

Northwest Climate Toolbox

Katherine Hegewisch
Department of Geography
University of Idaho, Moscow, ID

The Northwest Climate Toolbox

A collection of web tools for visualizing past and projected climate and hydrology of the Pacific Northwest, USA.

Applications

These tools are to help with decision making in fire, water management, agriculture and climate monitoring.



AGRICULTURE



CLIMATE



FIRE



WATER

Tools



Climate Mapper

Explore current and future climate information across multiple sectors [i](#)

[Launch Tool](#)



Climate Dashboard

Real-Time Climate Monitoring for a selected location. [i](#)

[Launch Tool](#)



US Water Watcher

Real-Time Water monitoring and mapping across the contiguous US. [i](#)

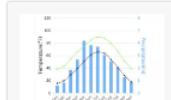
[Launch Tool](#)



Climate Tracker

Track historical climate variability for a selected location [i](#)

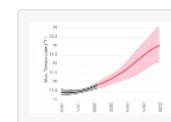
[Launch Tool](#)



Climate Normals

Visualize monthly average climate for a selected location. [i](#)

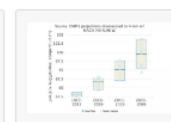
[Launch Tool](#)



Future Time Series

Generate a time series of projected changes in climate for a selected location [i](#)

[Launch Tool](#)



Future Climate

Generate a boxplot of future climate projections for a selected location [i](#)

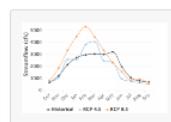
[Launch Tool](#)



Climate Projection Dashboard

Local climate projections for anywhere in the lower 48. [i](#)

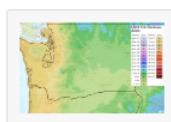
[Launch Tool](#)



Streamflow Projections

Generate a graph of monthly streamflows for selected stream gauges [i](#)

[Launch Tool](#)



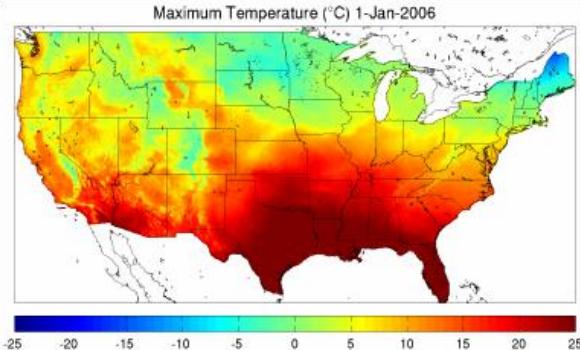
Cold Hardiness Zones

View current and projected cold hardiness and crop suitability zones [i](#)

[Launch Tool](#)

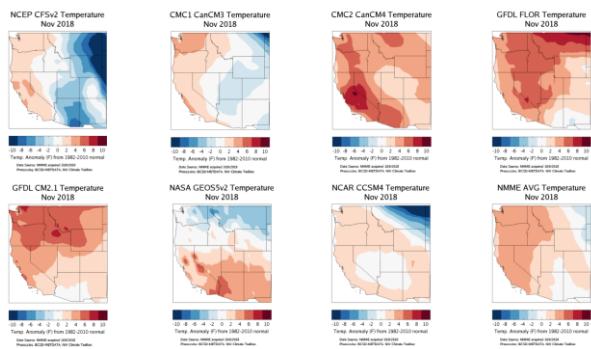
The Data

Observations



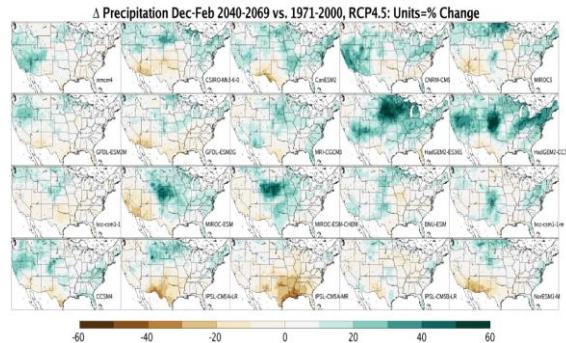
gridMET
Daily data
1979-Yesterday

Seasonal Climate Forecasts



Bias corrected NMME
Monthly data
next 7 months

Climate & Hydrology Projections

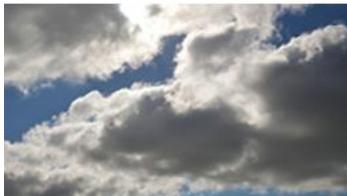


MACA, VIC
Daily data
2020-2100

Data stored in netCDF files on NKN, accessible w/ THREDDS services

The Variables

Climate



- Temperature
- Precipitation
- Humidity
- Wind
- Radiation

Water



- Soil moisture
- Total moisture
- Snow water equivalent
- Runoff
- Streamflow

Agriculture



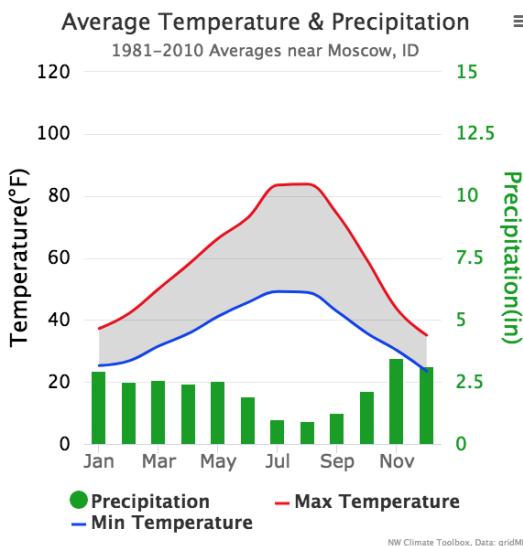
- Growing Degree Days
- Chill Hours
- Cold Hardiness Zones
- Heat Zones
- Palmer Drought Severity Index (PDSI)
- Potential Evapotranspiration

Fire Danger

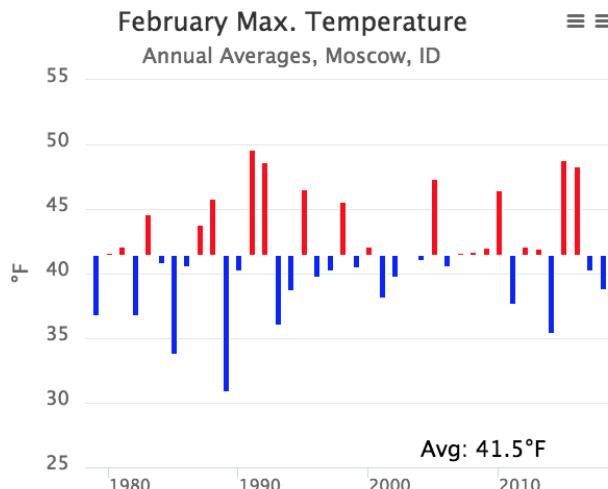


- Energy Release Component
- Burning Index
- 100-hr Fuel Moisture
- 100-hr Fuel Moisture

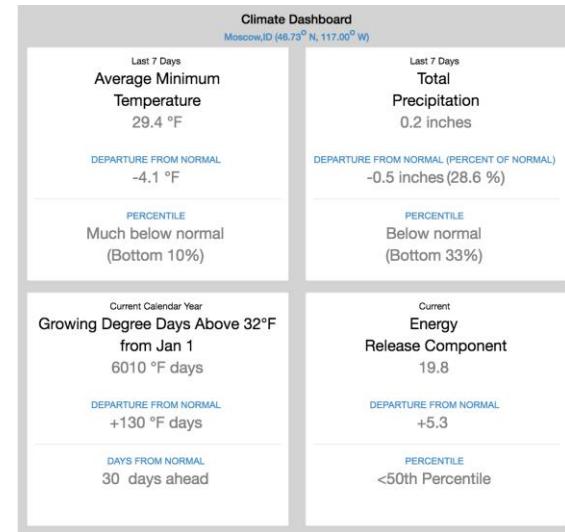
Tools – Historical



Historical
Averages

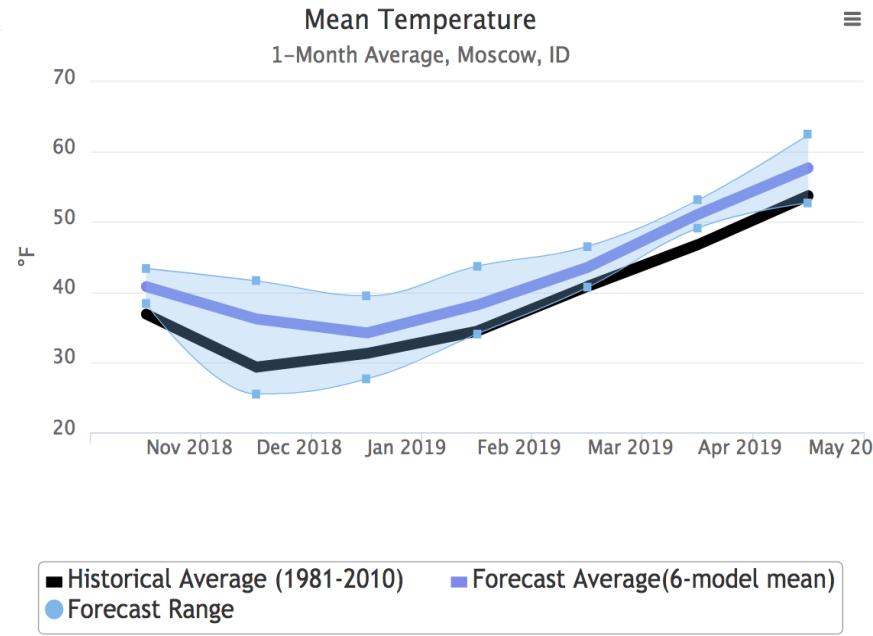
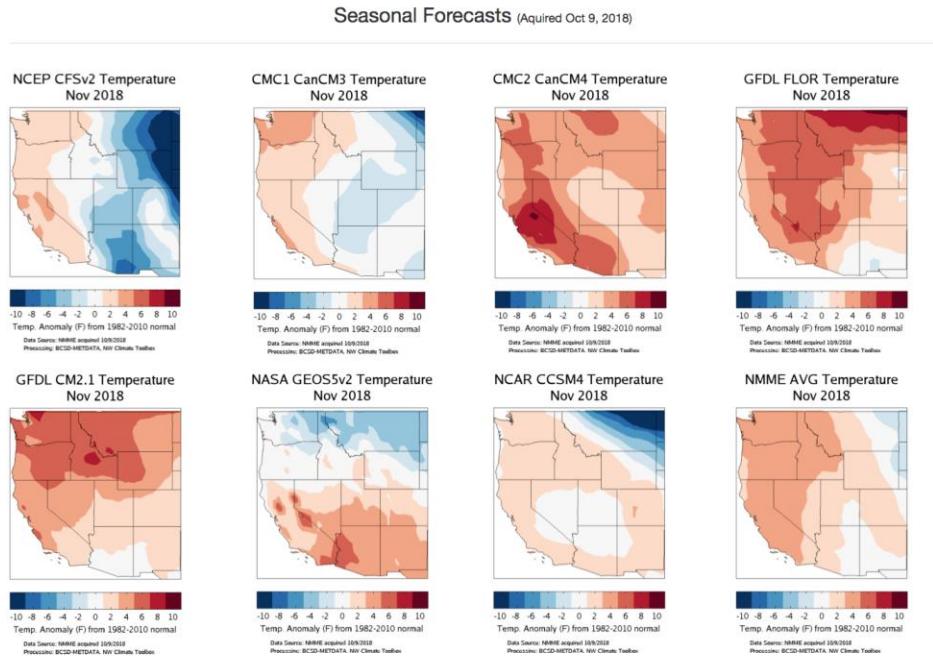


Historical
Variability



Real-Time Climate
Dashboard

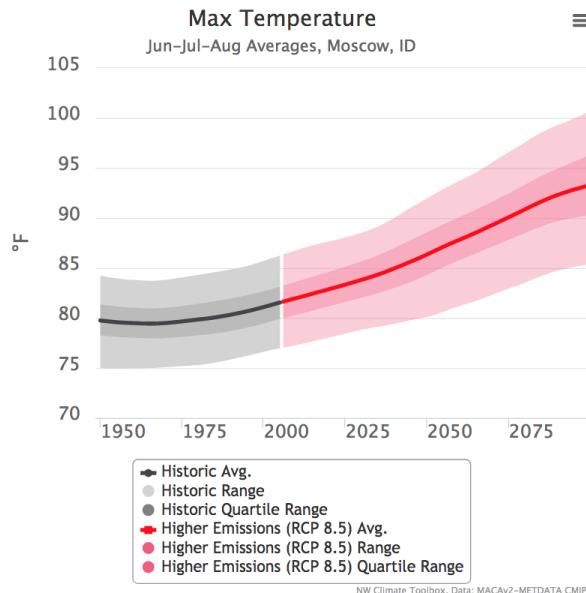
Tools – Forecasts



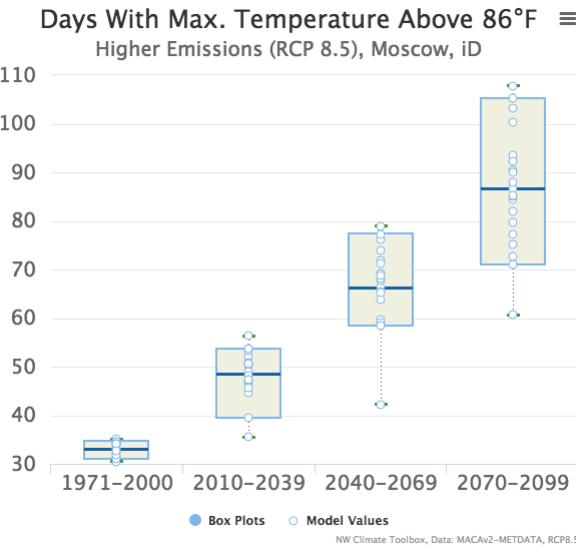
Maps

Graphs

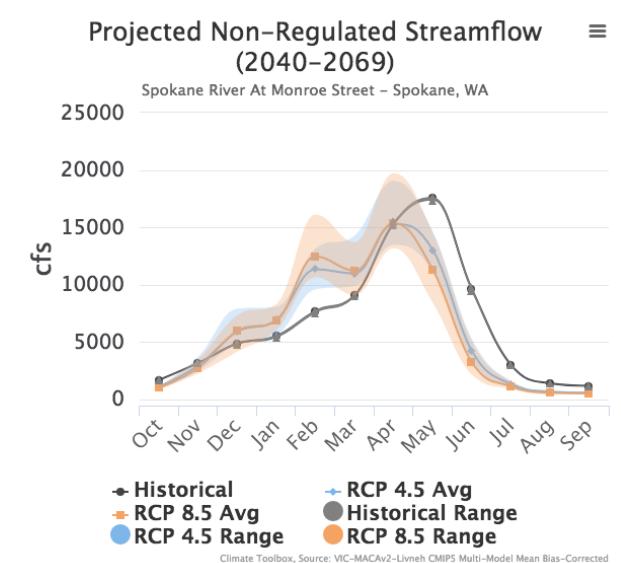
Tools –Projections



Annual Summaries

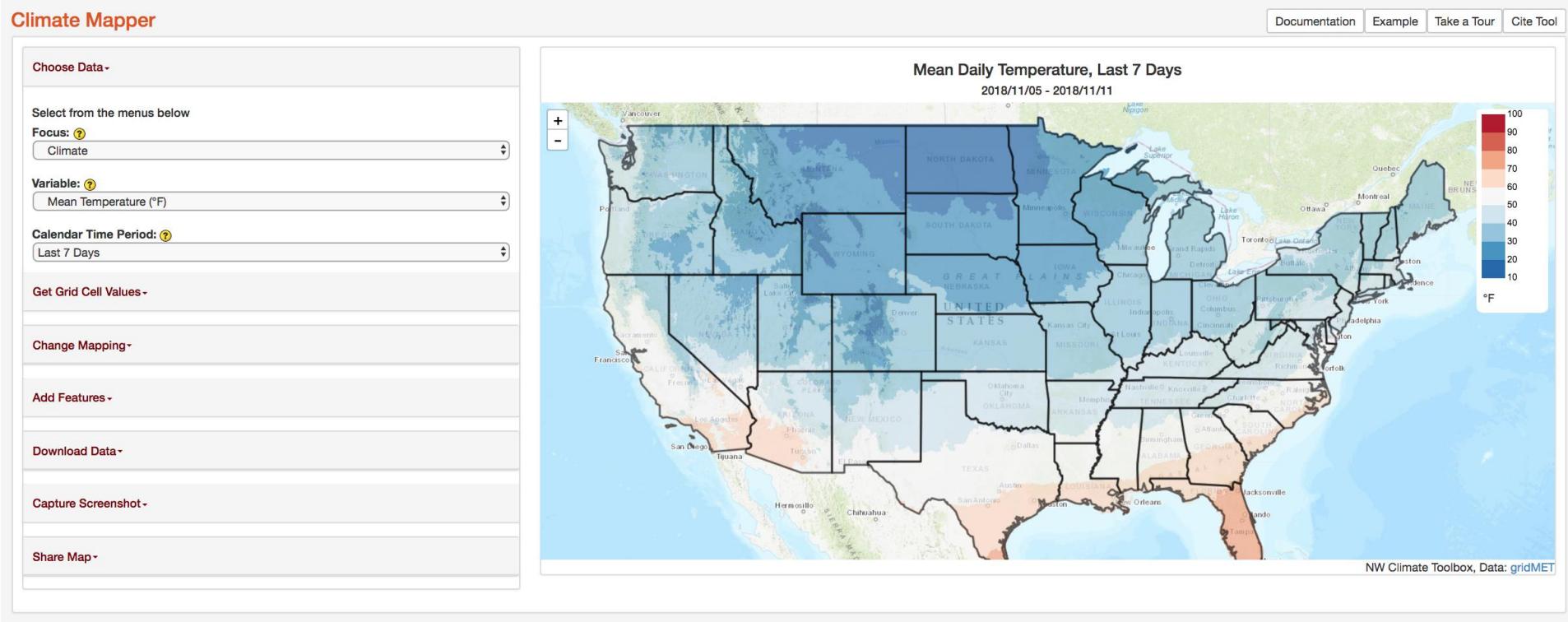


30-year Summaries



2 Future Scenarios

Highlighted Tool – Climate Mapper



Highlighted Tool – Climate Mapper

Climate Mapper

[Documentation](#) [Example](#) [Take a Tour](#) [Cite Tool](#)

Choose Data -

Get Grid Cell Values -

The data is available as a mean value over a grid cell. Select a point location to view the value of the containing grid cell.

- **GeoLocate:** Type a location description: [?](#)
- **Drag:** Click on the map to get a marker and drag the marker  to your desired location.
- **Enter:** Enter coordinates of a location: [?](#)
Latitude: N
Longitude: W

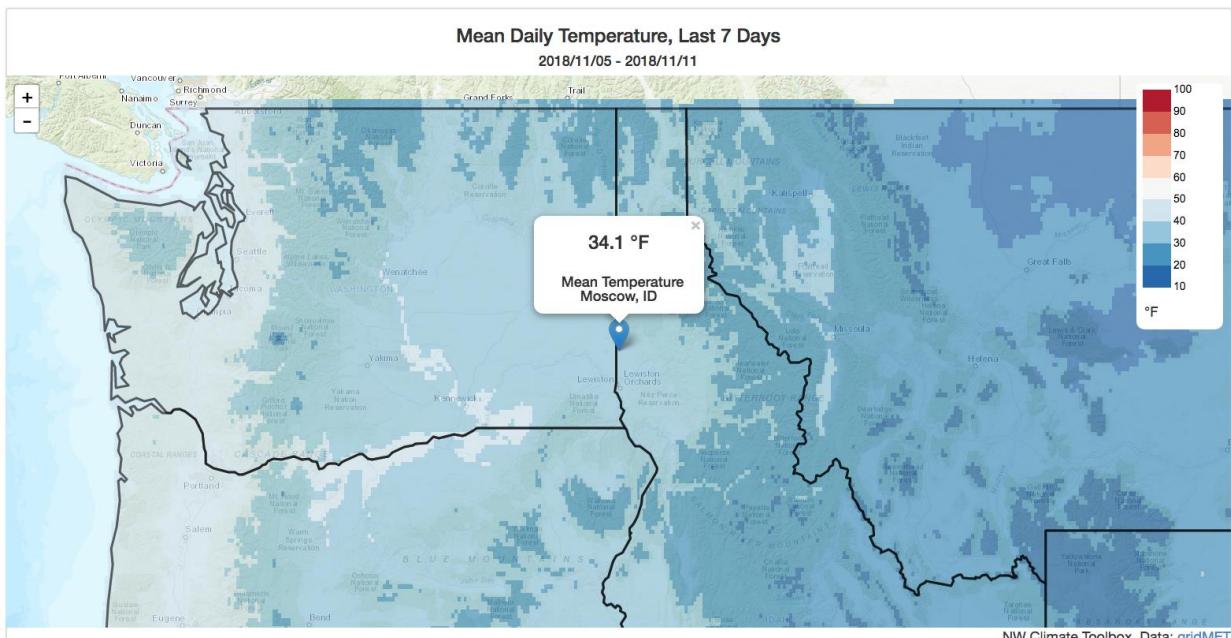
Change Mapping -

Add Features -

Download Data -

Capture Screenshot -

Share Map -



Highlighted Tool – Climate Mapper

Climate Mapper

[Documentation](#) [Example](#) [Take a Tour](#) [Cite Tool](#)

Choose Data -

Get Grid Cell Values -

Change Mapping -

To change the properties of the map layer, modify the entries and click the button

Base Map: [? World Topo](#)

Color Range: [?](#) 32 to 60 °F

Color Palette: [?](#) Red-White-Blue

Number of Colors: [?](#) 9

Color for Out of Range Values: [?](#) Transparent(no color)

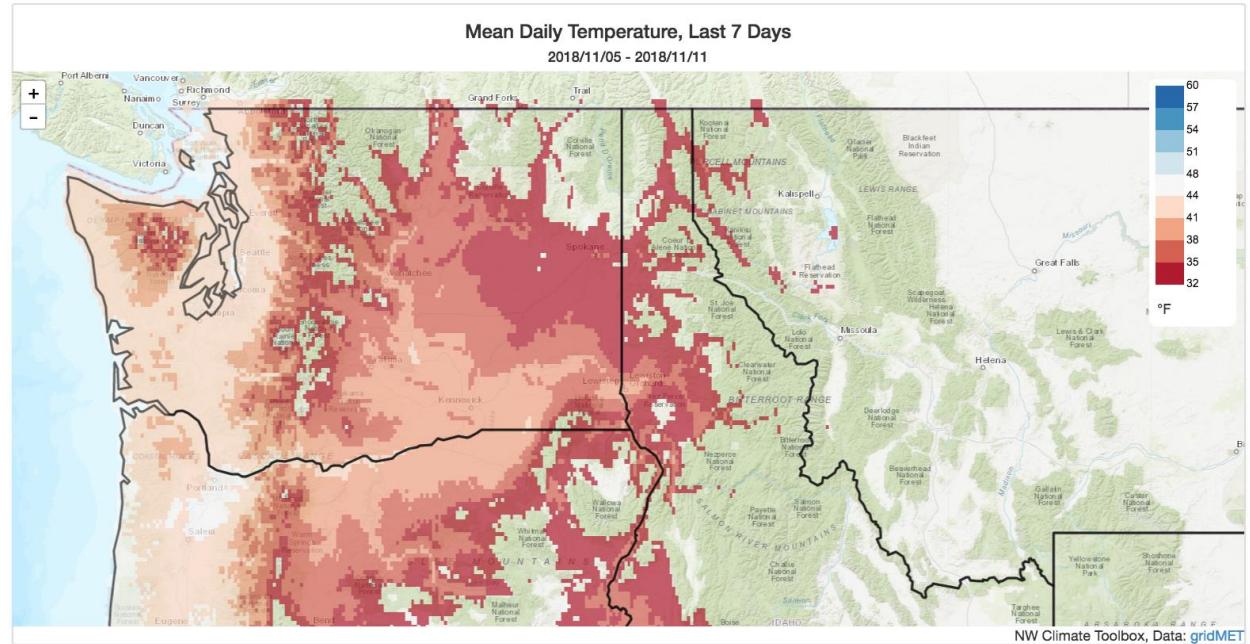
Opacity: [?](#) 70%

Add Features -

Download Data -

Capture Screenshot -

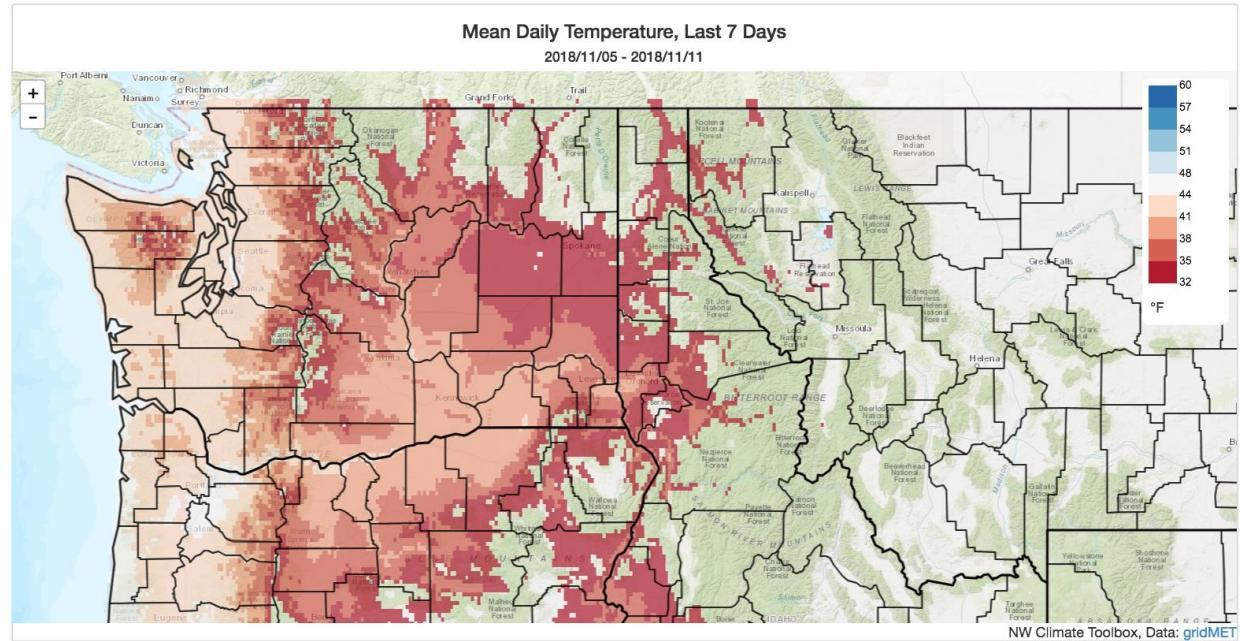
Share Map -



Highlighted Tool – Climate Mapper

Climate Mapper

[Documentation](#) [Example](#) [Take a Tour](#) [Cite Tool](#)



Highlighted Tool -Future Crop Suitability

Future Crop Suitability

Explore future climate suitability for specialty crops in the Western USA.

Location: Moscow, ID (46.73° N, 117.00° W)

[Documentation](#) [Take a Tour](#) [Example](#) [Cite Tool](#)

Crop Suitability

?

Crop:
Blueberries

Time Period(s):

- 1971-2000
- 2010-2039
- 2040-2069

Future Emissions:

Higher Emissions (RCP 8.5)

Additional Map Layers

?

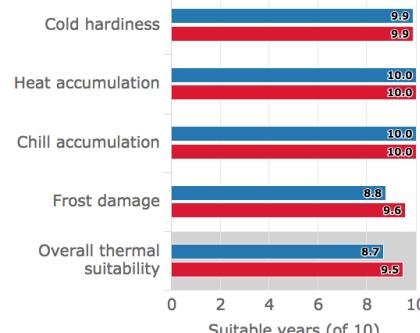
Crop Layers
Current crop extent

Boundaries

- Domain of data
- US States
- US Counties

Location Suitability

Climatic Limitations on Blueberry Suitability ≡ Moscow, ID



TIP Interpreting the Graph:

Overall thermal suitability is a composite metric incorporating the limiting factors of the other metrics shown. The limiting factor on the thermal suitability is the metric with the lowest value.

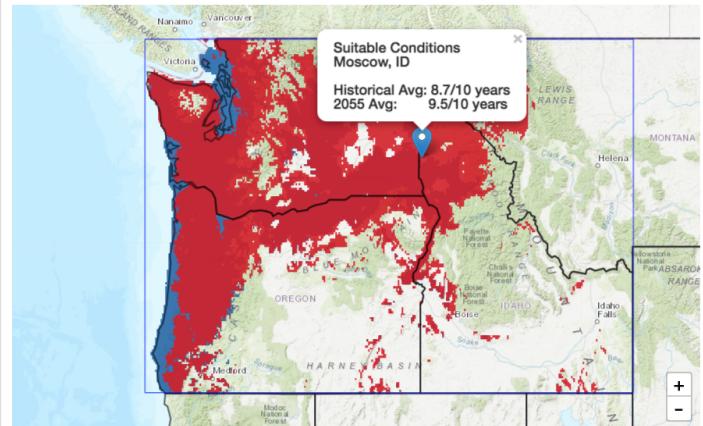
Suitable Spatial Range

?

Crop Suitability Metric: Overall thermal suitability
?

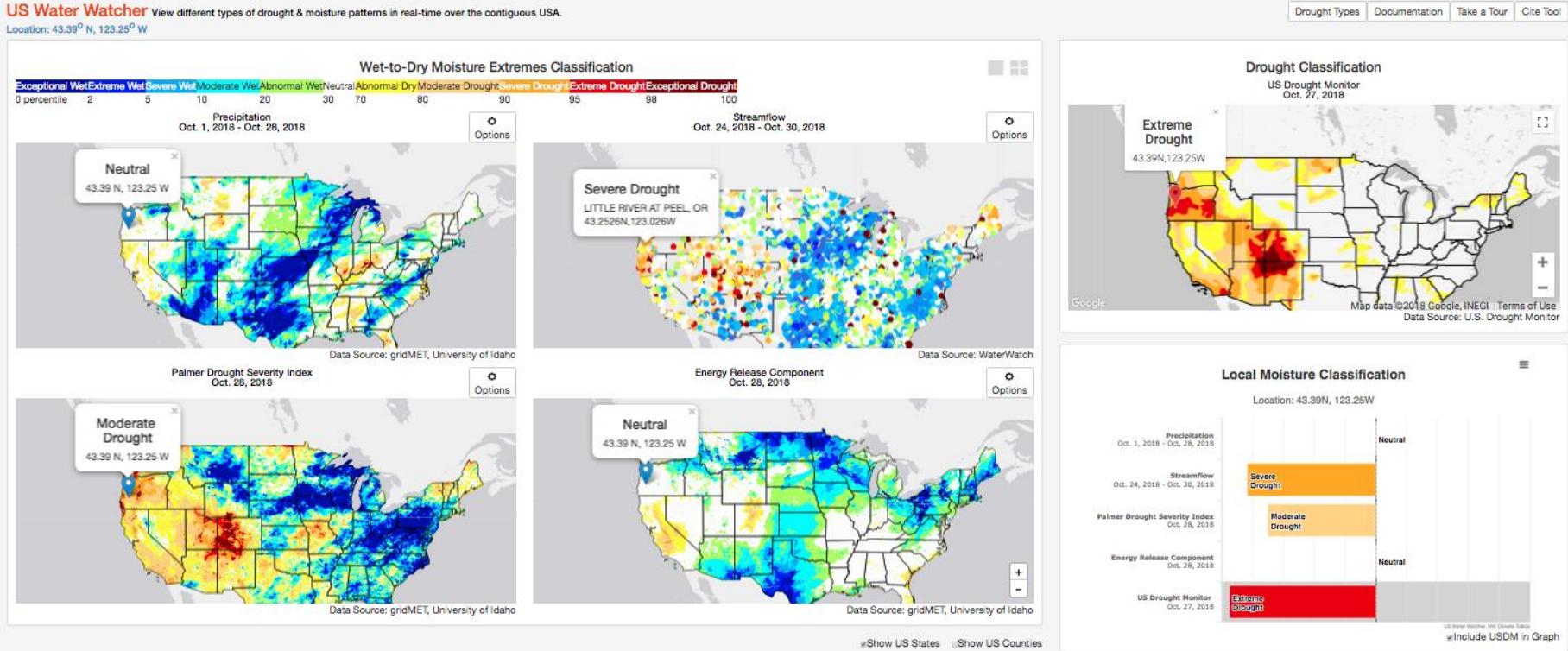
Map Crop Risk: Desired crop suitability in at least 9 in 10 years

Locations Suitable for Blueberries due to Overall thermal suitability (in at least 9 of every 10 years)



■ 1971-2000 (Historical Emissions)
■ 2040-2069 (Higher Emissions (RCP 8.5))

Highlighted Tool – US Water Watcher



Northwest Climate Toolbox

<https://climatetoolbox.org>



Northwest Knowledge Network



RISA
Regional Integrated Sciences
and Assessments

Northwest Climate Toolbox TOOLS - DATA - CLIMATE CURRENTS UPDATES CONTACT

The Northwest Climate Toolbox

A collection of web tools for visualizing past and projected climate and hydrology of the Pacific Northwest, USA.

Applications

These tools are to help with decision making in fire, water management, agriculture and climate monitoring.



AGRICULTURE



CLIMATE



FIRE



WATER

Tools



Climate Mapper
Explore current and future climate information across multiple sectors [i](#)

[Launch Tool](#)



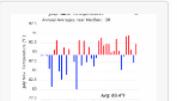
Climate Dashboard
Real-Time Climate Monitoring for a selected location. [i](#)

[Launch Tool](#)



US Water Watcher
Real-Time Water monitoring and mapping across the contiguous US. [i](#)

[Launch Tool](#)



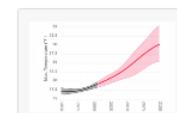
Climate Tracker
Track historical climate variability for a selected location. [i](#)

[Launch Tool](#)



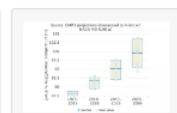
Climate Normals
Visualize monthly average climate for a selected location. [i](#)

[Launch Tool](#)



Future Time Series
Generate a time series of projected changes in climate for a selected location [i](#)

[Launch Tool](#)



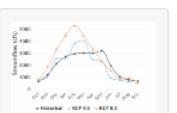
Future Climate
Generate a boxplot of future climate projections for a selected location [i](#)

[Launch Tool](#)



Climate Projection Dashboard
Local climate projections for anywhere in the lower 48. [i](#)

[Launch Tool](#)



Streamflow Projections
Generate a graph of monthly streamflows for selected stream gauges [i](#)

[Launch Tool](#)



Cold Hardiness Zones
View current and projected cold hardiness and crop suitability zones [i](#)

[Launch Tool](#)