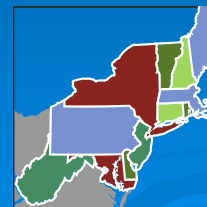


Climate data access tools using the Applied Climate Information System (ACIS)

Keith Eggleston
Regional Climatologist
Northeast Regional Climate Center
Cornell University



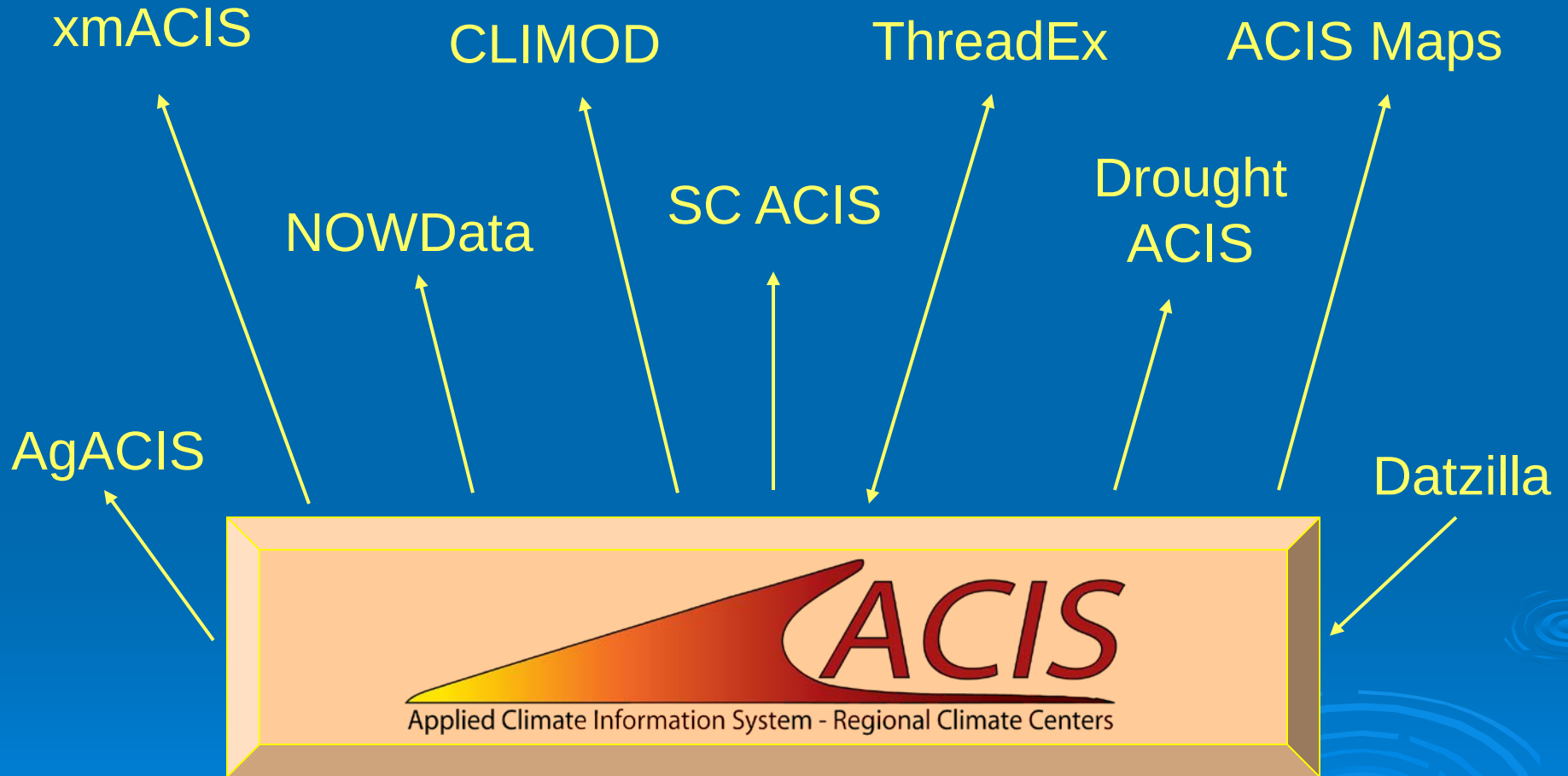
Northeast Regional
Climate Center

ACIS

- Seamless integration, quality control and storage of non-NOAA climate data with traditional NOAA data sources.
- Provides sector-specific and value-added data products.
- Established robust and efficient infrastructure for providing climate information.



ACIS Interfaces



NOWData ACIS Interface

NOWData - NOAA Online Weather Data

1. Location »

[View map](#)

Burlington Area
Burlington Intl, VT
Bethel 4 N, VT
Brookfield 2 WSW, VT
Canaan, VT
Cavendish, VT
Chelsea 2 NW, VT
Corinth, VT
Cornwall, VT
Danby 4 Corners, VT

2. Product »

- ☒ Daily data for a month
- ☐ Daily almanac
- ☐ Monthly summarized data
- ☐ Calendar day summaries
- ☐ Daily/monthly normals
- ☐ Climatology for a day
- ☐ First/last dates
- ☐ Temperature graphs
- ☐ Accumulation graphs

3. Options »

Date: 

4. View »

[Go](#)

Product Description:

DAILY DATA FOR A MONTH - daily maximum, minimum and average temperature (degrees F), average temperature departure from normal (degrees F), heating and cooling degree days (base 65), precipitation, snowfall and snow depth (inches) for all days of the selected month. Basic monthly summary statistics are also provided.

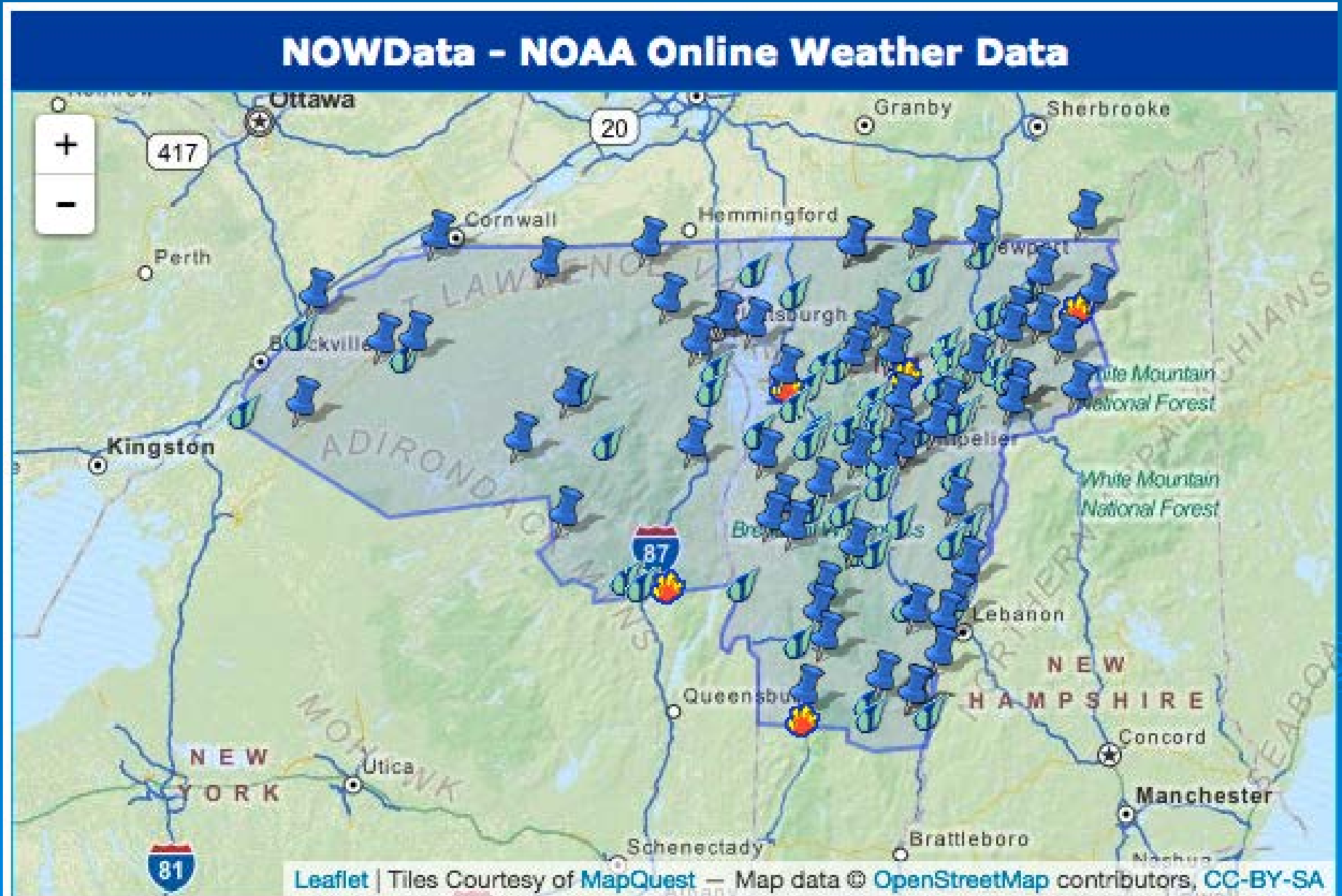
- [Common questions](#) -
- [Submit a question/comment](#) -

Powered by

NOAA Regional Climate Centers

The [Applied Climate Information System](#) (ACIS) is a joint project of the [Regional Climate Centers](#), the [National Climatic Data Center](#) and the [National Weather Service](#). Official data and data for additional locations are available from the Regional Climate Centers and the National Climatic Data Center.

NOWData ACIS Interface



SC-ACIS Interface

SC ACIS

Product selection

Options selection

Station/Area selection

ID

Search

Burlington, VT

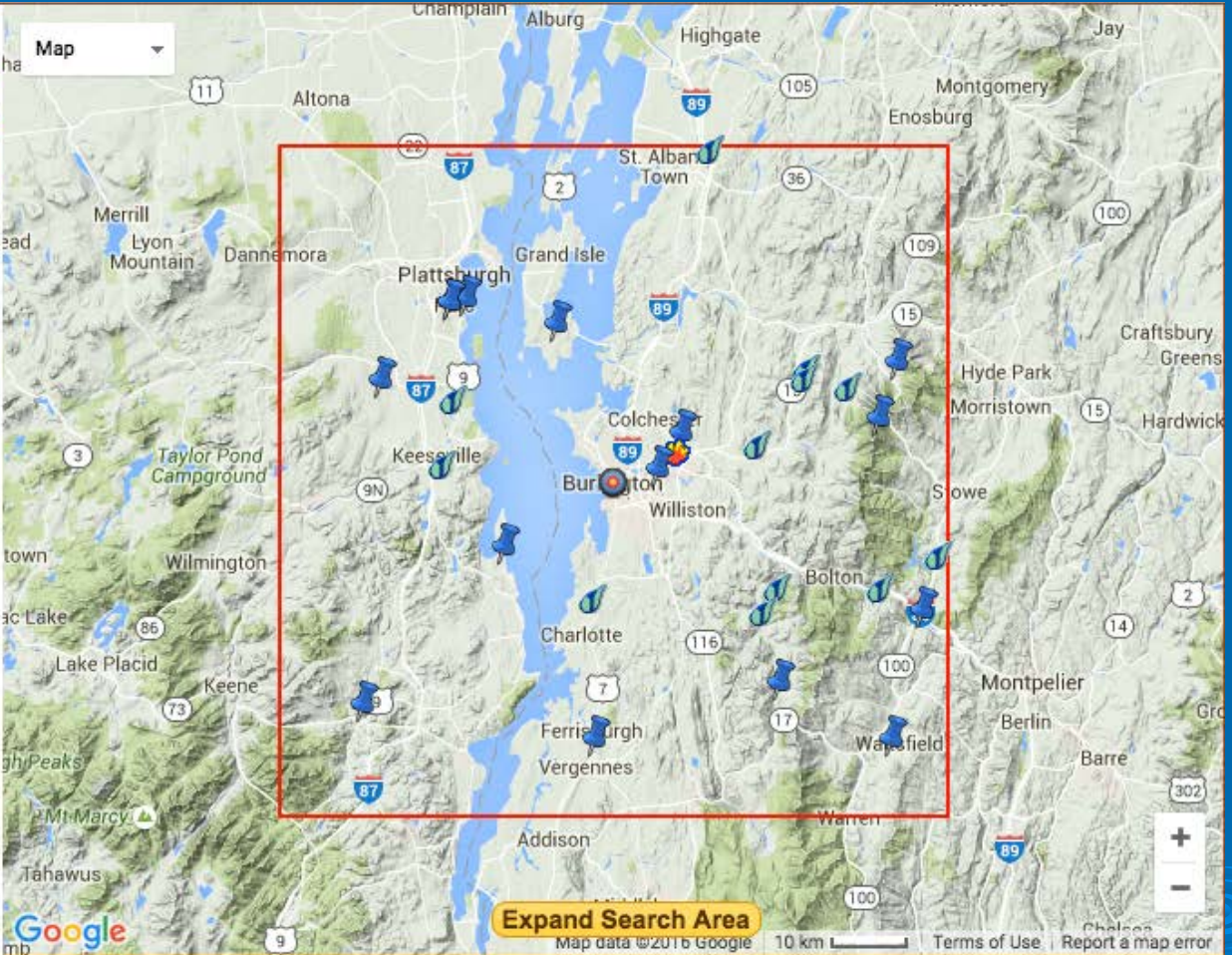
Station:

BURLINGTON INTL AP

Go

Close map

Map



Expand Search Area

Map data ©2016 Google 10 km

Terms of Use Report a map error

ACIS Interfaces

Monthly Total Precipitation for Sterling-Dulles Airport Area, VA (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2000	2.50	1.92	3.35	4.36	2.57	4.02	4.28	5.92	4.20	0.06	1.57	2.06	36.81
2001	2.54	1.68	4.14	2.15	5.68	4.83	4.24	4.52	3.39	1.42	0.81	1.56	36.96
2002	1.22	0.46	3.48	3.45	4.73	3.61	2.64	2.91	2.84	5.04	4.13	3.61	38.12
2003	2.69	6.27	3.69	2.71	8.71	8.33	6.06	5.55	7.26	4.63	5.20	4.57	65.67
2004	1.41	1.93	2.05	5.04	3.06	3.73	3.72	3.79	5.80	1.04	4.11	3.01	38.69
2005	3.14	1.41	3.93	4.34	4.86	1.92	7.85	2.32	0.15	9.22	2.49	2.92	44.55
2006	2.39	2.38	0.07	4.86	1.80	11.79	2.45	1.24	7.12	4.82	5.31	1.74	45.97
2007	2.11	2.54	2.93	3.38	0.34	2.92	1.75	1.67	1.40	3.52	1.49	2.97	27.02
2008	1.26	2.67	2.47	6.22	9.38	4.21	2.18	2.48	7.18	1.31	2.01	2.61	43.98
2009	2.64	0.35	2.41	4.12	10.26	6.69	2.18	2.75	1.83	5.70	3.71	5.98	48.62
2010	2.01	4.63	3.36	1.29	5.42	1.29	4.17	4.42	6.16	2.38	2.50	1.47	39.10
2011	1.87	2.21	5.07	5.21	3.28	1.40	2.58	3.74	7.93	6.27	2.18	4.46	46.20
2012	1.85	2.24	1.52	1.82	5.38	1.79	2.43	3.02	2.71	8.88	1.12	2.87	35.63
2013	3.70	1.63	3.16	2.30	3.20	4.64	7.27	1.95	1.61	7.51	2.79	5.58	45.34
2014	2.69	3.81	4.10	7.41	M	M	M	M	M	M	M	M	M
Mean	2.27	2.41	3.05	3.91	4.91	4.37	3.84	3.31	4.26	4.41	2.82	3.24	42.33
Max	3.70 2013	6.27 2003	5.07 2011	7.41 2014	10.26 2009	11.79 2006	7.85 2005	5.92 2000	7.93 2011	9.22 2005	5.31 2006	5.98 2009	65.67 2003
Min	1.22 2002	0.35 2009	0.07 2006	1.29 2010	0.34 2007	1.29 2010	1.75 2007	1.24 2006	0.15 2005	0.06 2000	0.81 2001	1.47 2010	27.02 2007

ACIS Interfaces

2. Product »

- ☐ Daily data for a month
- ☐ Daily almanac
- ☒ Monthly summarized data
- ☐ Calendar day summaries
- ☐ Daily/monthly normals
- ☐ Climatology for a day
- ☐ First/last dates
- ☐ Temperature graphs
- ☐ Accumulation graphs

3. Options »

Year range: -

Variable:

Summary:

NOWData

- Simplified interface
- Target: General public

SC-ACIS

- Additional options
- Target: Advanced users

Options selection

Output:

Variable	Summary
Avg temp	Mean

Year range: -

Season Calculation Method: **i**

- ☒ Average of months
- ☐ Average of days

Additional options

Month range: -

☒ Set maximum missing values

Allowable missing days:

- ☐ Include date of occurrence
- ☐ Include missing days count
- ☐ Select years

ACIS Interfaces

- <http://nowdata.rcc-acis.org/btv>
- <http://scacis.rcc-acis.org>

ACIS Tabular Products

**Almanac for WASHINGTON DC DULLES AP, VA
May 8, 2013**

Daily Data	Observed	Normal	Record Highest	Record Lowest
Max Temperature	68	73	90 in 2000	54 in 2006
Min Temperature	53	49	66 in 2000	29 in 1974
Avg Temperature	60.5	60.8	78.0 in 2000	48.0 in 1997
Precipitation	0.48	0.13	1.46 in 2008	0.00 in 2007
Snowfall	0.0	0.0	0.0 in 2013	0.0 in 2013
Snow Depth	0	-	0 in 2013	0 in 2013
HDD (base 65)	4	6	17 in 1997	0 in 2010
CDD (base 65)	0	1	13 in 2000	0 in 2013
Month-to-Date Summary	Observed	Normal	Record Highest	Record Lowest
Avg Max Temperature	66.6	72.2	83.0 in 2010	62.4 in 1978
Avg Min Temperature	46.3	47.6	58.4 in 2012	37.3 in 1968
Avg Temperature	56.4	59.9	70.6 in 2010	52.8 in 1974
Total Precipitation	1.51	1.06	4.31 in 1989	T in 2001
Total Snowfall	0.0	0.0	T in 1998	0.0 in 2014
Max Snow Depth	0	-	0 in 2014	0 in 2014
Total HDD (base 65)	66	51	97 in 1974	0 in 2014
Total CDD (base 65)	0	8	48 in 2010	0 in 2013

**Maximum 2-Day Total Snowfall
for WASHINGTON DC DULLES AP, VA**

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	32.4	2010-02-06	0
2	23.2	1996-01-08	0
3	22.8	1983-02-11	0
4	22.5	1983-02-12	0
5	21.2	1996-01-07	0
6	20.1	2003-02-16	0
7	18.0	2009-12-19	0
8	17.5	2010-02-07	0
-	17.5	2003-02-17	0
10	16.3	1979-02-19	0

Period of record: 1962-11-17 to 2014-05-01

**Number of Consecutive Days Max Temperature $\geq$ 95
for WASHINGTON DC DULLES AP, VA**

Click column heading to sort ascending, click again to sort descending.

Rank	Run Length	Dates
1	8	1993-07-04 through 1993-07-11
2	6	2012-07-03 through 2012-07-08
-	6	1995-07-31 through 1995-08-05
-	6	1988-07-06 through 1988-07-11
-	6	1987-07-20 through 1987-07-25
6	5	2011-07-29 through 2011-08-02
-	5	2010-07-04 through 2010-07-08
-	5	2002-08-11 through 2002-08-15
-	5	2002-08-01 through 2002-08-05

Period of record: 1962-11-17 to 2014-05-01

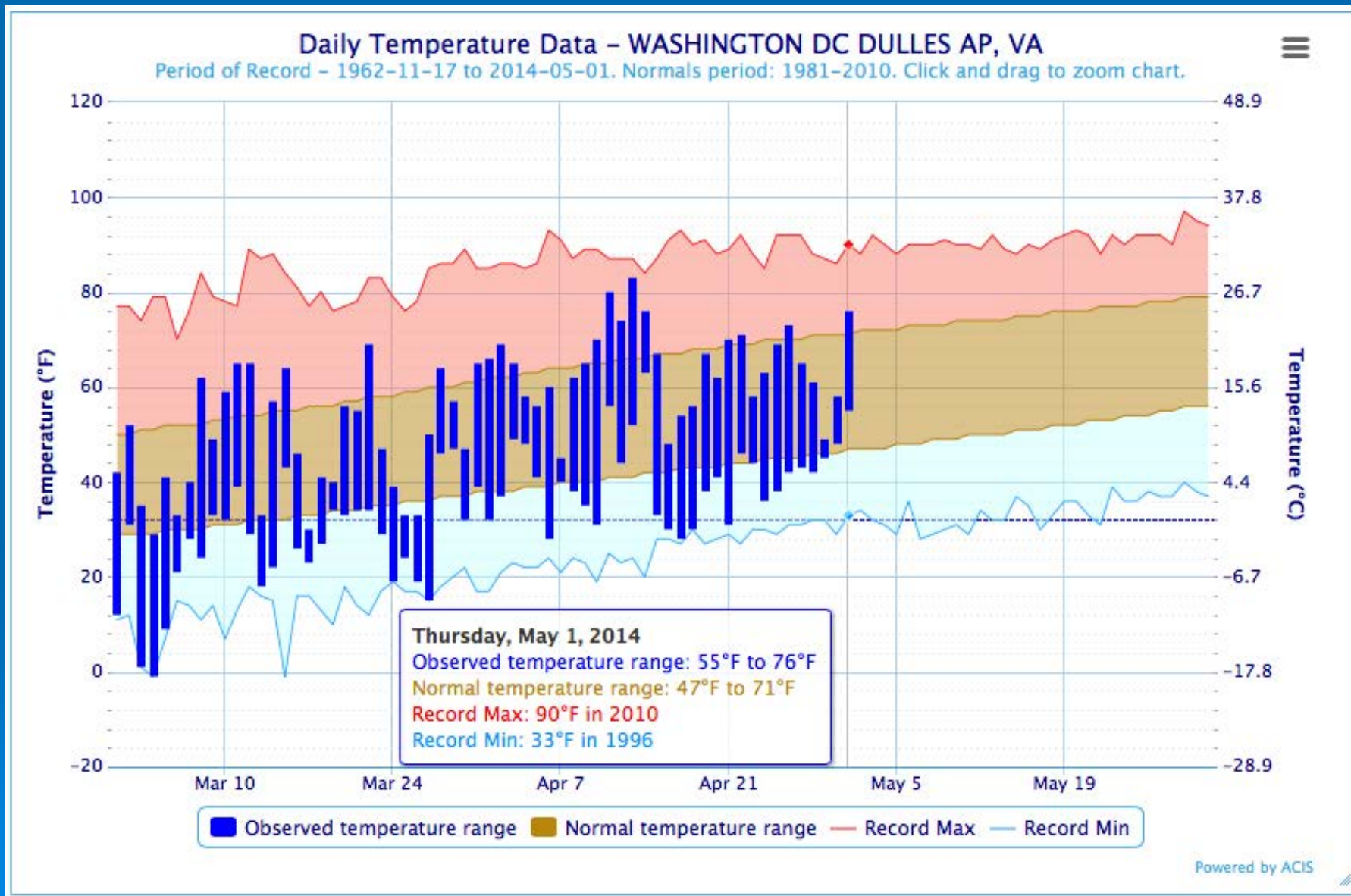
Frost/Freeze Summary for WASHINGTON DC DULLES AP, VA

Each column contains date and year of occurrence, value on that date.

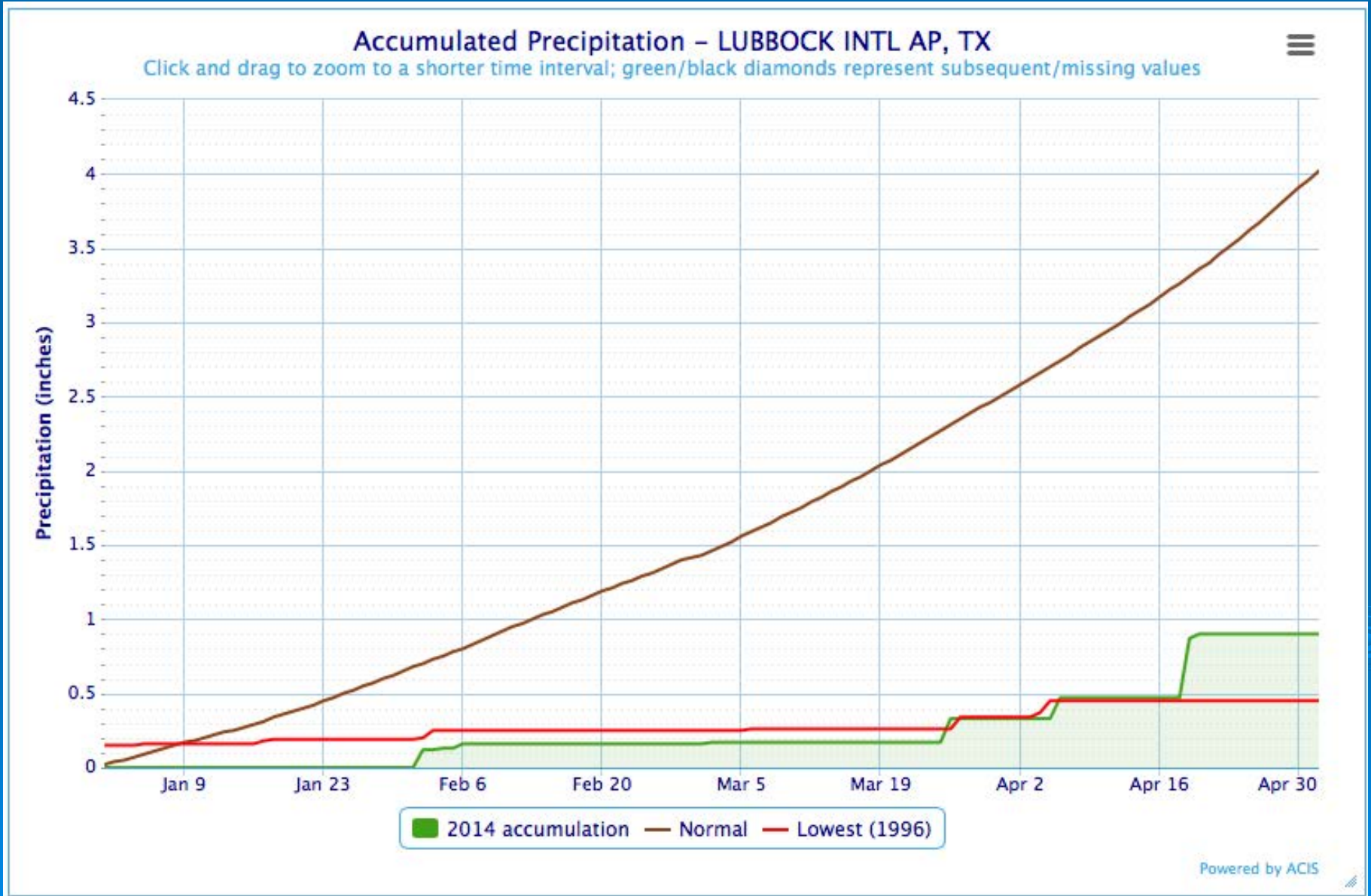
Click column heading to sort ascending, click again to sort descending.

Year	Last	Value	First	Value	Season Length
2006	04-10 (2006)	31	10-13 (2006)	31	185
2007	04-11 (2007)	28	10-29 (2007)	31	200
2008	04-16 (2008)	31	10-20 (2008)	29	186
2009	04-13 (2009)	32	11-04 (2009)	32	204
2010	04-18 (2010)	32	11-01 (2010)	32	196
2011	04-06 (2011)	30	10-30 (2011)	31	206
2012	04-25 (2012)	31	10-13 (2012)	30	170
2013	05-14 (2013)	32	10-25 (2013)	29	163
Minimum	04-06 (2011)		10-13 (2012)		163
Mean	04-18		10-24		189
Maximum	05-14 (2013)		11-04 (2009)		206

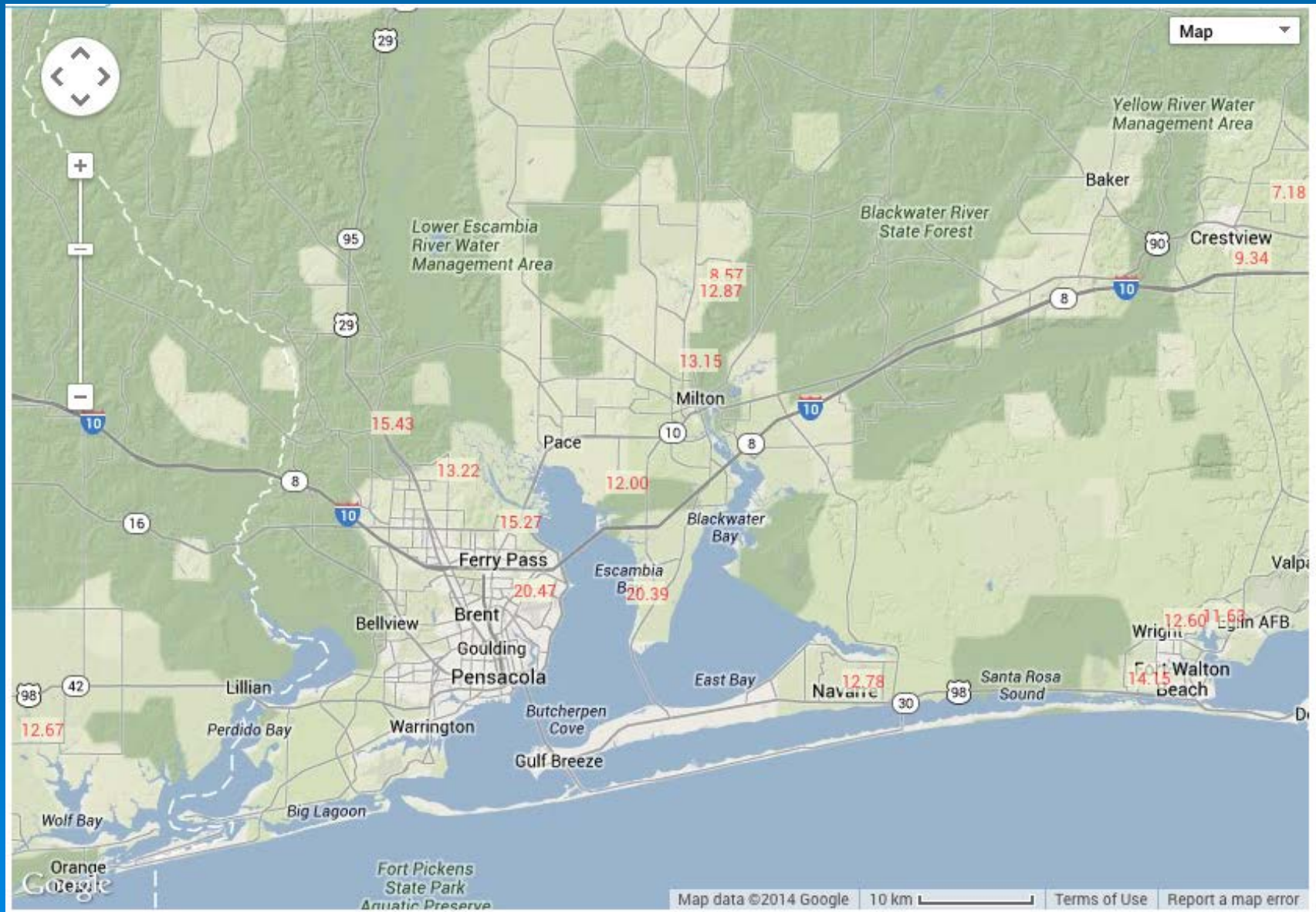
ACIS Graphical Products



ACIS Graphical Products



ACIS Station-Based Map Products



ACIS Web Services

- Single station data access
- Multi-station analyses
 - State, county, drainage basin, bounding box
- Gridded data
- Available from most programming languages
 - JavaScript, Python, Perl, PHP
- Documentation and examples
 - <http://www.rcc-acis.org>

ACIS Station Data Web Service

<http://data.rcc-acis.org/StnData?sid=KIAD&sdate=2010-02-04&edate=2010-02-08&elems=maxt,min,t,pcpn,snow,snwd>

Data for WASHINGTON DC DULLES AP, VA

Date	Max Temperature	Min Temperature	Precipitation	Snowfall	Snow Depth
2010-02-04	40	27	0.00	0.0	2
2010-02-05	35	30	1.47	14.9	1
2010-02-06	32	10	1.98	17.5	18
2010-02-07	31	7	0.00	0.0	21
2010-02-08	32	13	0.00	0.0	20

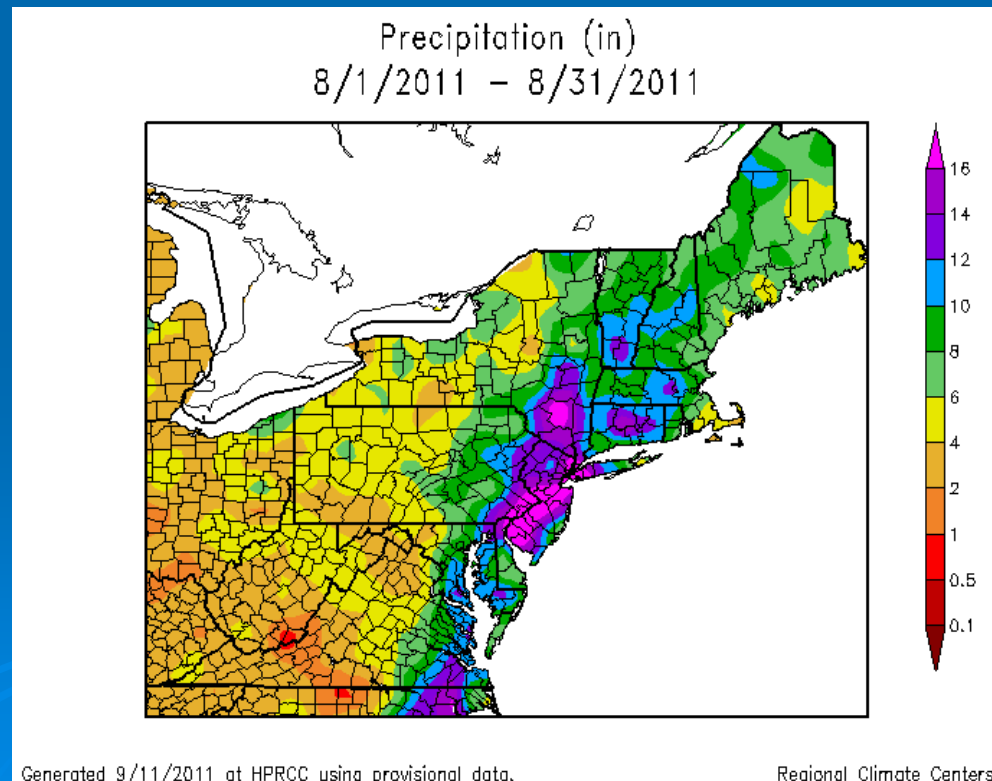


ACIS Grid Data Web Service

- County average precipitation

```
params={"grid":3, "state":"CT", "sdate":"2011-8", "edate":"2011-08",  
"elems":[{"name":"pcpn", "interval":"mly", "reduce":"sum", "area_reduce":"county_mean"}]}
```

```
"2011-08",{  
  "09015": 12.91,  
  "09007": 11.41,  
  "09005": 13.01,  
  "09011": 11.60,  
  "09003": 12.64,  
  "09013": 11.80,  
  "09001": 13.26,  
  "09009": 13.76  
}
```



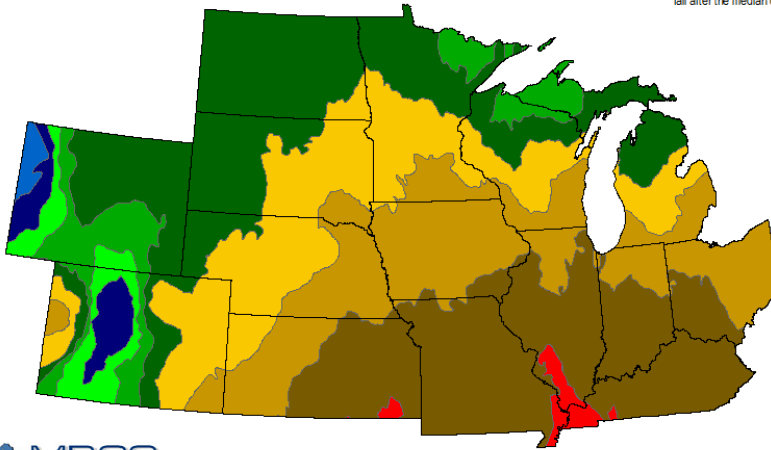
ACIS Station-Based Map Products

Spring Freeze

Median Date Of Last 28°F Freeze
Based on 1981-2010 Average

- Mar 10 or Earlier
- Mar 11 - 20
- Mar 21 - 31
- Apr 1 - 10
- Apr 11 - 20
- Apr 21 - 30
- May 1 - 10
- May 11 - 20
- May 21 - 31
- Jun 1 - 10
- Jun 11 - 20
- Jun 21 or Later

Median date is determined such that
half of all years fall before and half
fall after the median date.

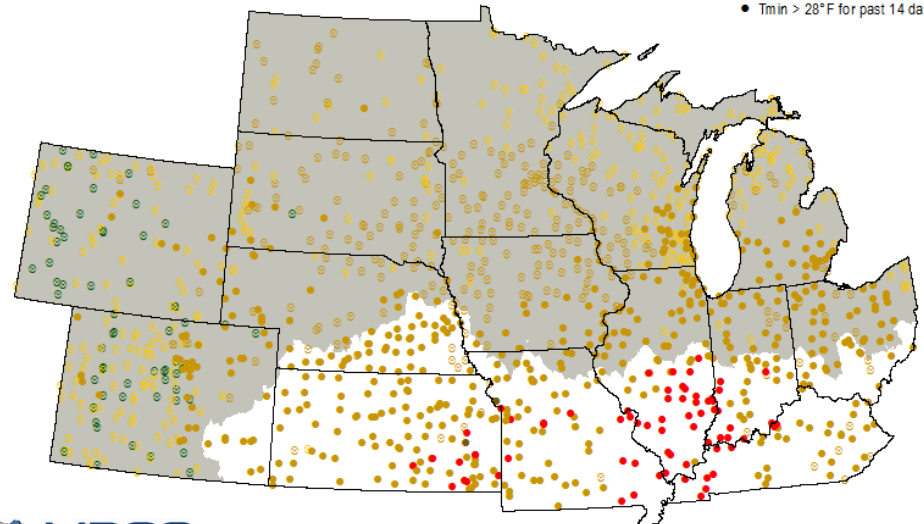


Date of Last 28°F Freeze through 5/1/2014

Shaded areas have accumulated less than 150
Growing Degree Days since Feb 1st (Base 50°F)

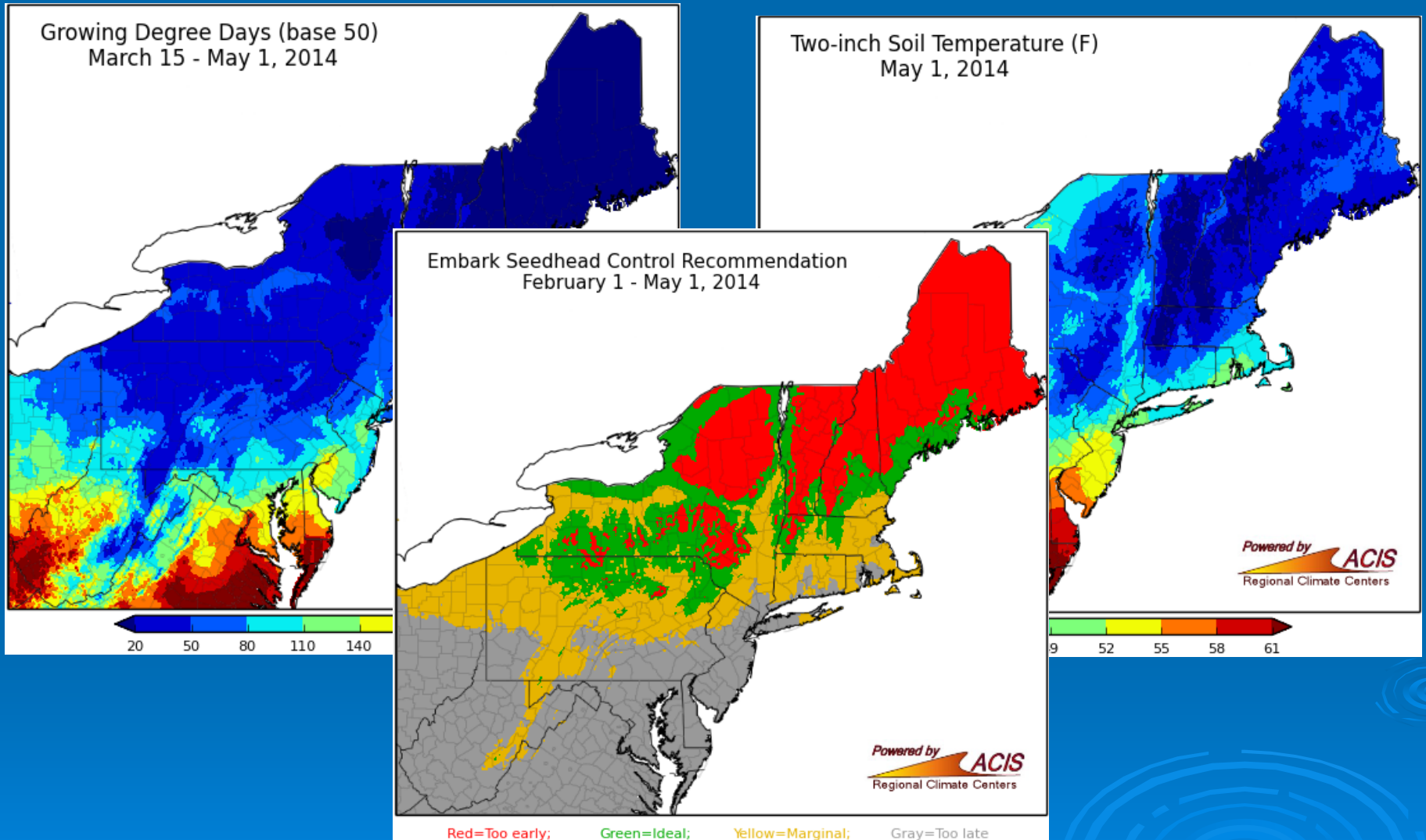
- Mar 10 or Earlier
- Mar 11 - 20
- Mar 21 - 31
- Apr 1 - 10
- Apr 11 - 20
- Apr 21 - 30
- May 1 - 10
- May 11 - 20
- May 21 - 31
- Jun 1 - 10
- Jun 11 - 20
- Jun 21 or Later

- T_{min} yet to reach 28°F
- T_{min} < 28°F within 14 days
- T_{min} > 28°F for past 14 days



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ACIS
Regional Climate Centers

ACIS Gridded Map Products

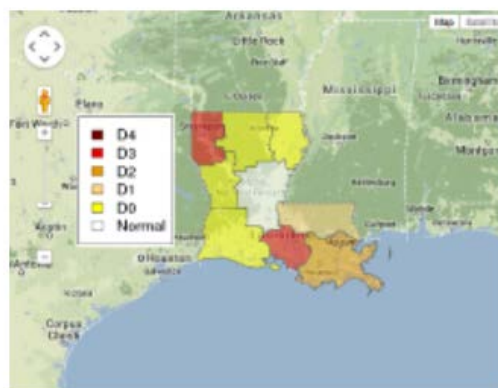


ACIS Partner Products



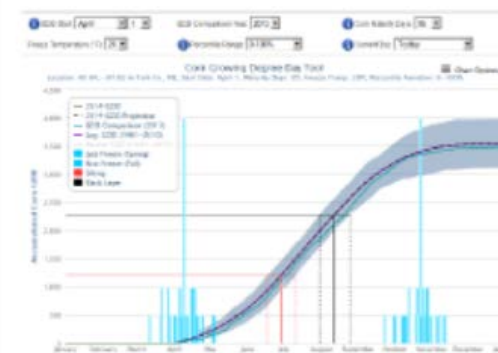
Drought Atlas

Led by the National Drought Mitigation Center, this atlas uses ACIS to provide historical drought information so that decision makers can assess their risk to drought.



Southern U.S. Drought Tool

Developed by the Southern Regional Climate Center for the SCIPP RISA, this tool displays the severity of drought along with the amount of precipitation needed to break it.



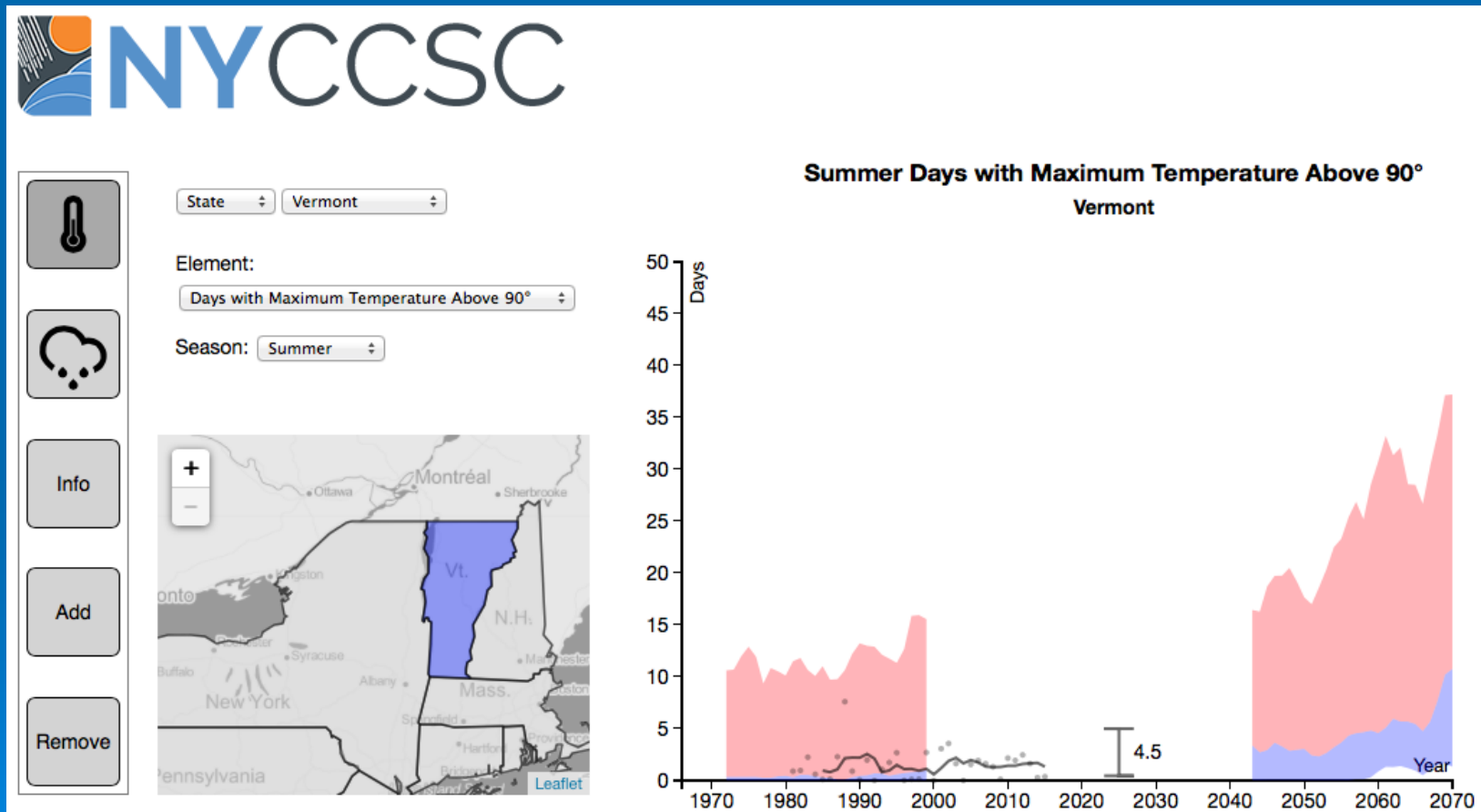
U2U Corn GDD Tool

Based off of gridded data available in ACIS-WS, this tool tracks real-time and historical growing degree day (GDD) accumulations and allows users to assess frost risk.

Visit <http://rcc-acis.org> for links and additional examples

Climate Change

NY State Climate Change Science Clearinghouse



Additional Information

- Web sites referenced:
 - <http://nowdata.rcc-acis.org/btv>
 - <http://scacis.rcc-acis.org>
 - <http://www.rcc-acis.org>

- Contact information
 - Keith.Eggleston@cornell.edu

- Northeast Regional Climate Center
 - nrcc@cornell.edu
 - <http://www.nrcc.cornell.edu>
 - Facebook and Twitter