

Commonly Asked Questions: GHCNm v4 Global Historical Climatological Network Monthly Version 4

About the Update

Why is this dataset being updated? What improvements does this version introduce? Why is updating datasets good for users?

NOAA periodically updates GHCN, both the Monthly and Daily datasets. Based on the best available data from a network of global reporting stations, the latest update of [GHCN–Monthly](#) incorporates data from 18,000 more reporting sites and capitalizes on enhanced methods to analyze the volumes of information available in our archive.

This updated dataset ensures that researchers, businesses, and industry have the best available information to develop tools, products, services, and assessments for decision making and that scientists can use in their research. The dataset is used by NCEI and other science-driven organizations for global climate monitoring and assessment, and by various economic sectors, such as [agriculture](#), and enterprises, such as the [reinsurance industry](#).

Changes from Version to Version

GHCN–Monthly was last updated in 2011. GHCNm version 4 includes the following refinements:

- Temperature values align more fully with GHCN–Daily, its foundational dataset
- Temperature values from the [International Surface Temperature Initiative](#) monthly temperature databank are used to provide the most complete set of station records
- Global coverage expands with more reporting stations
- Duplications are addressed
- Traceability of the calculation of monthly averages is more easily reproducible
- Uncertainties posed by the complexity of the data are reconsidered based on the additional data

Operational Uses

Where is the operational dataset?

As of October 2018, GHCNm v4 is available from NCEI at <ftp://ftp.ncdc.noaa.gov/pub/data/ghcn/v4/>. The maximum and minimum temperature data will be available at a later date. Information on the methodology is outlined in the paper by Matthew Menne et al. (2018) in the *Journal of Climate*, DOI: <https://doi.org/10.1175/JCLI-D-18-0094.1>

When will it be used by NCEI to conduct monitoring and assessments?

GHCNm v4 will be immediately available to researchers. These data will be used by NCEI in early 2019 in combination with [ERSSTv5](#) to generate a new version of the [NOAA Global Surface Temperature dataset \(NOAAGlobalTemp\)](#). NOAAGlobalTemp is used for global climate monitoring and assessment, such as the [State of the Climate](#) reports.

Who will use it, and what kind of studies does it contribute to?

Atmospheric research scientists and private sector interests constitute the major users of the dataset. Scientists around the world consider global surface temperature a critical component to help understand Earth's climate. Private sector interests use the dataset to assess related monthly factors, such as pending heating and cooling costs, or trends in the same. They use the data for global climate monitoring and assessment, environmental research, and informational products and services for various industries and economic sectors, such as agriculture. GHCNm has previously been used in both [U.S. National Climate Assessments](#) and [Intergovernmental Panel on Climate Change Assessment Reports](#).

Does the new version change the conclusions regarding global temperature increases?

Conclusions regarding the rate of warming in global land surface temperature are largely unchanged.

Peer-Review Process/Transparency

What kind of testing and peer-review does the dataset undergo before NCEI releases it for use?

During the development of version 4 of GHCNm, a team of scientists used a series of quality assurance tests to ensure the accuracy and integrity of version 4 as compared to previous versions. The final version was validated against other available independent global temperature datasets, including but not limited to, the [CRUTme](#) and the [Berkeley Earth Surface Temperature](#) dataset.

The methodology to develop GHCNm v4 dataset underwent thorough review within NOAA and was anonymously peer-reviewed by the American Meteorological Society's [Journal of Climate](#). The dataset also underwent a review process within NCEI to determine its readiness for public release.

What do scientists do with user feedback once the dataset is released?

NCEI scientists regularly review user feedback and evaluate its scientific value. Feedback with scientific merit and/or potential to support U.S. economic interests is used in future improvements of this product.