KELLY GORDON: We're turning now to a University of Minnesota researcher who's helping identify priorities for climate science across the country. Melissa Kenney is the lead author of a peer-reviewed paper recently published in *Earth's Future* and the *Journal of the American Meteorological Society.* She had been working on the Sixth National Climate Assessment before President Donald Trump paused it and dismissed its contributors last year. A group of scientists got together to do similar work on their own. The new paper is their first publication, and Melissa Kenney joins me now to talk about it. Welcome to the program, Melissa.

MELISSA KENNEY: Thank you for having me.

KELLY GORDON: The Trump administration has not said whether it will restart work on the Sixth National Climate Assessment, but federal law requires these assessments to be released every four years. The last one came out in 2023. So we're getting close to that mark. You've said this recent paper and the related work you're doing does not replace the National Assessment, but can you explain what the National Climate Assessment is and how this paper is different?

MELISSA KENNEY: Yeah, the US National Climate Assessment is a legislatively mandated report from the 1990 Global Change Research Act, which requires that once every four years that we produce a report that synthesizes the state of the science, what is occurring now, and what may happen over the next 25 to 100 years. Climate assessments are really important because they bring together a large body of research. It helps us to understand what scientists know, where questions remain, and what knowledge means for real-world decisions.

This paper was the first paper that was published as part of the US Climate Collection, which is an initiative of the American Geophysical Union and the American Meteorological Society. Our paper is really a research roadmap. It's not a new climate assessment. What we did was we asked 175 volunteer scientists where the science had advanced since the last National Climate Assessment in 2023, what is ready for synthesis, and where emerging questions require greater attention.

KELLY GORDON: Why is it important to have this high-level document to help guide the research?

MELISSA KENNEY: One of the opportunities with a paper like this is that it synthesizes, at this moment in time, where the climate science continues to advance. Communities continue to need credible information that they can use. And this paper really helps to focus scientists on the research priorities that can strengthen future assessments at many scales. What we found is that climate assessments are happening not just at the national scale, but also at the state, local, and private sector scale. And so this paper is really filling in a gap to be able to focus our community on the priorities that matter most at this moment in time.

KELLY GORDON: That was actually a question I was going to ask, is do you think that this is filling gaps that are created by the uncertainty with the National Assessment?

MELISSA KENNEY: I'm not sure if it's filling gaps as much as filling a landscape that is needed. There's a lot of work that has happened in the climate science field, and there's no need to replace the National Climate Assessment. And the US Climate Collection is different and complementary to that effort. It is really intended to be able to publish research that may not be able to be published in other spaces. That really helps to synthesize information in a useful way.

I think one of the ways to think about it is that the assessment is both a process and a product. The final report matters or the final papers matter, but so does the process of scientific review and public engagement that help identify the questions that the communities need answered, and this is one part of that assessment process.

Assessments are really critical because one of the things that they help us to do is to see the larger picture. A single study gives us one piece of evidence, but assessments really connect these pieces together so we can see that larger picture.

KELLY GORDON: I mean, it is such a big topic. How did you and your collaborators go about choosing the priorities in the report?

MELISSA KENNEY: Well, one of the things that we did was we had taken a look at past assessment reports and the breadth of topics that were covered through those assessment reports. Though the research paper that we published isn't comprehensive by any means, we did cover a wide range of various physical system topics, various impacts that are occurring in the United States that require synthesis and research, as well as responses that are occurring at this moment in time. Things like greenhouse gas mitigation or emissions reductions, climate adaptation, as well as climate interventions, which have been a topic of growing concern.

KELLY GORDON: So I know that your work here is nationwide, but since you-- and of course, most of our listeners-- are based in Minnesota, what would you say are the research priorities that you've identified that are most important here?

MELISSA KENNEY: Well, I think to start, I think here in Minnesota, climate change is not just something projected for the future. We're already experiencing warmer winters, shorter snow and ice seasons, heavier rainfall and flooding, and sharper swings between wet and dry conditions. And one of the things that was identified as a cross-cutting research priority is that we're seeing some of these risks are not occurring one at a time-- they're happening at the same time. We're seeing extreme rainfall that can cause flooding and power outages. And then those disruptions can be followed by extreme heat.

We also see examples including this summer where we had wildfires and wildfire smoke days happening at the same time as extreme heat days. One of the concerns when we have these co-occurring events that are happening at the same time is that we need to understand not only the individual hazards, but what happens when risks interact and cascade through a community.

For something like heat and wildfire, when we see high heat and smoke happening at the same time, if you don't have air conditioning, the response that you need to take is differing. When you have high heat want to open your windows, but if you have wildfire smoke and you have asthma, opening your windows can be quite impactful to your health.

And so I think there's an opportunity to not only understand the incidences when these events happen together, but what we can do and what guidance we can provide our communities to take action in the face of those events.

KELLY GORDON: Yeah, that's kind of where I was going. What impact do you hope this paper has on especially decision makers here in Minnesota?

MELISSA KENNEY: Well, I'm hoping that this paper will be the first of many papers that will happen. It will be a roadmap that scientists can use to identify research priorities, but it will also help to catalyze some of these papers on hazards, on human health, on the climate changes that we're seeing not just nationally, but here at home.

We're hoping that through these papers that we are able to fill some of the gaps and that we're able to do the work that is needed to be able to answer the questions that assessments answer, which is what do scientists know at this moment in time, what our confidence is in that knowledge, and why it might matter. And so the special US Climate Collection is one where we already have 20 papers that are lined up that are being developed.

And we're hoping for a large number of additional papers because we are hoping that scientists will hear our call to find the question where their expertise can contribute and help to build the knowledge that these future assessments will need.

KELLY GORDON: And are you going to continue to work in this effort. What are your next steps?

MELISSA KENNEY: Absolutely. I'm a decision scientist by training, and I think a lot about how we respond in the face of climate change. And I think about that a lot because my daughter was born in Minnesota, but I was born on the East Coast. And so my daughter oftentimes tells me, mom, you love summer because you weren't born here. But I'm a Minnesotan, so I love winter.

And I think a lot about my young daughter and what will happen in the upcoming decades. She's going to be a young adult in 2050 and retired by 2100. And these are the time horizons we often discuss in climate science. And the decisions we make today will shape the future they will have tomorrow. And so the work that I'm going to be continuing on is really working to help to make sure that we have the science that we need in order to make strong decisions here in Minnesota.

KELLY GORDON: That's fantastic. Thanks so much for joining us today, Melissa.

MELISSA KENNEY: Thank you.

KELLY GORDON: Melissa Kenney is the director of research and knowledge initiatives at the University of Minnesota's Institute on the Environment. She's also the lead author of the new paper, "Research Priorities for Robust Climate Assessments in the United States."