



Optimizing Energy Operations:

Leveraging Gridded Historical Weather Data for Utilities and Renewables

The Gridded Historical Weather (GHW) is a global gridded historical analysis dataset that aligns with DTN Forecast System algorithms, spatial resolution, time interval, and underlying input data. It provides hourly and daily aggregated analyses through the Weather Conditions API and DTN Data Feeds.

Data availability with upcoming developments

- Currently available through [Weather Conditions API \(WCA\)](#) & [DTN Data Feeds](#)
- Extension to a 30-year dataset expected in 2025

Parameter categories

Wind Parameters (20), Temperature Parameters (6), Cloud and Radiation Parameters (8), Pressure Parameters (2), Precipitation Parameters (8), Other Parameters (8)

Key features

Time coverage:

From January 1, 2013 (to be extended back 20 more years) to present

Time interval:

1 hour

Spatial resolution:

0.1 degrees (approx. 9km x 9km)

Domain:

Global

Parameters:

Nearly 90 hourly parameters and 10 daily climatological parameters



Daily climatological data

Average temperature, Minimum temperature, Maximum temperature, Dew point temperature, Wind speed, Station pressure, Precipitation, Potential evapotranspiration, Shortwave radiation, Longwave radiation

Benefits for renewable energy and utilities

- **Enhanced site selection and resource assessment:** Utilize long-term wind and solar radiation data for optimal placement of renewable energy installations. Improve accuracy of energy production estimates for project planning and financing
- **Advanced Forecasting and Grid Management:** Train AI models historical data that is consistent with the DTN Forecast System to enhance short-term and long-term energy demand predictions. Optimize grid operations and load balancing based on improved weather-related insights
- **Improved maintenance scheduling:** Predict optimal maintenance windows for wind turbines and solar panels to reduce downtime and increase overall energy production efficiency
- **Climate change adaptation:** Analyze long-term trends to develop robust strategies for grid resilience. Plan infrastructure investments considering future climate scenarios
- **Risk assessment and financial planning:** Provide detailed historical data for insurance and financial models to enhance accuracy of weather-related risk assessments for energy projects
- **Operational efficiency:** Optimize energy distribution based on historical weather patterns to improve overall system reliability and reduce waste
- **Regulatory compliance:** Support environmental impact assessments with comprehensive historical data. Facilitate reporting and planning for emissions reduction targets
- **Research and development:** Enable in-depth studies of weather patterns and their impact on energy systems. Support the development of next-generation renewable energy technologies

Why choose DTN?

- 40+ years of global industry-leading weather data expertise
- DTN Proprietary Forecast System
- Continuous innovation and dataset improvements
- Comprehensive support for maximizing GHW value
- Collaboration opportunities with DTN Risk Communicators and Certified Consulting Meteorologists



Empower your operations with DTN Weather APIs and Data Feeds.

[Learn more](#)