

Sharing Planetary Science: Addressing Controversial Topics

Addressing a Controversial Topic

Controversial topics can come up during planetary science presentations with a variety of audiences, during family events, and even in conversations on an airplane or in an elevator. While there are no easy solutions to every circumstance, there are some recommendations.¹

DO:

- Prepare to understand the claims or concerns of those with disagreements; this includes understanding their possible misunderstandings of how science is done (see “Misconceptions about Science”).
- Prepare: if a presentation is likely to deal with a controversial topic, have “extra slides” in place.
- Be ready to cite the consensus of the scientific community.
- When appropriate, remind their audiences that science seeks to explain natural things through natural causes; it does not rely on, and cannot evaluate or test, supernatural explanations.
- Be respectful and polite.
- Be prepared to deflect or defer the conversation if it’s off-topic or inappropriate for the broader audience.
- Consider changing the subject, if appropriate and necessary.
- Consider having a discussion on the topic when the audience has a genuine interest in knowing more.
- Consider using humor, but only if it is respectful of the audiences.

DON'T:

- Don't engage in fruitless debate.
- Don't panic, attack, or shout.
- Don't make an individual response the focus; the broader audience should be the focus and priority.
- Don't respond with arrogance.
- Don't imply or state that people just need to blindly accept and believe scientists.
- Don't attack political or religious groups.
- Don't misrepresent the scientific consensus by presenting “the other side” as though it were scientifically credible, if it is not.

¹ These recommendations are from the National Center for Science Education and from the participants in the related workshop conducted at LPI on Feb. 6, 2018.

Misconceptions about Science

There are a variety of misconceptions about science that can make it difficult to address controversial topics. According to the National Science Board's 2002 study *Science and Engineering Indicators*, only one-third of Americans can adequately explain what it means to study something scientifically. Some examples, from *UC Berkeley: Understanding Science 101* (<https://undsci.berkeley.edu> and <https://undsci.berkeley.edu/teaching/misconceptions.php>):

- *Some topics become controversial when scientists are asked to address non-scientific topics.* Science asks questions about the natural world, including the components of the physical universe. Science cannot study supernatural forces and explanations.
- *Many people think that scientific theories are merely hunches.* In everyday language, “theory” is often used to mean a hunch with little evidence, instead of a broad explanation for a wide range of phenomena that can be used to make predictions and is supported by many lines of evidence.
- *Some people think scientific ideas are judged democratically based on popularity.*
- *Some think that because scientific ideas are tentative and subject to change, they can't be trusted.* While it's true that all scientific ideas are subject to change, many scientific ideas are supported by many lines of evidence, are extremely reliable, and are unlikely to change.
- *Some arguments arise from the misconception that scientific ideas are absolute and unchanging.* While some scientific ideas are supported by so many lines of evidence, they are unlikely to be completely overturned, even these are subject to modification based on new evidence and perspectives. New scientific ideas may change rapidly as scientists test out many different possible explanations trying to figure out which are the most accurate.

Resources to Prepare for Addressing Controversial Topics

National Center for Science Education: <https://ncse.com/dealingwithdenial>

NCSE has resources on why so many people reject science, even when it supported by multiple lines of scientific evidence, where denial comes from, and the best way to counteract it. This site includes common climate change denial and anti-evolution arguments.

UC Berkeley: Dealing with objections to evolution

https://evolution.berkeley.edu/evolibrary/controversy_faq.php

- Some perceive evolution, the Big Bang, solar system formation, and geologic timescales to be incompatible with religious faith.
- Although many religious views and are compatible with these theories, and many religious organizations are comfortable with these topics, some members of your audience may be unaware of these facts.

For more information or suggestions on this or other topics in Sharing Planetary Science, please contact the Lunar and Planetary Institute's Scientist Engagement efforts, at education@lpi.usra.edu.