

## PIT Forecast API for Agriculture

Updated: October 2, 2024

Prescient Weather is developing a Point-in-Time Forecast API enabling access to a historical weather forecast and observations database. We aim to support discretionary and systematic agriculture traders to understand the market impact of changes in the weather forecast and the forecasts themselves and trade profitably from the results. This document provides the necessary details regarding the APIs functionality and options for retrieving data. The PiT Forecast API for Agriculture allows users to access two types of data: (1) Observations and (2) Forecasts.

### API Root

The API root URL is:

<https://s2s.worldclimateservice.com/pit/v1api?>

The API enables downloading of observations or model forecast data based on a parameter setting.

### Models

The model parameter is: model

The model available is:

Data Type – model parameter	API Abbreviation
Model	API abbreviations for forecast models, discussed in the Forecast section.
Observation	obs

### (1) Observation Data

Data from the point-in-time forecast database for observations is retrieved using the API root and the following parameters.

### Variables

The variable parameter is: variable

The variables available are:

Variable	API Abbreviation
Daily Maximum Temperature (°C)	tmax
Daily Minimum Temperature (°C)	tmin
Daily Accumulated Precipitation (mm)	prcp

### Weighting

The weighting parameter is: weighting.

The crop production weighting is applied within the region and subregions specified.

### US Region

The following crops (and weighting parameter) are available for the US Region:

- Corn (weighting = corn)

- Soybeans (soybeans)
- Spring Wheat (springwheat)
- Winter Wheat (winterwheat)
- Oats (oats)
- Cotton (cotton)
- Barley (barley)
- Rice (rice)

### EU Region

For the region = EU, the following crops (and weighting parameter) are available:

- Winter Wheat (winterwheat)
- Corn (corn)
- Winter Barley (winterbarley)
- Winter Rapeseed (winterrapeseed)
- Sunflower (sunflower)
- Oats (oats)
- Rye (rye)

### BR Region

For the region = BR, the following crops (and weighting parameter) are available:

- Corn1 (corn1)
- Corn2 (corn2)
- Soybeans (soybeans)
- Sugarcane (sugarcane)
- Coffee (coffee)
- Cotton (cotton)
- Rice (rice)

### AR Region

For the region = AR, the following crops (and weighting parameter) are available:

- Corn (corn)
- Soybeans (soybeans)
- Sunflower (sunflower)
- Sorghum (sorghum)
- Wheat (wheat)
- Barley (barley)

### Regions

The region parameter is: region

The real-time and historical forecast data are available for the United States, Europe, Brazil, and Argentina.

Region	API Abbreviation
United States	US
Europe	EU
Brazil	BR
Argentina	AR

### Sub-regions

The sub-region parameter is: sub\_region

Sub-regions are available but are crop specific.

For the US Region, the following combination of crops and states are available.

Crop (weighting = )	States Available (subregion = )
Corn (corn)	IA IL NE MN IN KS SD OH WI MO
Soybeans (soybeans)	IA IL NE MN IN MO OH SD ND KS
Winter Wheat (winterwheat)	KS WA OK MT CO TX ID OR NE IL
Spring Wheat (springwheat)	ND MT MN ID SD WA

**For Brazil, the following combination of crops and provinces are available.**

Crop (weighting = )	Provinces Available (subregion = )
Corn1 (corn1)	MG RS PR SC SP PI BA GO MA PA
Corn2 (corn2)	MT PR GO MS MG SP RO TO MA BA
Soybeans (soybeans)	MT PR RS GO MS MG BA SP TO MA
Sugarcane (sugarcane)	SP GO MG MS PR MT AL PE
Coffee (coffee)	MG ES SP BA RO
Cotton (cotton)	MT BA
Rice (rice)	RS SC TO MT

**For Argentina, the following combination of crops and provinces are available.**

Crop (weighting = )	Provinces Available (subregion = )
Corn (corn)	CB BA SF SE LP ER SA SL CC TM
Soybeans (soybeans)	CB BA SF SE LP ER SA SL CC TM
Sunflower (sunflower)	BA SF LP CC CB
Sorghum (sorghum)	CB SF BA ER SE CC
Wheat (wheat)	BA SF CB ER SE LP
Barley (barley)	BA LP

### Start Date and End Date

The start date and end date parameters are:  
startdate and enddate

Parameter	Description
startdate	The desired date to start retrieval of observations or forecast history
enddate	The desired date to end retrieval of observations or forecast history. If no end date is specified the time series from the start date to the most recent available data will be provided.

Start Dates:

- Historical Observed Data: 1950-01-01 to the prior day of the current date.

End Dates:

- Historical Data: 1950-01-01 to 2023-05-31

The date format is YYYYMMDD or YYYY-MM-DD where

YYYY = the four-digit year

MM = the two-digit month

DD = the two-digit day or month

### Output Format

The format parameters is: format

The API response provides either json or csv formatted output.

Parameter	API Response
format=json	json formatted data is returned
format=csv	A csv file is returned

### Pretty

The pretty parameter is: pretty.

Specifying pretty=true yields easy to read json formatted data.

Specifying pretty=false yields more difficult for a human to read data.

### API Key

The API key parameters is: apikey.

apikey=[auth]

Prescient Weather Ltd will provide you with an API key. To request an API key, please email [support@worldclimateservice.com](mailto:support@worldclimateservice.com)

### Summary API Parameter Specifications

The default API parameter value is highlighted in **bold red text**.

### Observed Data

model = obs  
 variable=[tmax, tmin, prcp]  
 weighting=[corn, soybeans]  
 region=[US]  
 subregion=none  
 startdate= Historical Data: 1950-01-01 to 2023-05-31; Real-time Forecast Data: 2023-10-20  
 enddate= Historical Data: 1950-01-01 to 2023-05-31 ; Real-time Forecast Data: The present day  
 format=[**json**,csv]  
 pretty=[true,**false**]  
 apikey=[auth]

Example API calls:

US corn production weighted observed daily maximum temperature from August 1, 2023  
[https://s2s.worldclimateservice.com/pit/v1api?model=obs&variable=tmax&weighting=corn&initdate=20180430&region=US&subregion=&fullensemble=false&format=csv&apikey=api\\_key](https://s2s.worldclimateservice.com/pit/v1api?model=obs&variable=tmax&weighting=corn&initdate=20180430&region=US&subregion=&fullensemble=false&format=csv&apikey=api_key)

## (2) Forecast Data

Data from the point-in-time forecast database for forecasts is retrieved using the API root and the following parameters.

### Models

The model parameter is: model

The models available are:

Model	API Abbreviation
ECMWF	ecmwf
GEFS	gefs
GFS	gfs

### Variables

The variable parameter is: variable

The variables available are:

Variable	API Abbreviation
Daily Maximum Temperature (°C)	tmax
Daily Minimum Temperature (°C)	tmin
Daily Accumulated Precipitation (mm)	prcp

### Weighting

The weighting parameter is: weighting.

The crop production weighting is applied within the region and subregions specified.

### US Region

The following crops (and weighting parameter) are available for the US Region:



- Corn (weighting = corn)
- Soybeans (soybeans)
- Spring Wheat (springwheat)
- Winter Wheat (winterwheat)
- Oats (oats)
- Cotton (cotton)
- Barley (barley)
- Rice (rice)

## EU Region

For the region = EU, the following crops (and weighting parameter) are available:

- Winter Wheat (winterwheat)
- Corn (corn)
- Winter Barley (winterbarley)
- Winter Rapeseed (winterrapeseed)
- Sunflower (sunflower)
- Oats (oats)
- Rye (rye)

## BR Region

For the region = BR, the following crops (and weighting parameter) are available:

- Corn1 (corn1)
- Corn2 (corn2)
- Soybeans (soybeans)
- Sugarcane (sugarcane)
- Coffee (coffee)
- Cotton (cotton)
- Rice (rice)

## AR Region

For the region = AR, the following crops (and weighting parameter) are available:

- Corn (corn)
- Soybeans (soybeans)
- Sunflower (sunflower)
- Sorghum (sorghum)
- Wheat (wheat)
- Barley (barley)

## Regions

The region parameter is: region

The real-time and historical forecast data are available for the United States, Europe, Brazil, and Argentina.

Region	API Abbreviation
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Europe	EU
Brazil	BR

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### Sub-regions

The sub-region parameter is: sub\_region

Sub-regions are available but are crop specific.

For the US Region, the following combination of crops and states are available.

Crop (weighting = )	States Available (subregion = )
Corn (corn)	IA IL NE MN IN KS SD OH WI MO
Soybeans (soybeans)	IA IL NE MN IN MO OH SD ND KS
Winter Wheat (winterwheat)	KS WA OK MT CO TX ID OR NE IL
Spring Wheat (springwheat)	ND MT MN ID SD WA

**For Brazil, the following combination of crops and provinces are available.**

Crop (weighting = )	Provinces Available (subregion = )
Corn1 (corn1)	MG RS PR SC SP PI BA GO MA PA
Corn2 (corn2)	MT PR GO MS MG SP RO TO MA BA
Soybeans (soybeans)	MT PR RS GO MS MG BA SP TO MA
Sugarcane (sugarcane)	SP GO MG MS PR MT AL PE
Coffee (coffee)	MG ES SP BA RO
Cotton (cotton)	MT BA
Rice (rice)	RS SC TO MT

**For Argentina, the following combination of crops and provinces are available.**

Crop (weighting = )	Provinces Available (subregion = )
Corn (corn)	CB BA SF SE LP ER SA SL CC TM
Soybeans (soybeans)	CB BA SF SE LP ER SA SL CC TM
Sunflower (sunflower)	BA SF LP CC CB
Sorghum (sorghum)	CB SF BA ER SE CC
Wheat (wheat)	BA SF CB ER SE LP
Barley (barley)	BA LP

### Initialization Date and Initialization Hour

The start date and end date parameters are:

initdate and inithour

Parameter	Description
initdate	The initialization date to retrieve a weather forecast for. Each forecast initdate must be requested individually.

inithour	The initialization hour to retrieve a weather forecast for (ie., 00z or 12z). Each forecast inithour must be requested individually.
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**Initialization Dates:**

- Historical Forecast Data: 2017-04-30 to 2023-05-31. There is a gap to 2023-10-20 which we plan to fill. Real-time daily updated forecasts are currently available.
- Historical Forecast Data: 2023-05-31 (the gap to the present day will be closed in the near future)

Real-time Forecast Data: The present day  
 The date format is YYYYMMDD or YYYY-MM-DD where  
 YYYY = the four-digit year  
 MM = the two-digit month  
 DD = the two-digit day or month

**Full Ensemble**

The model parameter is: fullensemble  
 The API response provides either true or false formatted output.

Parameter	API Response
fullensemble=true	Shows each individual ensemble member forecast
fullensemble=false	Shows the model’s mean forecast value.

**Output Format**

The format parameters is: format  
 The API response provides either json or csv formatted output.

Parameter	API Response
format=json	json formatted data is returned
format=csv	A csv file is returned

**Pretty**

The pretty parameter is: pretty.  
 Specifying pretty=true yields easy to read json formatted data.  
 Specifying pretty=false yields more difficult for a human to read data.

**API Key**

The API key parameters is: apikey.  
 apikey=[auth]

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## Summary API Parameter Specifications

The default API parameter value is highlighted in **bold red text**.

### Forecast Data

model=[ecmwf, gefs, gfs]  
variable=[tmax, tmin, prcp]  
weighting=[corn,soybeans]  
region=[US]  
subregion=none  
initdate=[2017-04-15 to 2023-05-31 for ecmwf, gefs, and gfs],  
          [2008-10-01 to 2023-03-31 Mon/Thu for ecmwf\_ext]  
inithour=[0,12 for ecmwf, gefs, gfs; 0 for ecmwf\_ext]  
fullensemble=[true,**false**]  
format=[**json**,csv]  
pretty=[true,**false**]  
apikey=[auth]

Example API calls:

ECMWF US corn production weighted 00Z ensemble averaged forecast for daily maximum temperatures.

[https://s2s.worldclimateservice.com/pit/v1api?model=ecmwf&weighting=corn&startdate=20220801&region=US&variable=tmax&pretty=true&apikey=api\\_key](https://s2s.worldclimateservice.com/pit/v1api?model=ecmwf&weighting=corn&startdate=20220801&region=US&variable=tmax&pretty=true&apikey=api_key)