MxVision WeatherSentry® Web Services

Content Guide

DTN
11400 Rupp Drive
Minneapolis, MN 55337
00.1.952.890.0609

1 Table of Contents

2 MxVision WeatherSentry® Web Services 4
2.1 Observed 4
2.2 Forecast 4
3 Content – Hourly Parameters 5
4 Content – Daily Parameters 6
5 Glossary 8

2 MxVision WeatherSentry® Web Services

This content guide is intended for users of MxVision WeatherSentry Web Services. Included in this guide are the various parameters available to users of MxVision WeatherSentry Web Services. For additional details, please see the MxVision WeatherSentry Web Services Programming Guide

MxVision WeatherSentry Web Services provides your organization with global weather observations and forecasts. All content is global unless otherwise stated.

Several categories of data are available. These are hourly and daily observed and forecast, as well as daily observed normals. The same content is available for both SOAP and REST.

2.1 Observed

Observed data is the record of atmospheric conditions. The observed value is measured at a point in time, or instantaneous, for most parameters – with the exception of precipitation. Precipitation is typically reported as a measurement over a period of time, or accumulated.

Observed weather values are reported hourly. Traditionally, the hourly report refers to the instantaneous value from top-of-the-hour readings. Precipitation values have duration and therefore are allowed to accumulate until reported at the end-of-the-hour. Observed data is available for a specified location for the past 60 days.

The normals provided are a 10 year average of high temperatures and/or low temperatures. Daily departures from normal are also available.

Quality control occurs within the hour and again within the day. To ensure the most accurate possible observation data, allow at least 8 hours past midnight for completion of quality control.

2.2 Forecast

A forecast is the prediction of the weather using the principles of physics and meteorology. Forecasts of temperature and other similar data, are instantaneous – meaning they are forecast for a specific time. Precipitation values have duration and are therefore represented as an accumulation expected by the end-of-the-hour.

The forecast process supports up to 15 days of hourly and daily data. Forecast data is provided for a specified location and is updated every hour.

3 Content – Hourly Parameters

Multiple units of measure are available. For example; temperature is typically measured in degrees Fahrenheit or degrees Celsius. Refer to the included XSD for valid values. Most hourly parameters are available for both forecast (Fcst) and observed (Obs); with exceptions noted in the table below.

Parameter	Description	Fcst	Obs
Temperature	The air temperature.	√	√
Dew Point	The absolute temperature at which air can no longer hold all of its water vapor.	√	√
Relative Humidity	The amount of water vapor in the air.	√	√
Heat Index	The combination of air temperature and relative humidity determining a perceived air temperature.	√	√
Wind Chill	The combination of air temperature and wind speed determining a perceived air temperature.	√	√
Feels Like	The feels like temperature.	√	√
Wind Direction	The direction the wind is coming from.	√	√
Wind Speed	The speed of the wind.	√	√
Wind Gusts	The speed of wind gusts.	√	√
Wet Bulb Temp	The lowest temperature that can be reached by the evaporation of water only.	√	√
Minutes of Sunshine	The number of minutes of sunshine to occur.	√	√
Cloud Cover Percentage	The percentage of sky covered by clouds.	√	√
Solar Radiation	The measure of solar radiation.	√	√
Probability of Precipitation	The likelihood of precipitation to occur.	√	
Precipitation amount	Total of rain or ice, or liquid equivalent of snowfall.	√	√
Snowfall	The amount of snowfall.	√	√
Precipitation Type	The type of precipitation; rain, ice or snow.	√	√
Weather Description	The general weather condition.	√	√
Sea Level Pressure	The atmospheric pressure at sea level.	√	√
Barometric Pressure	The pressure caused by the weight of atmosphere.	√	√
Visibility	Distance visible without instrumental assistance.	√	√

4 Content – Daily Parameters

Multiple units of measure are available. Refer to the included XSD for valid values. Daily parameters are valid for a given location and a specified local calendar day; that is midnight to 11:59pm local time. Most daily parameters are available for both forecast (Fcst) and observed (Obs); with exceptions noted in the table below.

Daily Parameter	Description (by calendar day)	Fcst	Obs
Sunrise	The time at which the first part of the sun becomes visible in the morning.	√	√
Sunset	The time at which the last part of the sun disappears below the horizon in the evening.	√	√
Max Temperature	The highest temperature to occur.	√	√
Min Temperature	The lowest temperature to occur.	√	√
Avg Temperature	An average of the Max Temperature and the Min Temperature.	√	√
10yr Normal Max Temperature	An average of the high temperatures recorded for a calendar day over a 10 year period.		√
10yr Normal Min Temperature	An average of the low temperatures recorded for a calendar day over a 10 year period.		√
10yr Normal Avg Temperature	An average of the Normal Max Temperature and Normal Min Temperature over a 10 year period.		√
Avg Temperature Departure From 10yr Normal	The difference between the Avg Temperature and the 10yr Normal Avg Temperature for the same calendar day.		√
Avg Dew Point	An average of the hourly dew point values.		√
Avg Relative Humidity	An average of the hourly relative humidity values.		√
Avg Wet Bulb Temperature	An average of the hourly wet bulb temperature values.		√
Heating Degree Day (HDD)	The sum of heating degrees required to maintain an average temperature of 65°F (18°C) within a home or business.	√	√
10yr Normal Heating Degree Day	An average of the number of heating degrees recorded for the same calendar day over a 10 year period.		√
Heating Degree Day Departure From 10yr Normal	The difference between the number of heating degrees and the 10yr Normal Heating Degree Day for the same calendar day.		√
Cooling Degree Day (CDD)	The sum of cooling degrees required to maintain an average temperature of 65°F (18°C) within a home or business.	√	√

10yr Normal Cooling Degree Day	An average of the number of cooling degrees recorded for the same calendar day over a 10 year period.		√
Cooling Degree Day Departure From 10yr Normal	The difference between the number of cooling degrees and the 10yr Normal Cooling Degree Day for the same calendar day.		√
Effective Degree Day	Effective Degree Day is a proprietary, enhanced version of Heating Degree Day that adds the affect of wind speed.	√	√
10yr Normal Effective Degree Day	An average of the number of effective degrees recorded for the same calendar day over a 10 year period.		√
Effective Degree Day Departure From 10yr Normal	The difference between the number of effective degrees and the 10yr Normal Effective Degree Day for the same calendar day.		√
Avg Heat Index	An average of the hourly heat index temperature.		√
Avg Wind Chill	An average of the hourly wind chill temperature.		√
Avg Feels Like	An average of the hourly feels like temperature.		√
Maximum Feels Like	The highest feels like temperature to occur.	√	√
Minimum Feels Like	The lowest feels like temperature to occur.	√	√
Average Wind Speed	An average of the hourly wind speed values.		√
Max Wind Speed	The highest wind speed or gust value.	√	√
Minutes of Sunshine	The number of minutes of sunshine to occur.	√	√
Cloud Cover Percentage	The percentage of sky covered by clouds.	√	√
Evapotranspiration	The sum of evaporation and plant transpiration from the earth's land surface to atmosphere.	√	√
Growing Degree Day	The number of degrees that the average temperature is above a baseline value.	√	√
Probability of Precipitation	The likelihood of precipitation to occur.	√	
Precipitation amount	Total of rain or ice, or liquid equivalent of snowfall.	√	√
Snowfall	The amount of snowfall.	√	√
Precipitation Type	Type of precipitation; rain, ice or snow.	√	√
Weather Description	The general weather condition.	√	√
Average Barometric Pressure	An average of the hourly barometric pressure.		√

5 Glossary

Accumulated
A value reported over a period of time which is typical for precipitation reporting.

Avg
Average (avg) is the number that is found by dividing the sum of data by the number of items in the data set. It is also called the mean. For example; the average daily temperature is calculated by dividing the sum of the 24 hourly temperatures by 24.

Calendar Day
A calendar day refers to the time period of midnight to 11:59pm local time.

Daily
Data is updated each day at a specific time. The time of day may vary by data type or provider or in reference to a data value represented for a 24 hour period, typically a calendar day.

Dew Point
The absolute temperature at which air can no longer hold all of its water vapor, causing condensation into liquid water.

Fcst
Forecast (Fcst) is a prediction of the weather through application of the principles of physics and meteorology.

Feels Like
The current heat index if over 70°F (21°C) or wind chill if below 50°F (10°C).

Global
Global, as used when referring to weather data, is data which is gathered from and available to the entire globe or world; worldwide.

Hourly
Traditionally, weather observations have been reported on or near the top-of-the-hour. The end-of-the-hour is the typical reporting method for precipitation amounts.

Instantaneous
A value reported for a specific time, the typical reporting method for temperatures.

Max
Maximum (Max) is the largest or highest value of a data set. For example; the maximum daily temperature refers to the highest temperature value recorded within a calendar day.

Min
Minimum (Min) is the smallest or lowest value of a data set. For example; the minimum daily temperature refers to the lowest temperature value recorded within a calendar day.

MADIS

The Meteorological Assimilation Data Ingest System (MADIS) ingests data files from NOAA data sources and non-NOAA data providers, decodes the data and then encodes all of the observational data into a common format with uniform observation units and time stamps. Quality control checks are conducted and the integrated data sets are stored in the MADIS database with a series of flags indicating the quality of the observation from a variety of perspectives.

NOAA

The National Oceanic and Atmospheric Administration (NOAA) is a United States federal agency focused on the condition of the oceans and the atmosphere.

Normals

Normals are the average value of a specific data type over a given timeframe. In this document normals refer to a 10 year period.

NWS

The National Weather Service (NWS) of the United States is a division of NOAA.

Obs

Observation (Obs) is an evaluation of one or more meteorological elements that describe the state of the atmosphere either at the earth's surface or aloft.

REST

REST web service (also called a RESTful web API) is a simple web service implemented using HTTP and the principles of REST.

SOAP

Simple Object Access Protocol (SOAP) is a protocol specification for exchanging structured information in the implementation of Web Services in computer networks.

Web Service

A Web service is a method of communication between two electronic devices over a network.

yr

A year (yr) is a period of 365 days (or 366 days during leap years).