

UCSD COSMOS 2009: Living Oceans and Climate Change

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Course website

<http://meteora.ucsd.edu/~jnorris/cosmos/cosmos.html>

PowerPoint lectures and other materials will be made available on the course website

Questions

- What things from the movie do you think are true? Why?
- What things from the movie do you think may not be true? Why?
- How could we determine what is true and what is not?

What is science?

- A mode of thinking
- A mode of doing
- A mode of interacting

Scientific thinking

- Not especially different from other methods of valid reasoning
- Measurements of physical world are determining evidence
- Nevertheless, intuition and prior assumptions play a key role
- Scientific truth relies on *parsimony* and *falsifiability*

Scientific doing

- *Observe* – describe characteristics and processes in nature
- *Experiment* – find out what happens under controlled circumstances
- *Model* – represent nature in simpler terms using physical, mathematical, or computer constructs
- *Theorize* – develop general principles

Scientific interacting

- *Communicate* – present results in a meeting or publish them in a journal
- *Discuss* – talk (and argue) with colleagues over the validity of results
- *Convince* – develop consensus on the scientifically correct description of nature