

On the Cutting Edge  
Professional Development for Geoscience Faculty 2011-12



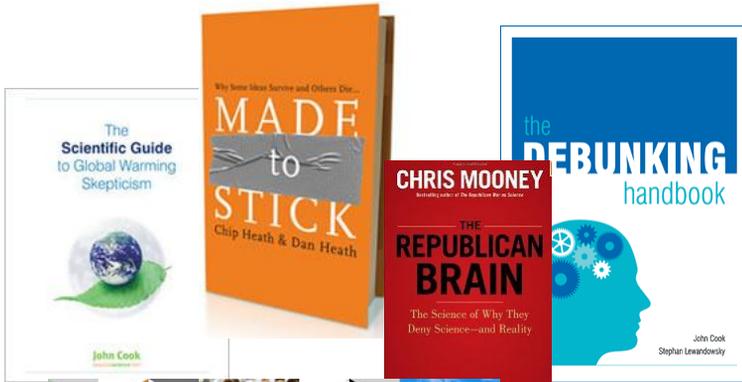
# Overcoming Misconceptions

Presentation compiled by  
Katryn Wiese

For June 2012 Teaching Environmental  
Geology Workshop



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**Myth Debunking**  
John Cook

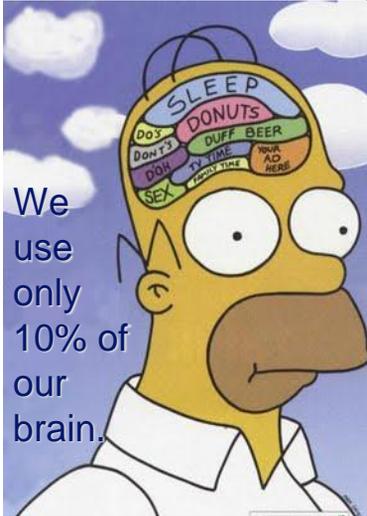
Climate Literacy and Environmental Awareness Network  
Date: 4 April 2012

Meeting the  
challenge of change

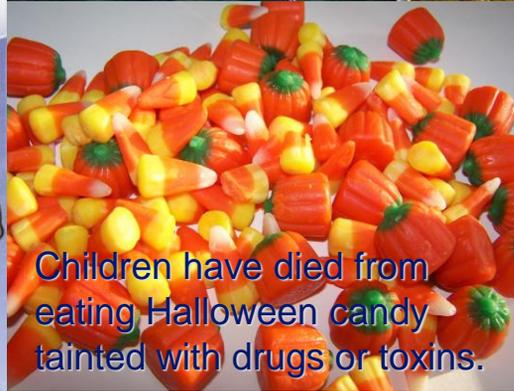


# Which of these is true?

Made to Stick: Why Some Ideas Survive and Others Die – Chip and Dan Heath, January 2, 2007



The Great Wall of China can be seen from space.



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## Unsticking an idea

We can't.

“We should fight sticky with stickier, meet Scotch tape with duct tape.”



Made to Stick: Why Some Ideas Survive and Others Die – Chip and Dan Heath, January 2, 2007

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# What makes ideas sticky?

Audience must be able to:

- ❖ Pay attention

## UNEXPECTED MYSTERY



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“...people are, in fact, more likely to keep thinking about a movie when they can’t explain what happened to the main character.”

From *Stumbling on Happiness*, Daniel Gilbert, 2006





## What makes ideas sticky

Audience must be able to:

- ❖ Pay attention  
**UNEXPECTED – CURIOSITY**
- ❖ Understand and remember

**CONCRETE**



Made to Stick: Why Some Ideas Survive and Others Die – Chip and Dan Heath, January 2, 2007

Sea otter fur contains, per square inch, 10 times the hair on an average human head.



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## What makes ideas sticky?

Audience must be able to:

- ❖ Pay attention  
UNEXPECTED – CURIOSITY
- ❖ Understand and remember  
CONCRETE
- ❖ Agree/believe

**CREDIBLE**



Made to Stick: Why Some Ideas Survive and Others Die – Chip and Dan Heath, January 2, 2007

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Sea otter fur contains, per square inch, 10 times the hair on an average human head.



K-Dutton-cleaning-an-oiled-sea-otter-pelt – <http://www.defendersblog.org/2010/11/how-do-you-de-oil-a-polar-bear/>.

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## What makes ideas sticky?

Audience must be able to:

- ❖ Pay attention  
UNEXPECTED – CURIOSITY
- ❖ Understand and remember  
CONCRETE
- ❖ Agree/believe CREDIBLE
- ❖ Care

# EMOTIONAL



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Sea otter fur contains, per square inch, 10 times the hair on an average human head.



## What makes ideas sticky?

Audience must be able to:

- ❖ Pay attention  
UNEXPECTED – CURIOSITY
- ❖ Understand and remember  
CONCRETE
- ❖ Agree/believe CREDIBLE
- ❖ Care EMOTIONAL
- ❖ Become part of it – engage



**STORY**

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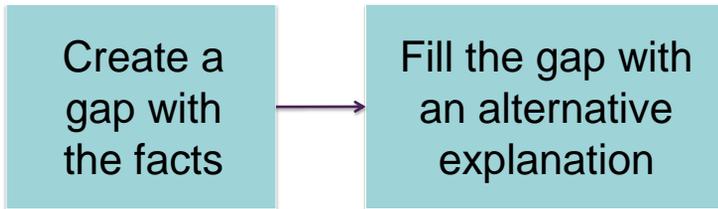


Monterey Bay images – from author's trip in 2010.

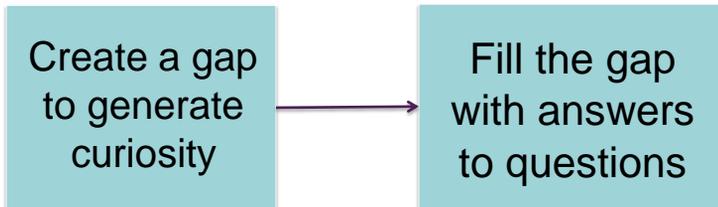
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### Debunking Method



### Generating Curiosity



[http://www.skepticalscience.com/docs/Debunking\\_Handbook.pdf](http://www.skepticalscience.com/docs/Debunking_Handbook.pdf)

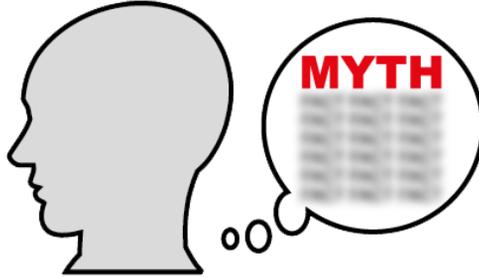


# CHALLENGES?

## Familiarity

*details of debunking fade, but headlines stick*

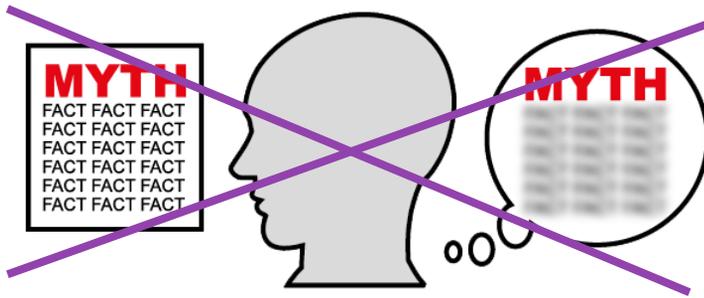
**MYTH**  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT



[http://www.skepticalscience.com/docs/Debunking\\_Handbook.pdf](http://www.skepticalscience.com/docs/Debunking_Handbook.pdf)

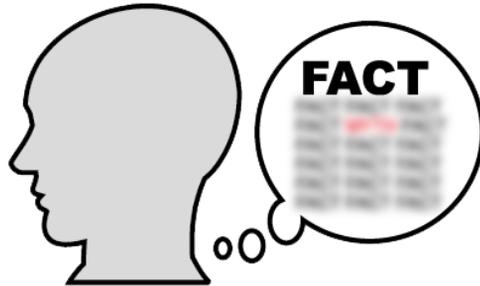


**MYTH**  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT



**FOCUS FIRST AND STRONGLY ON FACTS**  
*On guard: MYTH IS COMING!*

**FACT**  
FACT FACT FACT  
FACT **MYTH** FACT  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT



[http://www.skepticalscience.com/docs/Debunking\\_Handbook.pdf](http://www.skepticalscience.com/docs/Debunking_Handbook.pdf)

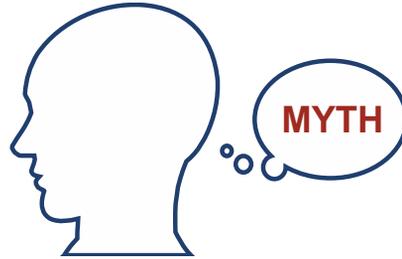


# CHALLENGES?

## Overkill –

*too many arguments against myth reinforces myth, because it's harder to accept, remember, grasp*

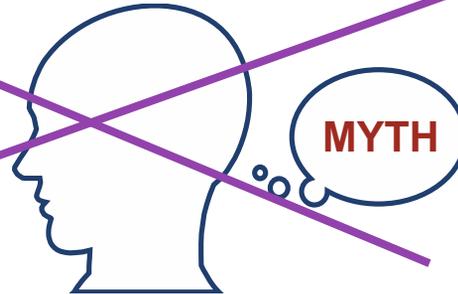
**MYTH**  
FACT FACT FACT  
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FACT FACT FACT  
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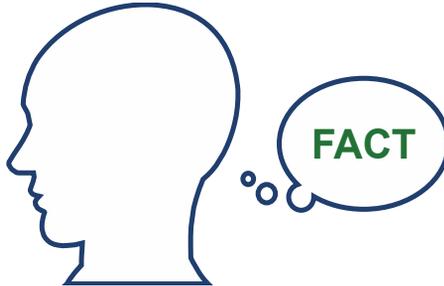


**MYTH**  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT  
FACT FACT FACT



## **KEEP IT SIMPLE!**

**MYTH**  
FACT  
FACT  
FACT



[http://www.skepticalscience.com/docs/Debunking\\_Handbook.pdf](http://www.skepticalscience.com/docs/Debunking_Handbook.pdf)



~~CHALLENGES?  
Curse of knowledge &  
lack of a common language~~



**Know your audience**



~~CHALLENGES?  
Issues challenge world view / identity  
*Attitude bolstering: bring supporting facts to  
mind, ignoring contrary facts*~~

**Frame  
messages  
to affirm  
worldview.**



[http://www.skepticalscience.com/docs/Debunking\\_Handbook.pdf](http://www.skepticalscience.com/docs/Debunking_Handbook.pdf)



## YOUR RESOURCES

### Teaching Activities

- ❖ Cherry picking data and what it leads to (real-life, personal examples, such as exams)
- ❖ Debunking/finding flaws in movies



+ More shared ideas, including some from fellow participants including: *Suki Smaglik and Leah Joseph*

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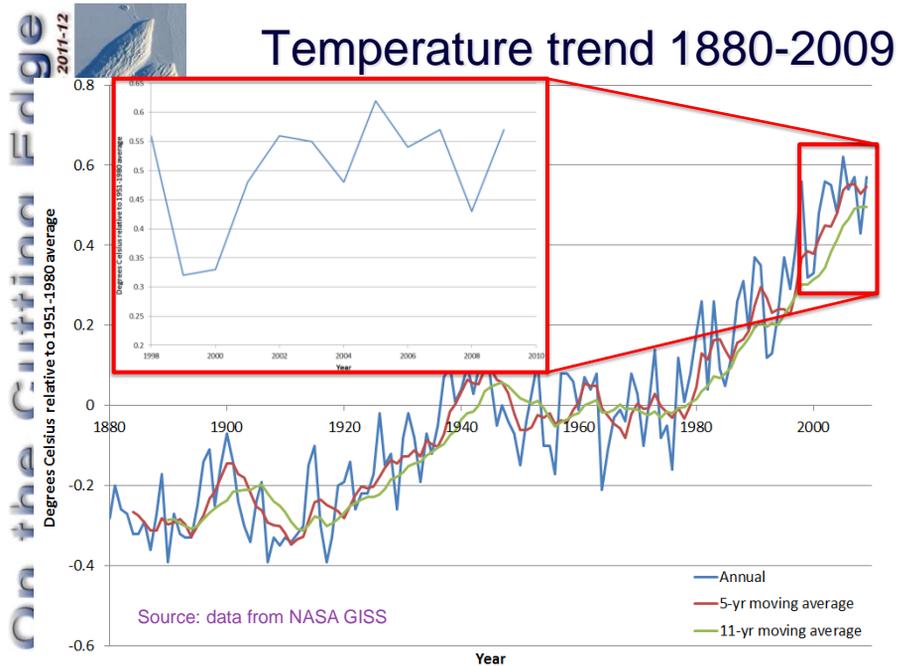


## Teaching that sticks:

- ❖ Simple (three core concepts you want everyone to remember)
- ❖ Unexpected (lighting a fire of curiosity)
- ❖ Concrete
- ❖ Credible (experience it first hand, show statistics)
- ❖ Emotion (not just facts, but experiences, explosions, smells, sounds)
- ❖ Story (any and all engage students and makes it more memorable)

Made to Stick: Why Some Ideas Survive and Others Die – Chip and Dan Heath, January 2, 2007

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Myth Debunking – John Cook – CLEAN Workshop – 4/4/2012