

We examine three strategies for conveying science effectively to a broad audience: making science relevant, accessible, and intriguing. Through an analysis of the dissemination strategy for research-related stories at the National Center for Atmospheric Research, we explore the methods for successful communication of societally relevant science. We will discuss both time-honored and new means of conveying authentic science in a rapidly changing media landscape.

FUNDAMENTALS OF SUCCESSFUL COMMUNICATION

Know Your Audience

- Who are you talking to, and what is their level of expertise on the topic you are communicating?
- Understand how to connect with your audience: what moves them, how can you reach them through their own interests and value systems?
- What are the obstacles to communication, what pre-existing biases are present, what misconceptions need to be cleared up?

Respect Your Audience

- Your audience deserves to be treated fairly and respectfully
- View your interaction as an opportunity to educate, exchange ideas, and tailor your message
- Be accepting of and patient with varying levels of expertise and understanding

Engage Your Audience

- Can you provide an opportunity for dialogue so that your audience can feel invested in your work, and communicate it to others?
- Are there ways to involve audiences in your research, directly or indirectly, so that they can better understand the concepts?
- Does your audience feel empowered by the knowledge you can provide, and is there a positive message they can take away?

Reach Your Audience

- Are you utilizing the most effective means of communicating with your audience?
- Is your information accessible and comprehensible?
- Have you distributed your science in a targeted manner, and are you tracking the results?

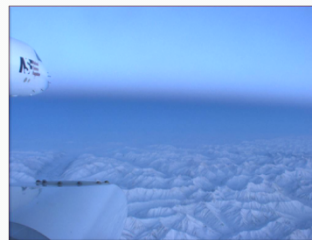
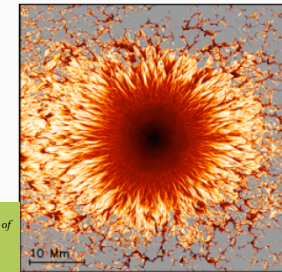
NCAR benefits from having science writers, outreach specialists, and a media team that help craft and disseminate the variety of messages aimed at NCAR's broad range of audiences.

Largely funded by the National Science Foundation (NSF), the National Center for Atmospheric Research (NCAR) strives to meet NSF objectives of educating the public, the media and the wider scientific community. Under this aegis, NCAR scientists address a variety of populations, from pre-school-aged children, to the public interested in science, to Congressional staffers responsible for providing policymakers with informed opinions on a variety of topics – including current science.

MAKE IT RELEVANT

Let people know how your science affects them personally, or things they care about. In a June news release about striking new sunspot simulations, NCAR highlighted the effect that solar events can have on communications and navigation systems here on Earth, systems we depend on every day.

The interface between a sunspot's umbra (dark center) and penumbra (lighter outer region) shows a complex structure with narrow, almost horizontal (lighter to white) filaments embedded in a background having a more vertical (darker to black) magnetic field. Farther out, extended patches of horizontal field dominate. For the first time, NCAR scientists and colleagues have modeled this complex structure in a comprehensive 3D computer simulation, giving a first glimpse below the visible surface to understand the underlying physical processes. (©UCAR, image courtesy Matthias Rempel, NCAR.)



This photo of the Arctic was taken from the HIAPER aircraft during the HIPPO mission. HIAPER is also known as the NSF/NCAR G-V. (©UCAR.)

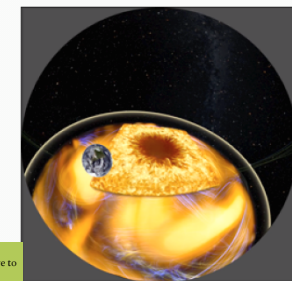
MAKE IT ACCESSIBLE

The HIAPER Pole-to-Pole Observations (HIPPO) mission is designed to improve predictions about greenhouse gases and help us make better decisions about climate change. The project covers some of the remotest areas of Earth, and yet you can get near-daily updates on the mission via Facebook and Twitter. The updates avoid jargon, giving quick and clear information for an audience that thrives on brevity. Scientific information can be carefully tailored to meet the various needs of different audiences.

MAKE IT INTRIGUING

Just as science itself has long been a curiosity-driven endeavor that seeks to answer significant questions about our universe, piquing the curiosity of others is an effective way of sharing science across audiences of many backgrounds and ages. Using compelling images, sharing excitement about the topic, letting the audience in on a discovery are all ways of getting people excited about your work, and curious to learn more. This summer, NCAR research about the Sun made its way into the Hayden Planetarium's latest show, where it enthralled an audience of a million people each year.

This visualization from the Hayden Planetarium's *Journey to the Stars* shows the generation of magnetic field in the solar convection zone and its connection to a sunspot at the visible surface of the Sun. Note that the sunspot (with a size slightly larger than Earth) is enlarged for better visibility and not in proper scale relative to the Sun. (© 2009, American Museum of Natural History)



CONCLUSION: Providing information in a language an audience understands is critical. Making the information useful and relevant, providing it in a context that reaches the intended recipients, and engaging the audience's curiosity are keys to successfully bringing science beyond the laboratory, and into people's lives.