



WEATHER DATA ANALYTICS

Basic Current and Forecast Weather

Description:

This bundle is designed for organizations that need basic current (now) and forecast (future) weather conditions for purposes such as:

- Providing users with weather information through your company's applications
- Delivering current and forecast weather information for your company's own agronomic models

All of these endpoints provide data for any location in the world. Note that daily values represent summaries of conditions spanning midnight to midnight local time for the requested location's timezone.

Endpoints include:

Current Conditions:

Provides current actual weather conditions for a given location, including: air temperature, relative humidity, dew point temperature, cloud cover, precipitation accumulation for the past hour leading up to the valid time (partitioned into liquid and frozen), visibility, wind speed, wind direction, atmospheric pressure, present weather descriptors, and URL links to weather icons. Available globally and updated every 20 minutes.

Real-Time Rain Gauge:

Provides up-to-the-minute values of one, six, 12 and 24-hour accumulated precipitation totals starting at the current hour. Note that this is a "virtual" rain gauge service, whereby values are extracted from analysis grids produced by combining radar

data (where available), satellite imagery, surface observations, and numerical weather analysis and prediction information via the ClearAg multi-sensor precipitation analysis.

Hourly Forecast

Provides hour-by-hour forecasts for a given location for future times up to 240 hours into the future based on Iteris' proprietary, ensemble-based eMPower™ gridded forecast system. The following parameters are provided: air temperature, relative humidity, dew point temperature, cloud cover, visibility, wind speed and direction, precipitation (probability and accumulation by type), general text classifications, and URL links to weather icons. Updates hourly.

Daily Forecast (and variants):

Provide a daily forecast summary for a specified location for up to 10 days (starting with the current day) based on Iteris' proprietary, ensemble-based eMPower gridded forecast system. Parameters include basic weather information such as temperature, winds, humidity, cloud cover, precipitation (probability, type, and amount) and weather descriptors, along with agronomically-relevant elements such as reference evapotranspiration, radiation, and sunshine duration. There are multiple Daily Forecast endpoints that provide varying subsets of content for efficient support of different use cases.

Nowcast:

Provides observed and forecast radar reflectivity values for a given location out to two hours into the future at five-minute time steps, as well as forecast confidence for each time step. Additionally, it includes the previous four hours of observed radar reflectivity. Updates every 10 minutes except for Western Europe region, which is every 15 minutes.

Precipitation Summary:

Provides historical 60-minute, 24-hour, seven-day, 30-day, 90-day, year-to-date and since-midnight aggregate precipitation totals for a specified location. This endpoint will also optionally return a list of the historical daily precipitation totals used in the aggregate calculations. Available globally and updated hourly.

Frost Forecast:

Provides up to a 72-hour forecast presence of frost at 15-minute time steps. Note that it is optimized for turf grass and is specifically focused on whether actual frost crystals form on the surface of the plants, as opposed to just whether or not conditions are below freezing.

Growing Degree Days:

Returns past or future daily and running total growing degree days (GDD) using the ClearAg historical, forecast and climatological weather databases. Often used as input for a variety of agronomic models, it allows the user to provide their own values of base and upper-limit temperatures.

Historical and Climatological Weather API

Description:

Historical information consists of an archive of past current conditions as a series of individual times or dates. Climatological data refers to long-term statistical values based on at least 30 years of data for the same date, time and location. This API is valuable for organizations that need to analyze or compare past environmental conditions to evaluate product performance, as well as product nutrient or chemical application strategies for optimum crop growth and health.

All of these endpoints provide data for any location in the world. Hourly data are available for any time frame spanning the previous calendar year to the previous hour. Daily data are available from January 1, 1980 through the previous day, and the daily values represent midnight to midnight local time for the location's timezone.

Endpoints include:

Hourly Historical (and variants):

Provides hourly historical weather data, up to a maximum of 240 hours of data per query, for a specified time range and location. Service provides observed air temperature, dew point temperature, precipitation accumulation (including liquid, ice, snow, and liquid-equivalent precipitation types), relative humidity, wind speed and direction, boom-height wind speed, cloud cover, and longwave and shortwave radiation amounts.

Daily Historical (and variants):

Provides past weather information for up to 366 days of data per query for a specified date range and location. Weather conditions including maximum, minimum and average dew point; relative humidity; wind speed at 2 m and 10 m; temperature; estimated precipitation accumulation from radar; and adjusted precipitation accumulation for each date are provided through this service, as well as several agronomically-relevant parameters such as reference evapotranspiration, sunshine hours, rainfall hours, and radiation.

Daily Climatology:

Multiple endpoints that provide daily climate information for a specified location and date range, such as average daily air temperature, dew point temperature, wind speed and accumulated precipitation. The standard deviation of many of

these variables is also provided. Each date ranges from midnight to midnight, local time. There are endpoints for values based on the previous 5, 10, and 30 complete years of data.

Frost Risk:

Provides quantitative estimates of climatological frost probability for any date of the year, derived from climatological air temperature data valid for user-defined locations and dates.

Hail History API

Description:

For users interested if hail has fallen at a location (e.g. crop insurance) these APIs provide point data retrieval from our radar-derived likelihood that hail fell. Valid responses are only available where radar coverage is available:

- Contiguous United States
- Southern Canada
- Australia
- Western Europe

Endpoints include:

Daily and Hourly Historical Hail:

Provides likelihood of past hail events (based on radar data analysis) for each day for up to a maximum of 366 days in a single query, for a specified date range and location. This service also provides observed maximum radar reflectivity values and raw and adjusted precipitation accumulations for each date. Each date represents 12:00 AM to 11:59 PM, localized to the location's time zone.

Weather Map Tile Overlays

Description:

ClearAg Map Overlay APIs provide access to various content in the form of image tiles suitable for use in interactive maps based on the Google Maps coordinate and tiling system. The service provides graphical rendering of a subset of the same gridded weather and soil content that powers the ClearAg weather and basic soil APIs. It is designed for display of recent, current and forecast basic weather conditions, geostationary weather satellite imagery, and radar data in interactive maps typically seen in mobile and web based applications. Note that this is not a service that provides gridded digital data values suitable for use in algorithms.

Available overlay layers include:

- Recent, current and forecast basic weather conditions rendered from the global and high-resolution US grids
 - Air temperature (including 24-hour minimum/maximum)
 - Relative humidity
 - Dew point temperature
 - Wind speed (including gusts and daily maximum)
 - Precipitation accumulation (liquid equivalent and snow accumulation)
 - Forecast probability of precipitation and onset time
- Geostationary Meteorological Satellite Imagery (Infrared and Visible)
 - Global mosaic
 - United States (updates more frequently than global)
- Regional Radar Products (US, S. Canada, W. Europe, Australia)
 - Radar Reflectivity
 - “Future Radar” Nowcast
 - Multi-Sensor Precipitation Analyses
 - Hail Analysis