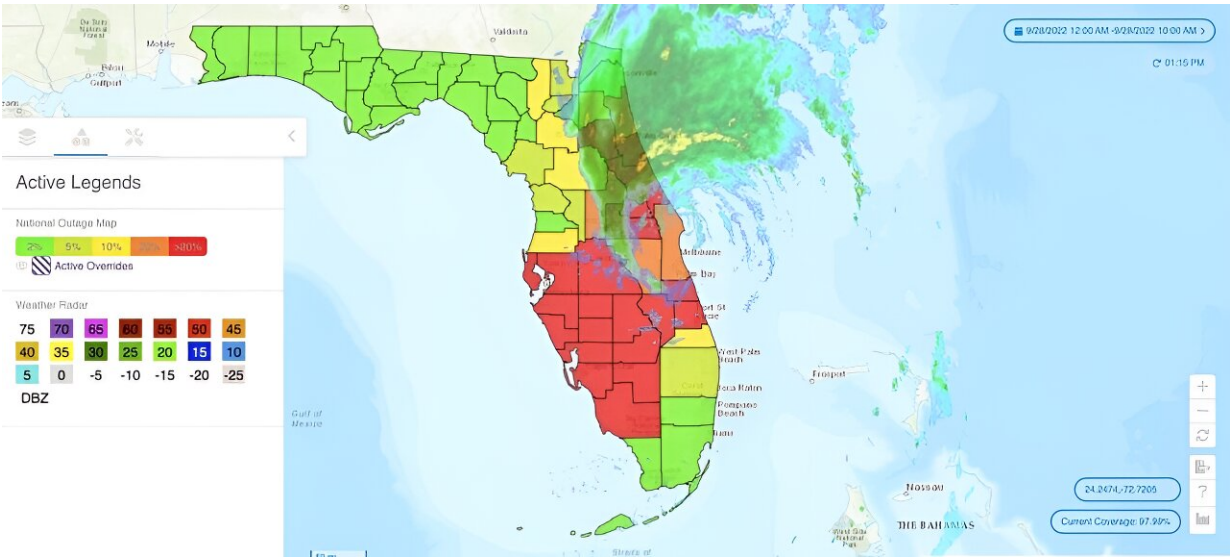


Researchers compile most comprehensive power outage dataset for the US

May 14 2024, by Mark Alewine



This dataset will prove to be a vital tool in several ways, including assessing the consequences of extreme weather on electricity infrastructure and the power grid and identifying vulnerability points. Credit: ORNL, U.S. Dept. of Energy

In a recent [study](#) published in the journal *Scientific Data*, researchers from the Department of Energy's (DOE) Oak Ridge National Laboratory (ORNL) have produced the most comprehensive power outage dataset

ever compiled for the United States.

This dataset, showing electricity outages from 2014–22 in the 50 U.S. states, Washington D.C. and Puerto Rico, details outages at 15-minute intervals for up to 92% of customers for the eight-year period.

According to the researchers, this dataset will prove to be a vital tool in several ways, including assessing the consequences of extreme weather on electricity infrastructure and the [power grid](#) and in identifying vulnerability points. This information could also be used to quantify differences in grid resilience and explore changes in resilience over time, as well as to monitor changes by season.

The researchers collected data from local utility providers with the help of a geographic information system and data visualization platform called Environment for Analysis of Geo-Located Energy Information, or EAGLE-I. EAGLE-I allowed them to record and organize reports of outages from 3,044 of 3,226 U.S. counties and other localities.

"The ultimate goal of EAGLE-I is to provide comprehensive situational awareness about incidents impacting or potentially impacting the [energy sector](#), including being the authoritative source for information about power outages," said Sarah Tennille, data engineer in ORNL's Computational Sciences and Engineering Division.

"The release of this dataset as [open-source](#), and subsequent annual data updates, is expected to facilitate advances in research of electric grid resilience and to support better understanding in areas such as energy justice and [climate change impacts](#)," added Aaron Myers, principal investigator of EAGLE-I and group leader of the lab's Geoinformatics Engineering group.

EAGLE-I was created after the 2003 Northeast blackout, which left as many as 50 million people without power for up to four days. Federal, regional, state and local partners use the platform to know where outages have occurred.

It's also used by [emergency responders](#) during major disasters like Hurricane Ian (2022 in Florida), Winter Storm Uri (2021 across North America), and the Camp Fire (2018 in California).

Researchers believe creating a long-term information reference of outages through the EAGLE-I system is critical for understanding characteristics of service disruptions and the consequences of future extreme weather.

"We're excited for researchers to take this dataset and see what can be solved with it," Tennille said. "The aim of this article is to spell out the ins and outs of this dataset so everyone can understand the strengths, weaknesses, gaps and possibilities that this [dataset](#) has to offer."

More information: Christa Brelsford et al, A dataset of recorded electricity outages by United States county 2014–2022, *Scientific Data* (2024). [DOI: 10.1038/s41597-024-03095-5](https://doi.org/10.1038/s41597-024-03095-5)

Provided by Oak Ridge National Laboratory

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