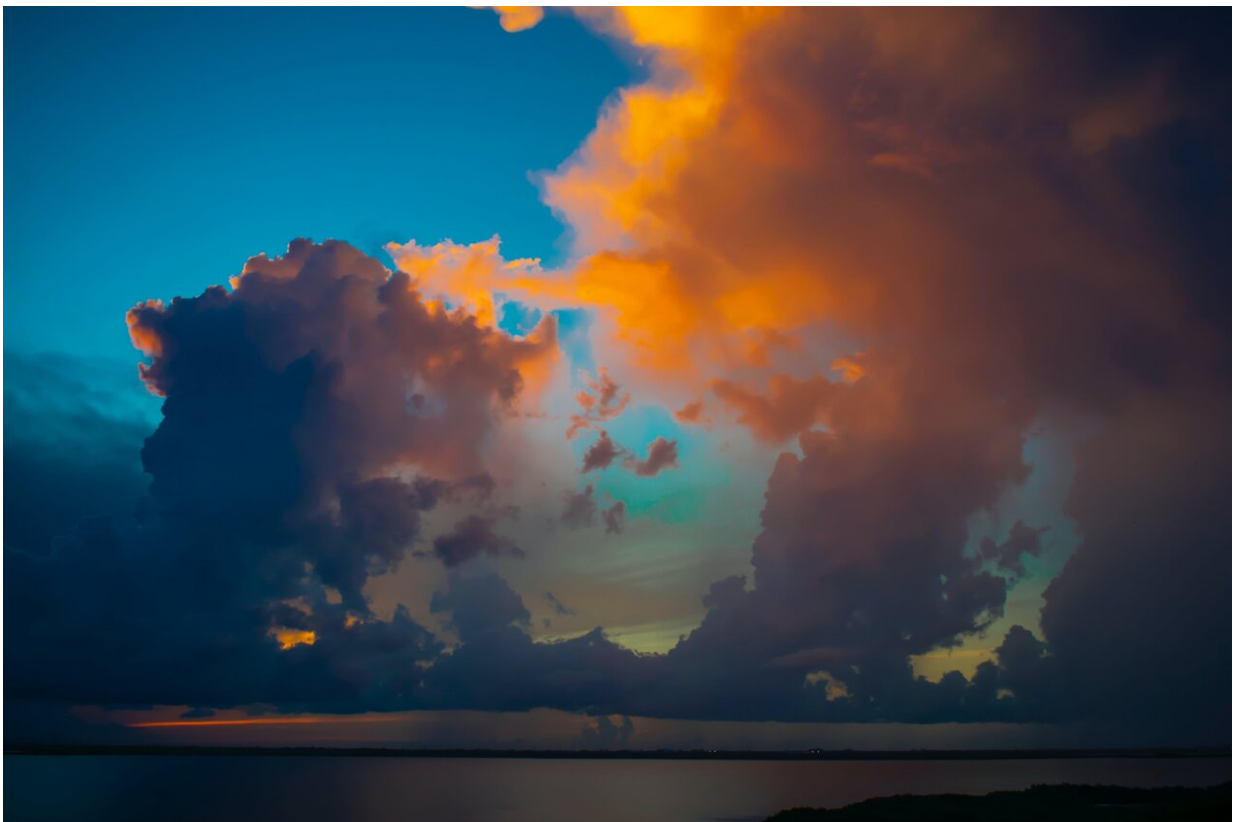


What are meteorologists thinking? They can tell us about the weather, but also worry about the climate emergency

September 19 2022, by Christopher Borrelli



Credit: Unsplash/CC0 Public Domain

Jim Anderson winced as he said opportunity. He paused on the word for a moment as about 20 weather-industry professionals sat in folding

chairs before him. Anderson didn't want to sound mercenary or, worse, cheerful. But climate change, he repeated, is an opportunity for them, albeit one they may "wish they could forgo." Yet here they were, a gathering of data miners, weather instrument manufacturers and climate scientists, at the recent Meteorological Technology World Expo in Rosemont, Illinois, hoping to mitigate that pain.

After all, Anderson said, not just "philosophical ambitions will save the day."

We'll need radiometers, scintillometers, [weather balloons](#), tsunami detection devices, tornado detection, lightning detection, volcanic ash meters, humidity sensors, climate-data modeling software, fog sensors, rain gauges, radar, anemometers and barometers.

He told them, "The math is simple and not controversial."

He told them, "Our head and our heart must come together."

He told them: About 80% of [climate change](#) was solvable and many of the people on this convention floor right now were going to be part of those solutions. Then after a half an hour, Anderson stepped down from the podium and waded into the small crowd. He was a thoughtful, slender man in a checkered suit. I asked him why he felt the need tell these people, of all people, that the math on climate change was not controversial.

"Because our industry, like others, struggles with how to talk about it," he said. "Not for political reasons, but because the culture of [weather](#) technology people is introspective and scientific and we don't always do a good job of articulating our importance. But as the weather gets less predictable? We'll need better data systems and analysis and..."

The chief meteorologist of a major airline walked past.

Anderson excused himself and shook hands.

The Meteorological Technology World Expo was a modest gathering—so modest that some local weather people didn't know it was happening—but it brought together research institutes and maritime engineers and environmental agencies and, of course, a lot of meteorologists. They discussed advances in lightning detection and wildfire data and jet streams and corporate risk assessment and Doppler radars. They talked the costs of extreme weather; last year was the third costliest for weather calamities in this country. They talked AI modeling; national security; the size of the hail on golf courses.

But bubbling under many of the sales pitches and meetings and speeches was even simpler math: The people in this room do not control the weather. They could not stop climate change on their own. But with the right tools and better observations, they might warn more people sooner? You heard the word "mitigation" a lot. You heard "resiliency."

Also, "opportunity."

Jan Dutton, CEO of Prescient Weather, stood behind a booth pitching data software named Crop Prophet and World Climate Service. Like Anderson, he apologized at his choice of words, "but climate change will be the greatest opportunity for weather information services like us. There may be a limit to the science, and even a limit to the predictability, but if we reinterpret data in new ways we extract a bit more predictability."

Rosemont is home to conventions on animé and comic books and horror films and tattoos and campers and fitness instructors, but also on occasion, the truly existential.

See, weather, by nature, is nature.

Meaning, messy, complex and, in a sense, lawless. So the marketing slogans draped from booths here promised a degree of control. Or at least a hope for collegiality with the weather itself. Banners read: "Forecast the Future," "Number One by Nature," "Reliable by Nature." Which, of course, was not entirely possible. Not in any literal sense.

Emily Jackson and Amy Stephens, meteorologists with Hennepin County Emergency Management in Minnesota (which includes Minneapolis), walked the soft blue carpet, passing booth after booth "More lead time we have, the better we can warn the public," Jackson said, "so we're figuring what tech is out there, what the new sensors look like."

"We get a bit of everything in Hennepin," Stephens said.

"Snow, of course. And high wind events," Jackson said.

"Our problem is the county is so big, it includes the urban, the rural ..."

"You tend to worry about having enough coverage everywhere now."

Asking weather people what they needed to prepare for the effects of climate change, you heard a theme: More sensors in more places, pumping out more data. Tom Young, of the Traverse City, Michigan-based R.M. Young weather instrument company, said "meteorologists want more equipment and cheaper, to blanket an area."

He was surrounded by a metal forest of ultrasonic anemometers (to read wind speed) and visibility sensors for road conditions (that resembled the warships of alien empires). "The joke everywhere, in every place on Earth, is wait five minutes, the weather will change. The thing is, that's true! Because weather is driven by forces that we don't always detect."

Indeed, two studies, one in 2019 at Stockholm University, and one earlier this year at Stanford University, claimed that, beyond the obvious catastrophic impacts, a warmer planet means long-range forecasting loses some steam. The Stanford study linked an increase in the planet temperature to the loss of a day of certainty; the Stockholm one, more specifically, said predicting summer rains, and therefore flooding, will get fuzzier.

Those effects are expected to be disproportionately dramatic in poorer nations, which is why engineer Martin Steinson and project manager Kathryn Payne, of the University Corporation for Atmospheric Research in Colorado, stood beside an impressive array of weather instruments that were entirely 3D printed. "A commercial weather station is anywhere from, say, \$10,000 to \$20,000, and always hard to maintain," said Steinson, "so a lot of countries, the truth is, the only time they may get a decent one is when an old station gets donated to them by another country. This, however, is quality, and costs \$500, or maybe less, and when the equipment needs it, an update can just be printed."

That, said Paul Deanno, a meteorologist at WMAQ-Ch. 5, is the kind of real-world innovation that would have an impact even in a Midwestern city like Chicago. "We live in a country full of wonderful technology but the weather doesn't start in this country. It starts in places where good data might be nonexistent and so, in a way, we become reliant on bad data to contribute to a weather model. But if we could fill in parts of Canada, Africa, China, with better data collecting, it can help everyone downstream.

"But some extreme tornado event caused by climate change 20 days from now? We will never be able to predict that—though we could have more data to prepare for it better."

The good news is forecasting is better.

"Earth has been experiencing human-caused climate change for decades now, and [weather forecasts](#) have objectively been getting better during that time," said Daniel Horton, who leads the Climate Change Research Group at Northwestern University. He cited, as an example, the recent heat wave across the United Kingdom. "Weather forecasts predicted those record-breaking conditions weeks ahead of time, despite such conditions having never occurred before."

William Passalacqua, an engineer with the Chicago bureau of the National Weather Service, said he attended the show partly because there was urgent need to upgrade old equipment. He expected to walk the entire convention in 15 minutes. He ended up spending a half-hour on just the first two booths.

This new stuff was too good.

AI modeling that considers the history and geography of a region being measured. Rain gauges that dispense with tipping buckets and employ sonic sensors that measure the speed, frequency and size of raindrops. "There is such a big push now to make government data open—pulled from the NASAs and NOAAs of the world—everyone wants to extract insight into climate scenarios," said Josh Grail, a solutions engineer with the Environmental Systems Research Institute. His company had recently worked with AT&T to study how climate change might affect its infrastructure, and with the federal government on a new website (Heat.gov) to forecast extreme heat events. "But this is also a two-headed sword: The better the modeling, the messier the picture you get."

As he spoke, it was 82 degrees and sunny in Rosemont.

Elsewhere, however, there was a drought in New England, flooding in Mississippi, as well as extreme heat and the fear of probable wildfires in California. But you can't say they didn't see it coming.

2022 Chicago Tribune.

Distributed by Tribune Content Agency, LLC.

Citation: What are meteorologists thinking? They can tell us about the weather, but also worry about the climate emergency (2022, September 19) retrieved 6 May 2024 from <https://phys.org/news/2022-09-meteorologists-weather-climate-emergency.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.