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I believe too many scientists are comfortable in the ivory tower, journal space, and conferences. However, a gale of misinformation rushes in to replace the void if scientists are not communicating to the public, stakeholders, and students.

Dr. Marshall Shepherd



A Science Communication "Big Picture" and Some Perspective From an "Outsider"

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J.MARSHALLSHEPHERD, PhD Georgia Athletic Association Distinguished Professor Director, UGA Atmospheric Sciences Program 2013 President, American Meteorological Society Host, Weather Channel's Weather Geeks Forbes Contributor @DrShepherd2013 on Twitter



Wildfires and Smoke Are "So What" Topics and Relevant To Public and Decisionmakers

Wildfires Don't Stop At The Canadian Border - Debunking The Latest Twitter Myth



Marshall Shepherd Senior Contributor ③

Damage from wildfires' toxic air lingers long after the smoke clears



MATT SIMON SCIENCE 09.10.2020 00:00 AM

What's in Wildfire Smoke, and How Dangerous Is It?

Blazes on the West Coast are spewing a haze clear across the country. Along the way, the complex chemistry of what we inhale gets even more complex.

As wildfires rage, climate experts warn: The future we were worried about is here

Wildfires in the U.S., Australia and Siberia have driven home how climate change is already threatening to destroy ecosystems in various parts of the world.



9 Tips For Communicating Science To Non-Scientists



Black Carbon Column Mass Density (mg/m²) 0 5 ≥10

- •Know your audience.
- •Don't use jargon.
- •Get to the point.
- •Use analogies and metaphors.
- •Three points.
- •You are the expert.
- •Use social media.
- •The myth of "popularizers."
- •Relate



A Recent Example...



Get to the Point





Social Media





Summary of Key Points

- Study the 9 Tips
- Get to the Point without Jargon
- Use Social media





Perspectives From An Outsider and Former AMS President

- We need clarity on the climate change smoke wildfire connections?
- How is Artificial Intelligence (AI) / Machine Learning being integrated into research and operations?
- What is missing from weather climate models at this point for your needs (resolution, less parameterization, process, connection to DSS)?
- Can NWS Impact-Based Forecasting and Attention to social sciences improve messaging within this community?
- What role can NCAR play at the intersections of modeling, observations, and the topic?



Perspectives From the National Center for Atmospheric Research

- Gaps/future opportunities: Linking lab studies including studies in the fire Lab to 3D studies and field campaigns to fill the gap we cannot cover with observations (e.g., "What happens in the first 30 minutes between emission and first observations"?)
- Climate Change: We need to link interactive land models with interactive fire models to capture the full feedbacks and do that at reasonably high resolution.
- Air Quality: Detailed chemistry studies on interactions of urban pollution and fire plumes; Still many not well-known compounds in fire smoke and many air toxics with serious implications on human health.
- **Emission Inventories:** We really need to separate smoldering and flaming phase and use satellite data to characterize the diurnal cycle. Current emission inventories remain to be highly uncertain.
- Smoke aerosols: Composition and optical properties and aerosol aging are still not fully known yet have large impact on weather and climate
- Machine Learning (ML): Once we understand processes better we can use ML to derive, e.g. simplified chemistry and aerosols schemes for inclusion in 3D Models. ACOM is also doing work on using ML together with LES modeling to improve modeling of plume chemistry



Compiled by Gabriel Pfister/NCAR