

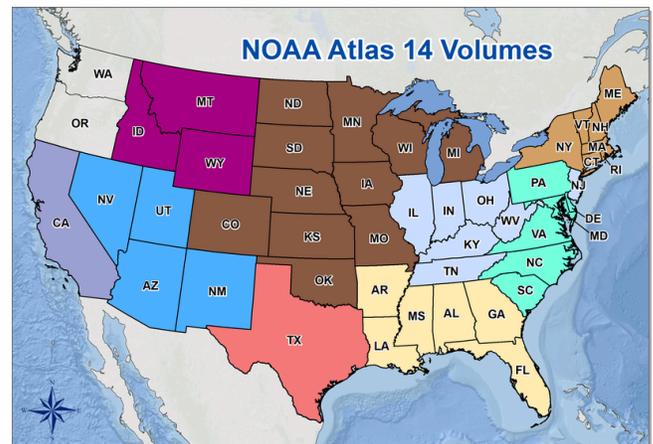
NOAA ATLAS 15: Update to the National Precipitation Frequency Standard



NOAA is recognized by the engineering and floodplain management communities as the authoritative source of precipitation frequency data, and has a long history of generating these data that serve as the foundation for built infrastructure nationwide. The current authoritative precipitation frequency dataset is NOAA Atlas 14, and the next generation update, NOAA Atlas 15, is currently in development.

The [National Weather Service \(NWS\) Office of Water Prediction \(OWP\)](#) has developed the NOAA Atlas 14 Precipitation-Frequency Atlas of the United States. These estimates are accessible through the [NOAA Precipitation Frequency Data Server \(PFDS\)](#). Precipitation frequency estimates are defined as the precipitation depth at a particular location, for a given storm duration, that has a statistically-expected 1-in-YY chance of being exceeded in any given year, where YY is the statistical annual recurrence interval.

NOAA Atlas 14 estimates are essential for designing, planning, and managing infrastructure in accordance with federal, state and local regulations. These updated estimates replace those from the 1960s and '70s. Compared to previous publications, Atlas 14 estimates benefit from use of better-quality data, improved frequency analysis and spatial interpolation methods that account for variation in terrain, and inclusion of uncertainty.



NOAA Atlas 15 Next Generation Update: What to Expect

Historically, NOAA precipitation frequency estimates have been funded by states and other users, on a cost-reimbursable basis, for individual subsets of the U.S. However, with the 2022 Bipartisan Infrastructure Law, OWP received first-ever direct Federal funding to develop precipitation frequency estimates as a seamless national analysis for the entire U.S. and its territories, and to account for nonstationarity which would help communities plan and design infrastructure that is more resilient to changes in extreme precipitation over time. **These updated precipitation frequency estimates will be referred to as NOAA Atlas 15** and will be presented in two volumes. **Volume 1** provides spatially continuous and independent present-day estimates of expected precipitation depth or intensity for a specified duration, at a particular location of interest, and **Volume 2** provides estimates of future conditions leveraging multiple model outputs.

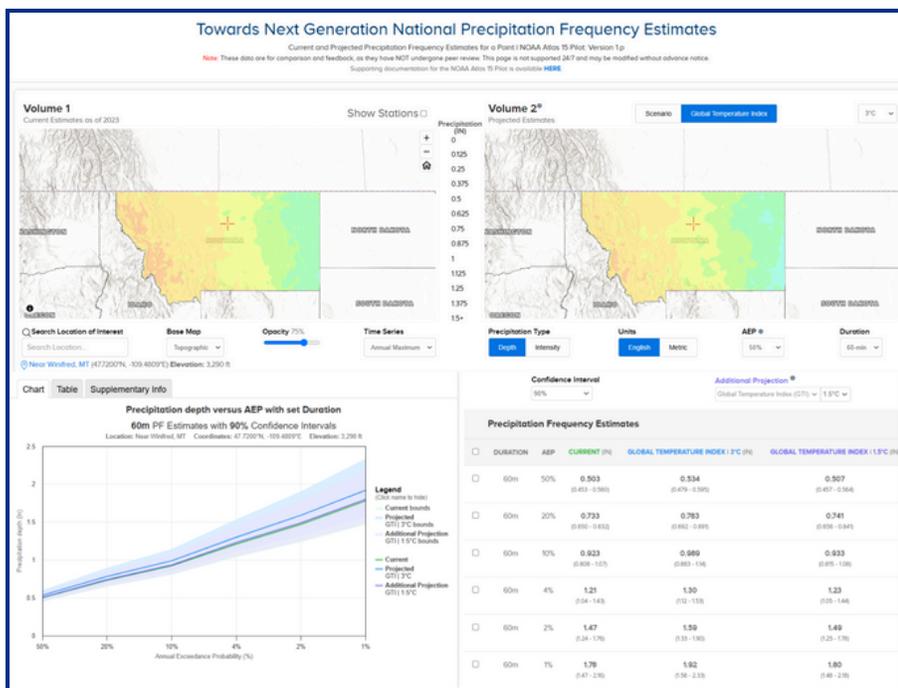
The generation of authoritative precipitation frequency information requires a rigorous development process and extensive quality control with significant stakeholder interaction.

In order to collect feedback early in the development process, NOAA released the [NOAA Atlas 15 Pilot data over the state of Montana](#) on September 26, 2024. With this early release, collaborative NOAA teams, including the National Centers for Environmental Information (NCEI), demonstrated to a large number of stakeholders the nature of the Atlas 15 data to ensure practitioners have the precipitation information they need, upon final publication. The NOAA Atlas 15 Pilot covered estimates for a subset of storm durations (1 hour to 10 days) and average annual exceedance probabilities (50% to 1%).

The Pilot data, methods, and the website will be refined through 2026, and 2027, when NOAA Atlas 15 will be fully published over and outside the contiguous U.S., respectively. Some major differences between the pilot and full release are highlighted in the table to the right.

The below image showcases information and visualization highlights from the NOAA Atlas15 Pilot webpage.

	Pilot	Full Release
Spatial Coverage	Montana	U.S. and Territories
Storm Durations	1-hour to 10-days	5-minutes to 60-days
Exceedance Probabilities	50% to 1%	63% to 0.1%
Methods	Preliminary	Fully Developed



Maps

Visualize and compare **spatial patterns** for specified durations, exceedance probabilities and future scenarios.

Charts / Tables

Visualize and compare estimates **across a range** of specified durations, exceedance probabilities and future scenarios

Timeline for the Development and Publishing of Updated Authoritative Precipitation Frequency Estimates Nationwide

2022/
2023

- **January 2023** - Hosted technical workshop with federal partners.
- **July 2023** - Initiated dataset development.

2024

- **Development** - Evolve framework. Create Quality Controlled National Precipitation Database. Evaluate Climate Model Projections.
- **Aug 2024** - Hosted technical workshop with federal partners.
- **Sept 2024 Pilot** - Deliver Atlas 15 Vol. 1 and Vol. 2 pilot over Montana.

2025

- **CONUS** - Publish preliminary data
- Initiate 60-day peer review for atlas 15 Vol.1 and Vol. 2 for CONUS (lower 48 states)
- Collect feedback and adjudicate comments on product.

2026

- **CONUS** - Complete Atlas 15 Vol. 1 and Vol. 2 and publish final estimates, documentation and supplementary products to stakeholders
- **oCONUS** - Publish preliminary estimates.
- Initiate peer review for oCONUS (e.g. Hawaii, Alaska, Puerto Rico, U.S. Virgin Islands, Guam).

2027

- **oCONUS** - Complete Atlas 15 Vol. 1 and Vol. 2 and deliver estimates, documentation and supplementary products to stakeholders.

The **FLOODS Act** signed into law in December 2022 and known as [Public Law No: 117-316](#), authorizes NOAA to establish a program, to be known as the NOAA Precipitation Frequency Atlas of the United States. This program would compile, estimate, analyze, and communicate the frequency of precipitation in the United States and update these precipitation frequency estimates no less than once every 10 years.