

# PRISM 4km Gridded Climate Data

## Downloads via Web Service

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### DOCUMENT CONTENTS

- Introduction
- Data Availability
- Data File Contents
- Download Limits
- Data Web Service Usage
- Sample Bulk Data Download Script
- Release Date Web Service Usage

### INTRODUCTION

An open web service is available for downloads of individual PRISM grids, one grid per request. By default, PRISM grids are delivered in BIL format; however, there is an option to download grids in other raster data formats via this web service (see the Data Web Service Usage section).

Other types of files can be downloaded manually using the [prism.oregonstate.edu](http://prism.oregonstate.edu) website. For more information on the formats, and for a complete explanation of the file naming conventions, see the [data formats](#) section of the website. The files available via the web service are a subset of those available through web download. They are of the form PRISM\_<var>\_<stability>\_<scale&version>\_<time period>[\_all|\_annual]\_bil.zip

Before downloading data, be sure to acquaint yourself with our [terms of use](#), which explain how to acknowledge any use of our data.

In addition to the data web service, we also provide a “Release Date” web service. This service is intended to provide the end user with the ability to obtain the date upon which a grid was most recently processed and released. In this manner, the user can avoid downloading an entire grid simply to determine whether it is newer than their current copy (ideally as a scripted process that compares retrieved release dates against grids on the user’s filesystem).

The Release Date service provides a few columns of information per grid and can be requested for a single grid or a range of grids. See the “RELEASE DATE WEB SERVICE USAGE” section at the end of this document.

You may want to reference the [PRISM update schedule](#) document for details on when and how often PRISM grids are updated to incorporate new station data and quality control procedures. Data older than six months are considered stable and should not change.

### DATA AVAILABILITY

#### *Data Web Service*

Currently, the following data (i.e., grids in BIL format) can be downloaded via the web service:

- Variables:

- ppt, tmin, tmax, tmean, tdmean, vpdmin, vpdmax (as both time series grids and normals grids)
- solslope, soltotal, solclear, soltrans (as normals grids only)
- Recent data: 1981 to present; daily, monthly, annual data
- Historical data: 1895 through 1980; complete monthly and annual data by year
- 30-year normals data: daily, monthly, and annual normals, each as a single grid

### ***Release Date Web Service***

Release Date information is maintained from April 2014 forward. Requests for Release Date information on grids older than April 2014 will return an unpopulated line.

The Release Date web service currently supports requests for the following time series climate variables: ppt, tmin, tmax, tmean, tdmean, vpdmin, vpdmax.

### **DATA FILE CONTENTS**

Each BIL grid is a collection of files delivered as a single compressed .zip file, essentially comprising a “grid package.” Data downloaded in other raster formats will contain similar ancillary files in each .zip file. To illustrate, each BIL grid package contains the following files:

- <filename>.bil – band interleaved by line (BIL) raster data file
- <filename>.bil.aux.xml – auxiliary file containing grid statistics (primarily for Esri software)
- <filename>.hdr – standard header file that describes the .bil file content
- <filename>.info.txt – information file containing various PRISM parameters
- <filename>.prj – projection file describing the coordinate system
- <filename>.stn.csv – CSV file containing information about weather stations that provided input data to the PRISM model run that produced the associated BIL grid
- <filename>.stx – auxiliary file containing grid statistics (for all GIS software)
- <filename>.xml – FGDC-compliant metadata file describing the dataset

### **DOWNLOAD LIMITS**

Download activity is continuously monitored. To prevent rogue download scripts from exceeding bandwidth limits, if a file is downloaded twice in a 24-hour period, no more downloads of that file will be allowed during that period. Repeated excessive download activity may result in IP address blocking, at our discretion.

### **DATA WEB SERVICE USAGE**

#### ***Time Series (daily, monthly, annual) Data Request Syntax***

To initiate a request via this web service, use a client (e.g., web browser, the *wget* or *curl* utility, etc.) that can perform an HTTP request with the following parameters:

**[https://services.nacse.org/prism/data/public/4km/<element>/<date><?format=\[nc|asc|grib2\]>](https://services.nacse.org/prism/data/public/4km/<element>/<date><?format=[nc|asc|grib2]>)**

Where:

- `<element>` is *ppt*, *tmin*, *tmax*, *tmean*, *tdmean*, *vpdmin*, or *vpdmax*
- `<date>` is:
  - YYYYMMDD for daily data (between yesterday and January 1st, 1981) – returns a single grid in a .zip file
  - YYYYMM for monthly data (between last month and January 1981) – returns a single grid in a .zip file
  - YYYY for annual data (between last year and 1981) – returns a single grid in a .zip file
  - YYYY for historical data (between 1980 and 1895) – returns a single zip file containing 12 monthly grids for YYYY plus the annual.
- `<?format=[nc|asc|grib2]>`: optional command that will deliver the data in the specified format.  
Format options:
  - **nc**: netCDF format (<https://www.unidata.ucar.edu/software/netcdf>)
  - **asc**: ASCII Grid format (<https://www.loc.gov/preservation/digital/formats/fdd/fdd000421.shtml>)
  - **grib2**: Grib2 format ([https://www.nco.ncep.noaa.gov/pmb/docs/grib2/grib2\\_doc](https://www.nco.ncep.noaa.gov/pmb/docs/grib2/grib2_doc))

Valid HTTP examples:

Daily grid: <https://services.nacse.org/prism/data/public/4km/tmin/20090405>

Monthly grid: <https://services.nacse.org/prism/data/public/4km/ppt/198304>

Annual grid: <https://services.nacse.org/prism/data/public/4km/tmax/2021>

Historical monthly grid: <https://services.nacse.org/prism/data/public/4km/tmin/194402>

Reformatted (netCDF) monthly grid: <https://services.nacse.org/prism/data/public/4km/tmin/200904?format=nc>

Reformatted (Grib2) daily grid: <https://services.nacse.org/prism/data/public/4km/ppt/19911023?format=grib2>

Valid UNIX command line example:

```
wget --content-disposition https://services.nacse.org/prism/data/public/4km/tmin/20090405
```

### ***Normals Request Syntax***

To initiate a request via this web service, use a client (web browser, the *wget* utility, etc.) that can perform an HTTP request with the following parameters:

**`https://services.nacse.org/prism/data/public/normals/<resolution>/<element>/<date>`**

Where:

- `<resolution>` is *4km* or *800m*
- `<element>` is *ppt*, *tmin*, *tmax*, *tmean*, *tdmean*, *vpdmin*, *vpdmax*, *solslope*, *soltotal*, *solclear*, or *soltrans*
- `<date>` is ONE of the following per request:
  - Monthly normal: date is MM (i.e., 04 for April) or the value 14, which returns the annual normal
  - Daily normal: date is MMDD (i.e., 0430 for April 30)

Valid HTTP examples:

800m tmean daily normal: <https://services.nacse.org/prism/data/public/normals/800m/tmean/0430>

4km vpdmax daily normal: <https://services.nacse.org/prism/data/public/normals/4km/vpdmax/0705>

800m ppt monthly normal: <https://services.nacse.org/prism/data/public/normals/800m/ppt/03>

4km tmin monthly normal: <https://services.nacse.org/prism/data/public/normals/4km/tmin/10>

Annual 800m tmax normal: <https://services.nacse.org/prism/data/public/normals/800m/tmax/14>

Valid UNIX command line example:

wget --content-disposition <https://services.nacse.org/prism/data/public/normals/4km/tmax/08>

## SAMPLE BULK DOWNLOAD SCRIPT

The web service provides a single grid per request. To perform a bulk download of multiple grids, create and run a script or batch job. An example Perl script is provided below – this example script will download a year’s worth of daily ppt grids. (Note that it’s important to use the `--content-disposition` switch with the `wget` command to preserve the original filename, as in the following example.)

```
#!/usr/bin/perl
use strict;
use warnings;
use DateTime;

my $day;
my $clim_var = 'ppt';
my $base_url = 'https://services.nacse.org/prism/data/public/4km';

my $start = DateTime->new( day => 1, month => 10, year => 1999 );
my $stop = DateTime->new( day => 30, month => 9, year => 2000 );

while($start <= $stop) {
    $day = $start->strftime('%Y%m%d'); #place date in proper format
    system("wget --content-disposition $base_url/$clim_var/$day");
    sleep 2; #to be nice to our server
    $start->add(days => 1);
}
}
```

## RELEASE DATE WEB SERVICE USAGE

To initiate a request via this web service, use a client (web browser, the `wget` utility, etc.) that can perform an HTTP request with the following parameters:

**`https://services.nacse.org/prism/data/public/releaseDate/<element>/<date>`**

The `<element>` and `<date>` syntax is identical to the description in the “DATA WEB SERVICE USAGE” section above.

By default, the output is delivered as tab-delimited text. The output may also be requested in JSON format, by adding “`?json=true`” to the end of the request URL. The following columns of data are provided:

Data date	(e.g., <i>1999-01-01</i> )
Release date	(e.g., <i>2013-01-14</i> )
Element	(e.g., <i>tmin</i> )
Grid count	(e.g., <i>6</i> )
Data URL	(e.g., <i>https://services.nacse.org/prism/data/public/4km/tmin/19990101</i> )

This web service can provide grid release date information for a single grid, or a range of grids. Examples of both approaches are given below.

Valid HTTP examples for a *single* grid:

Daily grid: <https://services.nacse.org/prism/data/public/releaseDate/ppt/20090405?json=true>

Monthly grid: <https://services.nacse.org/prism/data/public/releaseDate/ppt/200904>

Valid HTTP examples for a *range* of grids:

Daily grids: <https://services.nacse.org/prism/data/public/releaseDate/ppt/19990101/19991231>

Monthly grids: <https://services.nacse.org/prism/data/public/releaseDate/ppt/199201/199212?json=true>