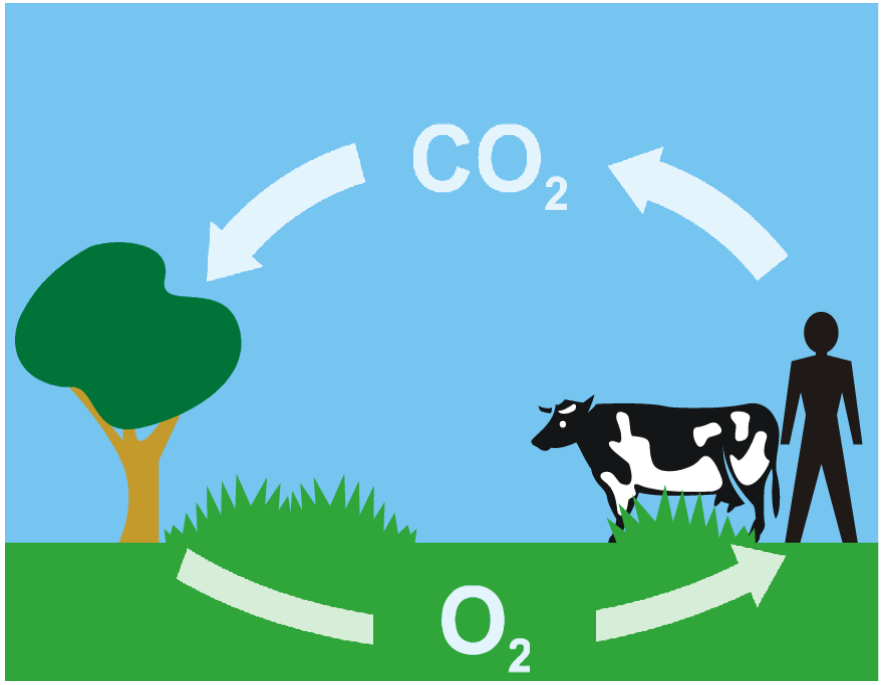


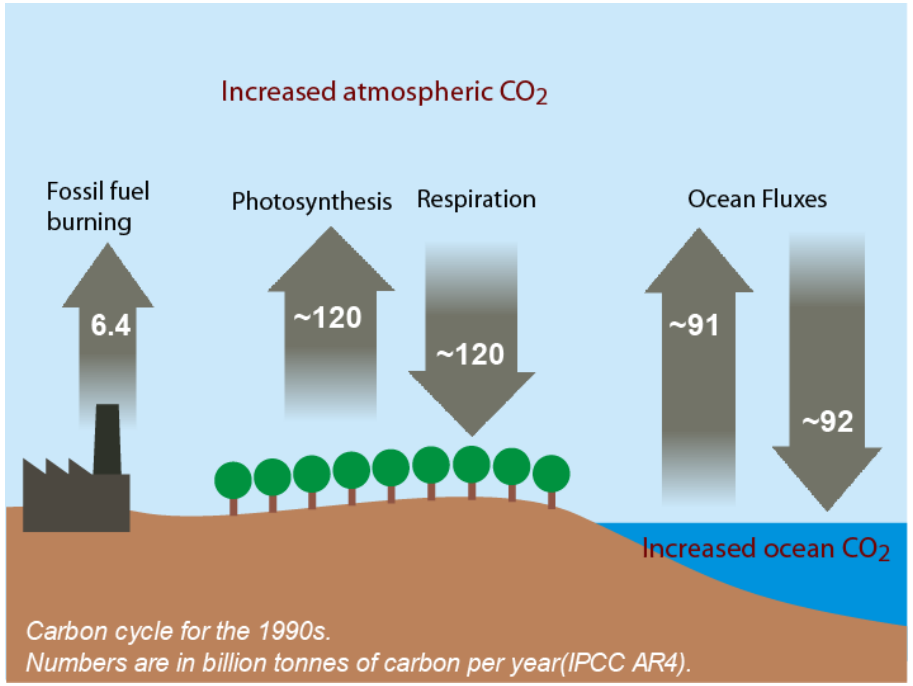
Why the heat-trapping blanket works



- Fills cognitive hole of CO_2 as cause of climate change.
- Directs away from unproductive thinking patterns like: “change is natural,” “it’s all about the ozone,” “nature works in cycles,” and “the solution is recycling.”

Metaphor: Regular vs. Rampant CO_2 levels

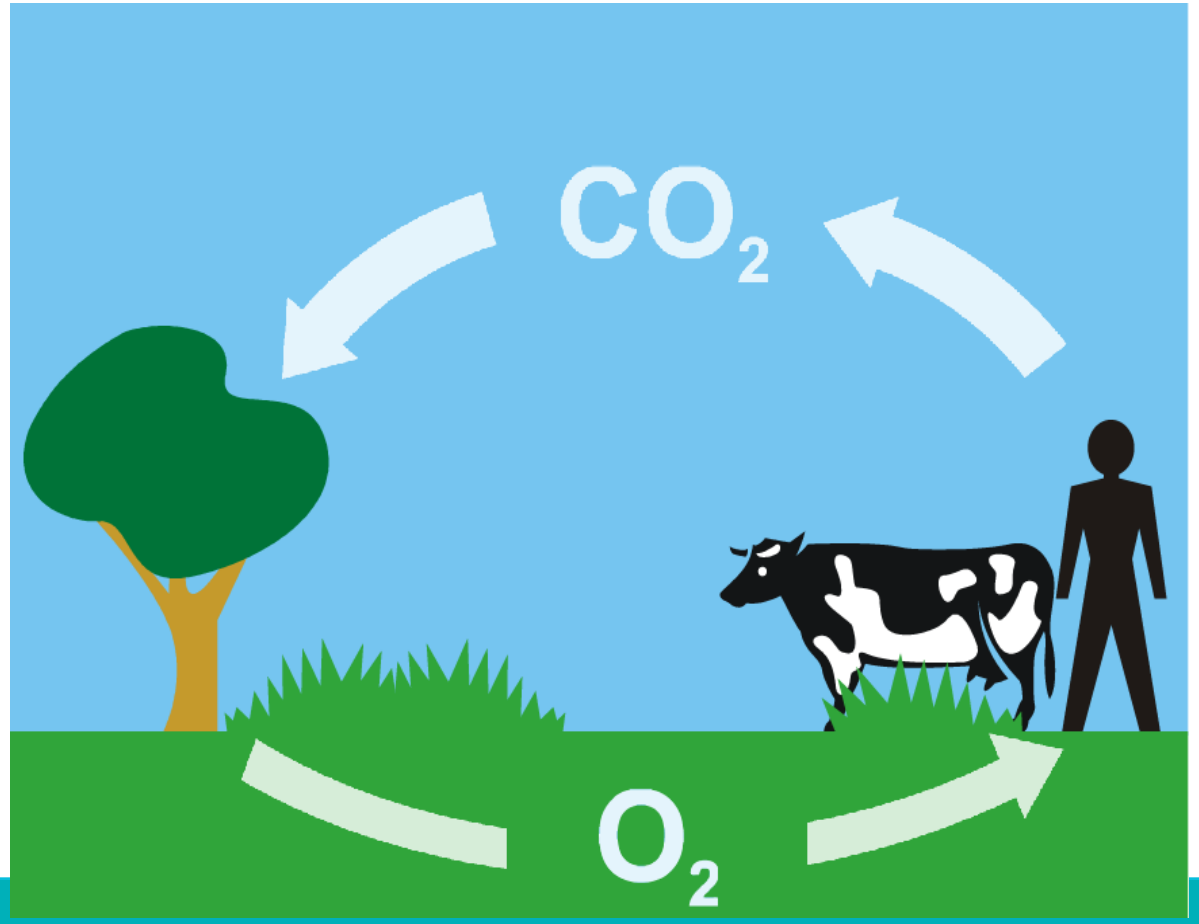


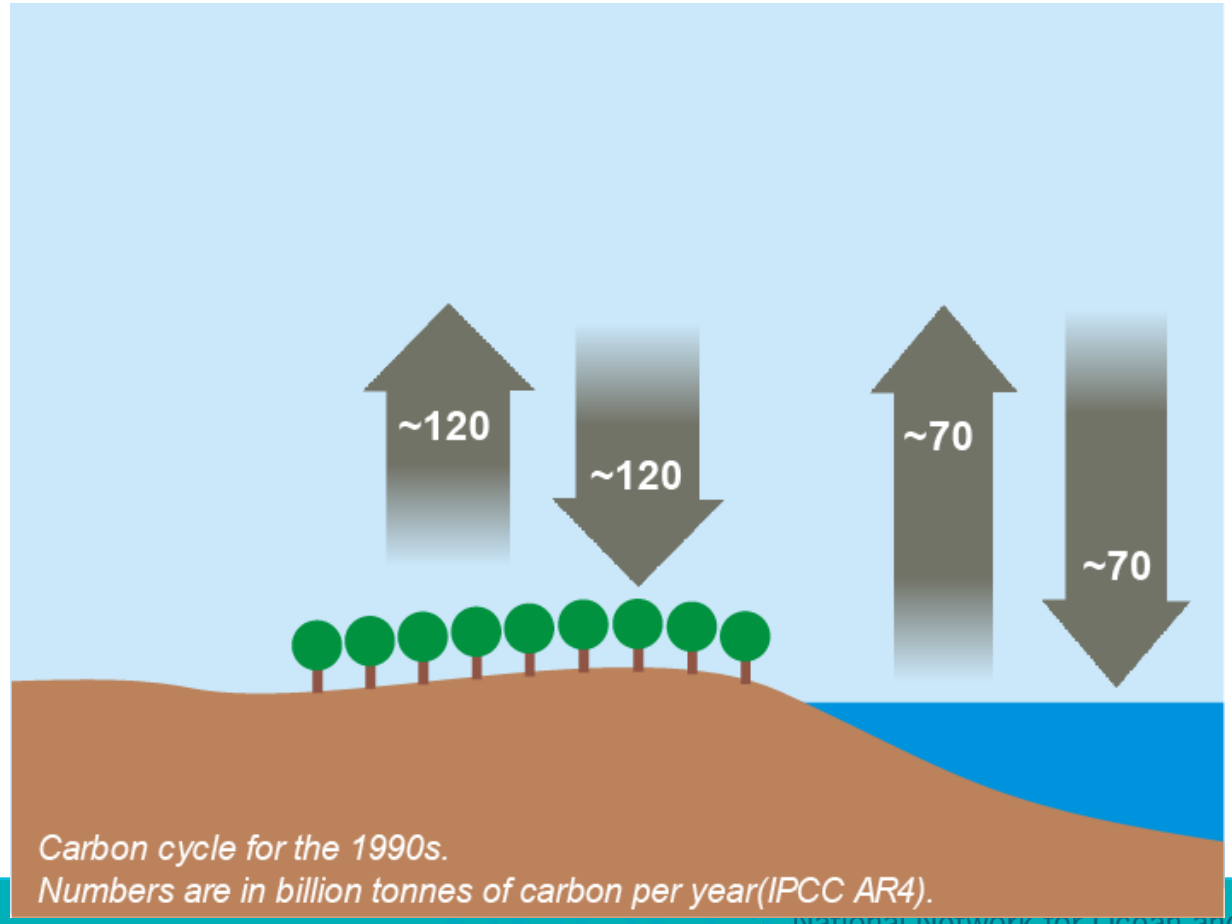


"Regular" levels of carbon dioxide are used and created by normal life processes.

"Rampant" levels of carbon dioxide come from burning fossil fuels for energy.

Carbon dioxide is naturally cycled by plants and animals.

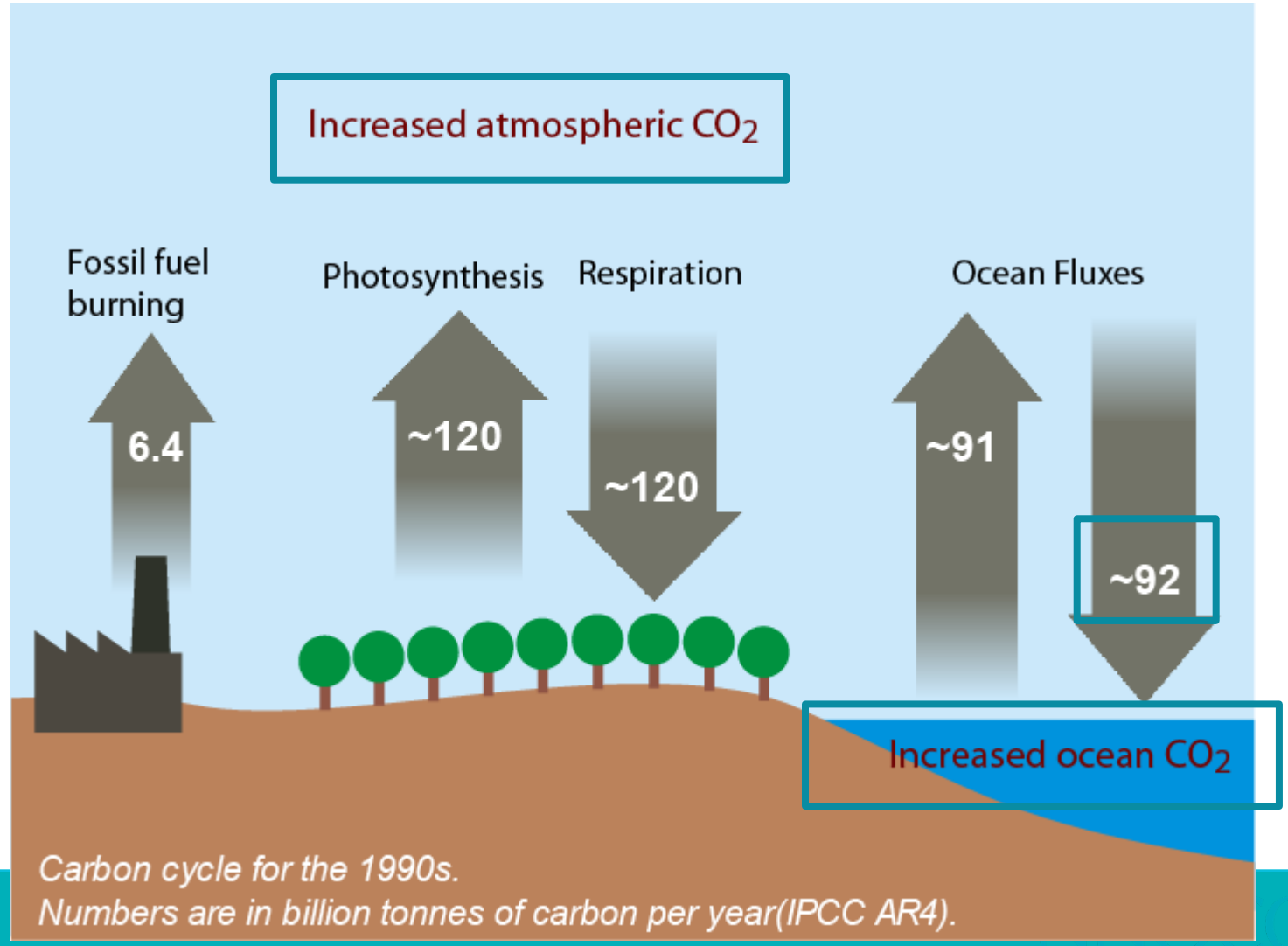




Carbon cycle for the 1990s.
Numbers are in billion tonnes of carbon per year(IPCC AR4).

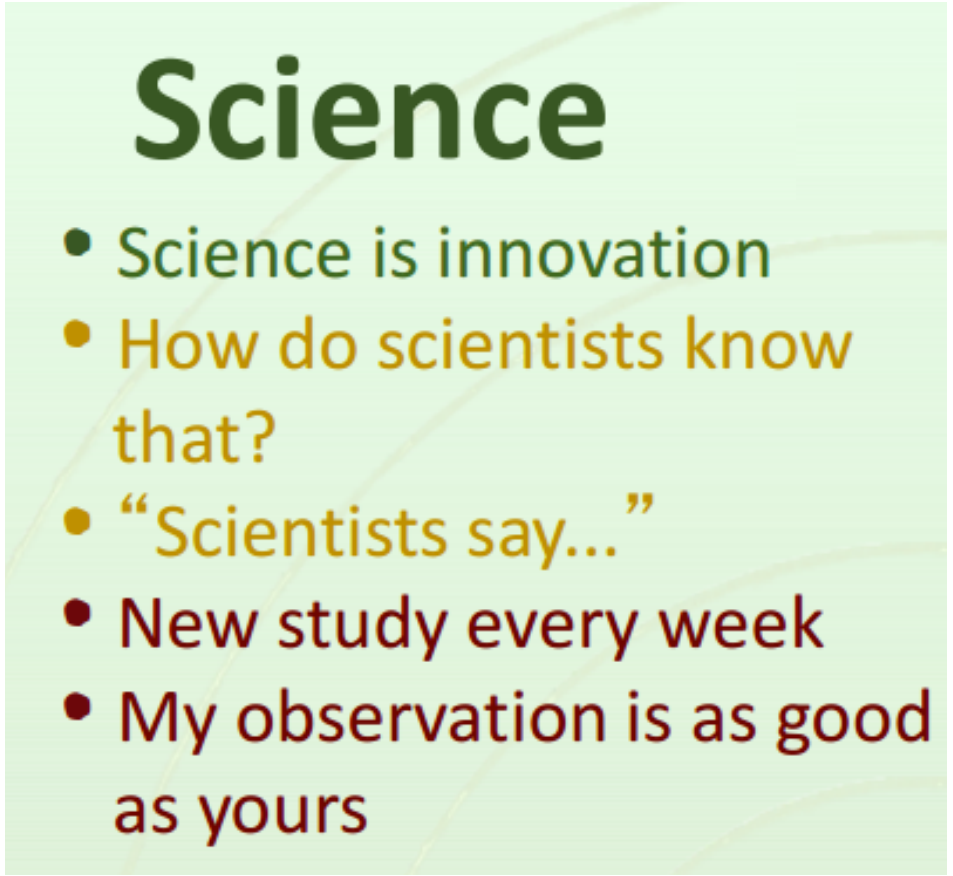
Modified from Skeptical Science Graphics by Skeptical Science

Rampant levels of carbon dioxide are caused by burning fossil fuels like coal, oil, and natural gas.



Modified from Skeptical Science Graphics by Skeptical Science

Climate Change Mental Models



Green = productive

Yellow = can be either productive or unproductive

Red = unproductive

Rubric: positive, civic-minded, and solutions focused

Oceans

- Oceans support humans
- Oceans as a resource
- Basis of life
- Ocean and land= separate worlds
- Oceans are vast; Drop in the bucket
- Heal themselves
- All on the surface
- Ocean acidification- what's that?
- Ocean is too big to be harmed

Science

- Science is innovation
- How do scientists know that?
- "Scientists say..."
- New study every week
- My observation is as good as yours

Consumerism

- Ecosystems are valuable resources
- Cost/benefit thinking
- Eat it while you can!
- Bottomless grocery store
- Jobs vs. environment

Pollution

- Human caused
- Ocean problems=material pollution
- The root of all environment problems
- Just clean it up
- Solution=Recycling
- Carbon dioxide=carbon monoxide

What's in the swamp of...

Ocean & Climate Change

Nature

- Web of life/It's all connected
- Shared fate
- Nature works in cycles
- Nature is self-correcting
- Change is natural/Fatalism
- Mother nature
- CO_2 is natural, therefore it is good

Climate Change

- Something needs to be done
- Climate change = warming
- Melting Ice
- What can I really do?
- Climate=yearly weather patterns in place
- "It's about the ozone, isn't it?"
- Big, Scary depressing
- System, what system?

Public Affairs

- Americans are problem solvers
- Civic Responsibility
- Government is good at protection
- Two sides to every story
- Even if we do our part, other countries won't
- Politics as usual
- Individualism

Putting together a climate change narrative: essential tools

- Explanatory chains
- Values
- Solutions

Explanatory chains

Initial Factor: Start a few steps back from the problem

Mediating Factor(s): Description of what affects what.

The Final Consequence(s) or Outcome (s)

Extreme weather is often messaged as “black box.”

Initial Factor: When we burn fossils fuels like coal, oil, and natural gas for energy, we add CO2 to the atmosphere where it acts like a heat trapping blanket, trapping excess heat that would normally be re-emitted back to space.

Mediating Factors: “Warming air also boosts evaporation, which can worsen drought. More drought creates dry fields and forests that are prone to catching fire.” (National Academics of Sciences, 2019 “Global warming is contributing to extreme weather events”)

Outcome: Longer wildfire seasons are expected.

Impacts to species also need clear links.

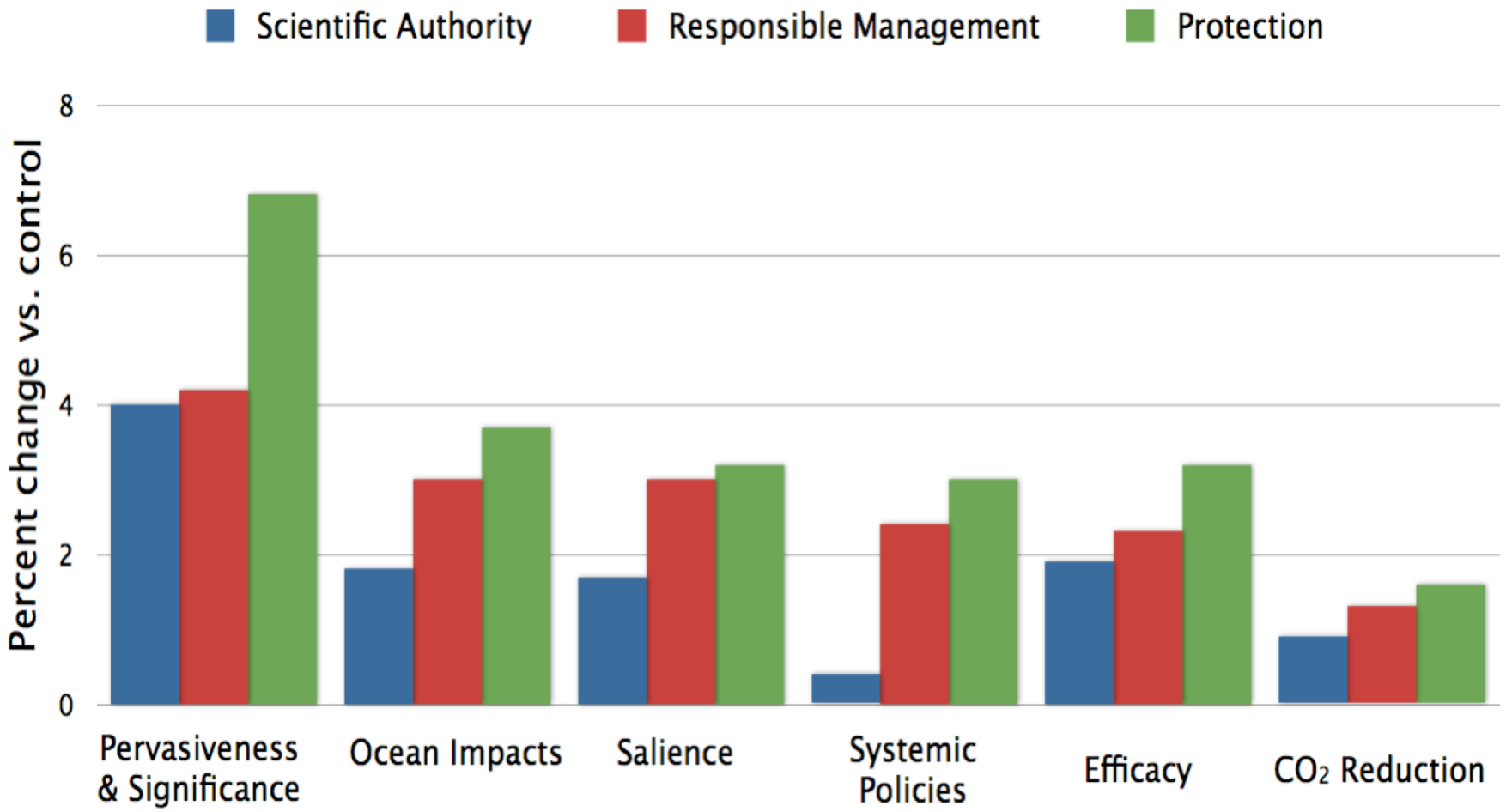
Initial Factor: When we burn fossils fuels like coal, oil, and natural gas for energy, we add CO2 to the atmosphere where it acts like a heat trapping blanket, trapping excess heat that would normally be re-emitted back to space.

Mediating Factors:

- Much of this excess heat is absorbed by the ocean.
- Many ocean creatures, like lobsters, rely on the temperature of the water to regulate their metabolism, oxygen flow, and even disease resistance.
- Temperatures that are too cold can be damaging as metabolisms slow, but temperatures that are too hot are particularly dangerous as the warmer water tends to hold less oxygen while simultaneously causing their growth rate and metabolism to speed up.

Outcome: Lobster populations are expected to decline.

Use tested values to establish common ground with your audience.



Value

Responsible Management

Why does it matter? What's at stake?

The story you're telling:

Taking practical, common sense steps to address problems facing our environment today is in the best interest of future generations.

Strategically redirects thinking away from patterns such as:

• Change Is Natural/Fatalism • Eat It While You Can • Individualism
• Nature Will Fix Itself • Nature Works In Cycles • Solution = Recycling

Value

Protection

Why does it matter? What's at stake?

The story you're telling:

We must protect people and places from being harmed by the issues facing our environment.

Strategically redirects thinking away from patterns such as:

• Bottomless Grocery Store • Change Is Natural/Fatalism • Individualism
• Nature Will Fix Itself • Nature Works in Cycles • Solution = Recycling

Example

- We should take a practical steps now to protect our environment to preserve our planet for future generations.

- We need to act now to protect places that are threatened by sea-level rise.

End with (Community Level) Solutions

- Scale of solutions needs to match the scale of the problem
  - Reducing fossil fuel usage at local, state, and national levels
- Talk with others
- Avoid polarizing language
  - Politicians → civic leaders
  - Policies / laws / regulations → approaches / programs
  - Government → municipal / name your location

Summary

- Start with a shared value
- Use clear metaphors & explanatory chains to connect human action to climate impacts
- Avoid unproductive mental models
- End with a solution

Questions?

- For more resources:
  - Climateinterpreter.org
  - Frameworksinstitute.org
- Contact us:
  - Emily.a.moberg at gmail dot com
  - Jmoyer at frameworksinstitute dot org

Osteoporosis of the seas

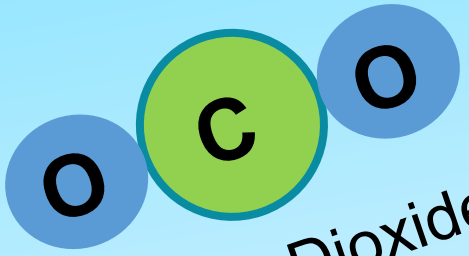
- The ocean absorbs excess carbon dioxide humans emit into the atmosphere, which changes the chemistry of the ocean.
- This change in chemistry reduces the amount of carbonate in the ocean.
- Just as humans need calcium to build their bones, many sea creatures need carbonate to build their skeletons and shells.
- As a result, we see organisms with thin, brittle shells. These organisms are often part of food webs, so this “osteoporosis of the sea” can impact ecosystems.

Why osteoporosis of the seas work

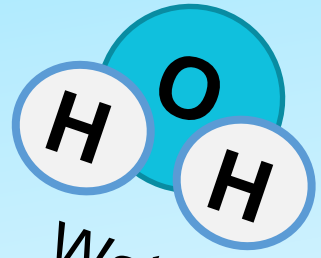
- Fills in a ‘cognitive hole’ about ocean acidification

- Directs thinking about from unproductive thinking patterns like “nature will fix itself,” “the ocean is too big to be harmed,” and “ocean

Water



Carbon Dioxide



Water

Example

We are extra carbon dioxide into the atmosphere and the absorbs a large proportion of that carbon dioxide, which is changing its chemistry. This changed chemistry results in less carbonate available for shelled organisms. This “osteoporosis of the sea” causes the protective shells of these animals to be thin and brittle, just like when humans have calcium deficiencies in their bones, which makes it hard for them to grow and survive.

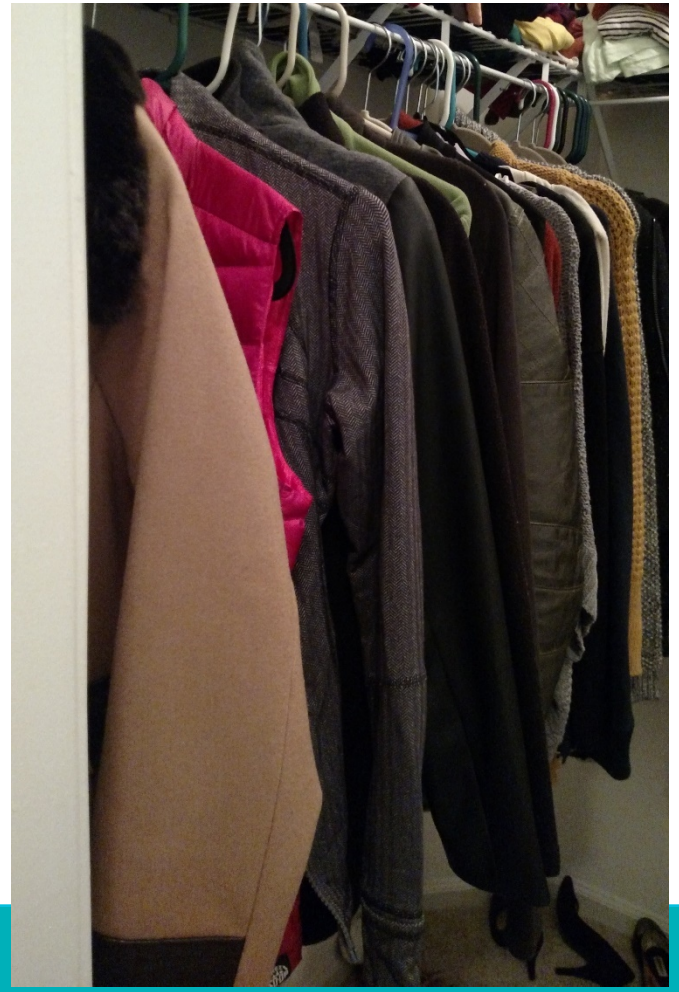
Climate's heart

- As the heart of the climate's circulatory system, the ocean maintains the earth's temperatures by moving heat and moisture via currents and winds, and stabilizes the earth's temperature by absorbing heat from the sun and transferring it to different parts of the climate system.
- When we burn fossil fuels, we put a lot of stress on the ocean, damaging its ability to keep the climate stable.
- As a result of this stress, sometimes the ocean pumps too much heat and moisture throughout the system, sometimes too little.
- A heart must be monitored and cared for to ensure overall health and functioning, and the best care is preventative care.

Why climate's heart works?

- Fills cognitive hole about ocean's role in climate.
- Redirects thinking away from unproductive thought processes like "climate = weather," "ocean and land are separate worlds," "ocean is too big to be harmed," and "nature will heal itself."

The climate is the long-term pattern of temperature, precipitation, and winds in an area.



Closet full of warm clothes for fall
~ climate

Choosing a puffy coat for a really cold day in November
~ weather