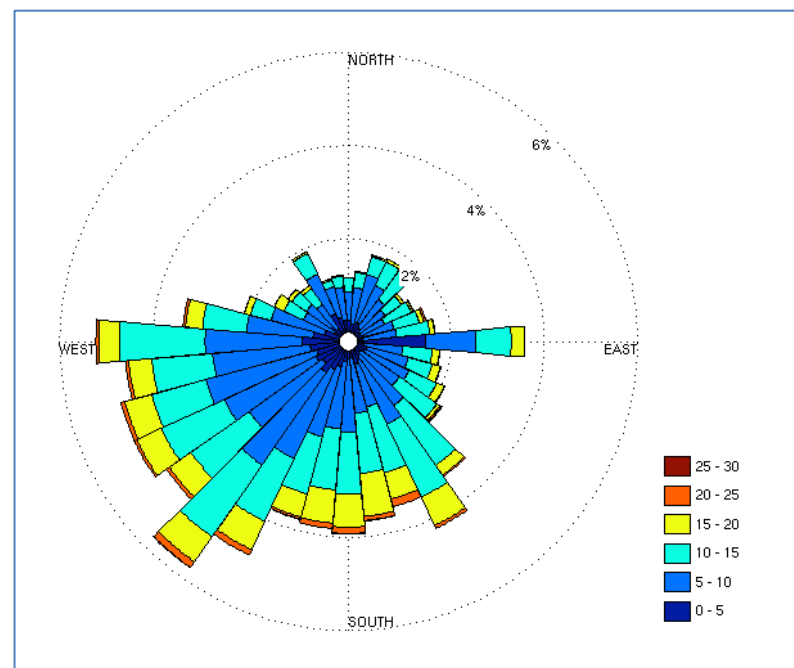


An Historical Hourly Climate Database and its Value-Added Resource Potential



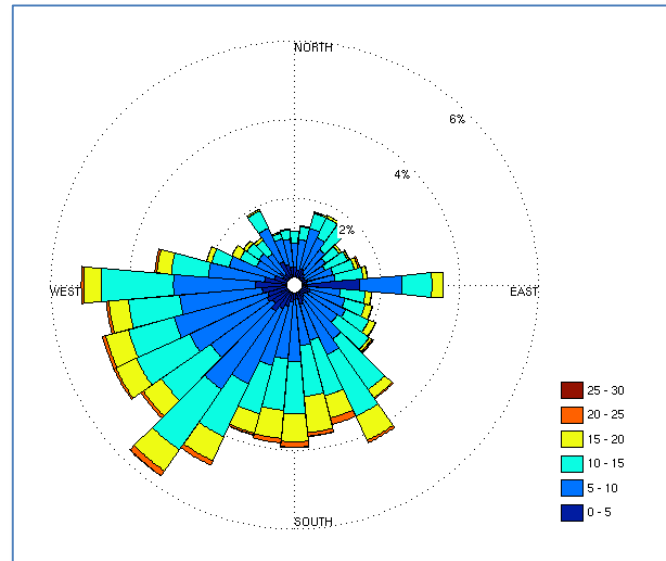
Beth L. Hall¹, Michael Timlin¹, Leslie Stoecker¹,
Greg McCurdy²,

¹Midwestern Regional Climate Center - U of Illinois,

²Western Regional Climate Center, Desert Research Institute,

Stakeholder Demand

- Atmospheric moisture climatology
 - *Dew point temperature*
 - *Relative humidity*
- *Winds*
 - *Speed*
 - *Direction*
 - *Gusts*
- *Derived*
 - *Wind chill*
 - *Heat Index*



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What Most RCCs have

- Existing hourly data at MRCC
 - *Climate Reference Network (CRN)*
 - *METAR*
 - *QCLCD*
- *Available in cli-MATE (MRCC Application Tools Environment)*
- *Stored on internal SQL database*

Motivation

The screenshot shows a web browser window with the URL `mrcc.isws.illinois.edu/CLIMATE/crn/choose_crn3.jsp`. The browser's address bar and bookmarks are visible at the top. The page layout includes a left sidebar with the 'cli-MATE' logo and a list of navigation links: Station Data, County Data, Climate Division Data, State Data, Maps of Data, Charts and Graphs, and Help. A personalized greeting 'Hi Michael!' with a 'Log out' link is also present. The main content area is titled 'CURRENT STATION INFORMATION:' and displays details for 'IL Champaign 9 SW', including its location, WBAN, coordinates, and elevation. To the right of this information is the MRCC logo and a 'Privacy Policy' link. Below the station information, a dark blue header bar reads 'CLIMATE REFERENCE NETWORK (CRN) DATA' with links to 'CHANGE STATE' and 'CHANGE STATION'. The main section is titled 'Select a Product and Date Range:' and provides a date range from 2002-12-20 to 2016-03-20. It features three data selection options: 'Daily Summary' (year: 2016, count: 3), 'Monthly Summary' (year: 2016), and 'Total Monthly Precipitation for all Years'. Each option has a 'Go' button. At the bottom of the main section, there is a link to the NOAA Climate Reference Network website. The footer of the page contains a copyright notice for 2000-2016.

cli-MATE: MRCC Application

mrcc.isws.illinois.edu/CLIMATE/crn/choose_crn3.jsp

Apps Positive Time Report AVSL login TEM SC ACIS2 Datzilla Main Page NWS EDD Index of /pub/data/pr Index of /pub/data/cir ESRL: nclimdiv comp ACIS QC Other bookmarks

cli-MATE
MRCC APPLICATION
TOOLS ENVIRONMENT

Hi Michael!
Log out

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Privacy Policy

Select Hourly Station

CLIMATE REFERENCE NETWORK (CRN) DATA
[CHANGE STATE] [CHANGE STATION]

Select a Product and Date Range:
Data ranges from 2002-12-20 to 2016-03-20

Daily Summary: 2016 3 Go

Monthly Summary: 2016 Go

Total Monthly Precipitation for all Years: Go

Raw Hourly Data: 2016 3 Go

For more information on CRN data, please see the NOAA Climate Reference Network website.

Send Feedback

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Motivation

cli-MATE: MRCC Application

mrcc.isws.illinois.edu/CLIMATE/crm/Raw_Data.jsp

Apps Positive Time Report AVSL login TEM SC ACIS2 Datzilla Main Page NWS EDD Index of /pub/data/pr Index of /pub/data/ci ESRL : nclimdiv comp ACIS QC Other bookmarks

MRCC APPLICATION
TOOLS ENVIRONMENT

Hi Michael!
Log out

Data Selector

Send Feedback

CURRENT STATION INFORMATION:
 Station Name: IL Champaign 9 SW
 Location Name: Univ. of Illinois (Bondville Environ. & Atmos. Resrch. Stn.)
 Location: Champaign, IL
 Station WBAN: 54808
 Coordinates: 40.053, -88.373
 Elevation: 700' GMT Offset: -6

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[Privacy Policy](#)

CLIMATE REFERENCE NETWORK (CRN) DATA - RAW HOURLY DATA
[\[CHANGE STATE \]](#) [\[CHANGE STATION \]](#) [\[CHANGE PRODUCT \]](#)

Raw Hourly Data for station #54808, IL Champaign 9 SW in Champaign, IL
Dates: 03/2016

WBAN NO	OBS DATE - UTC	OBS TIME - UTC	OBS DATE - LST	OBS TIME - LST	TEMP °C 5-MIN CALCULATED	TEMP °C HRLY AVG	MAX TEMP °C	MIN TEMP °C	PRECIP mm CALCULATED	SOLAR RAD W/m^2
54808	2016-03-01	00:06:00	2016-03-01	00:00:00	5.1	4.2	5.1	3.3	0.0	0.0
54808	2016-03-01	00:07:00	2016-03-01	00:01:00	4.3	4.3	5.2	3.9	0.0	0.0
54808	2016-03-01	00:08:00	2016-03-01	00:02:00	5.2	4.5	5.4	3.7	0.0	0.0
54808	2016-03-01	00:09:00	2016-03-01	00:03:00	4.2	4.8	5.3	4.2	0.0	0.0
54808	2016-03-01	00:10:00	2016-03-01	00:04:00	4.1	4.2	4.5	3.9	0.0	0.0
54808	2016-03-01	00:11:00	2016-03-01	00:05:00	4.1	3.8	4.2	3.5	0.0	0.0
54808	2016-03-01	00:12:00	2016-03-01	00:06:00	3.9	3.9	4.1	3.8	0.0	0.0
54808	2016-03-01	00:13:00	2016-03-01	00:07:00	5.0	4.3	5.1	3.9	0.0	3.0
54808	2016-03-01	00:14:00	2016-03-01	00:08:00	6.6	5.9	6.6	5.0	0.0	42.0
54808	2016-03-01	00:15:00	2016-03-01	00:09:00	7.9	7.4	7.9	6.7	0.0	85.0
54808	2016-03-01	00:16:00	2016-03-01	00:10:00	9.2	8.5	9.2	7.9	0.0	76.0
54808	2016-03-01	00:16:00	2016-03-01	00:10:00	9.2	8.5	9.2	7.9	0.0	76.0
54808	2016-03-01	00:17:00	2016-03-01	00:11:00	2.9	6.1	9.5	2.9	0.0	94.0
54808	2016-03-01	00:18:00	2016-03-01	00:12:00	0.6	1.5	2.9	0.6	0.0	58.0
54808	2016-03-01	00:19:00	2016-03-01	00:13:00	-0.1	0.1	0.6	-0.1	0.0	58.0
54808	2016-03-01	00:20:00	2016-03-01	00:14:00	-0.8	-0.5	-0.1	-0.8	0.0	100.0
54808	2016-03-01	00:21:00	2016-03-01	00:15:00	-1.9	-1.6	-0.8	-2.0	0.0	93.0

crn-out1.html

Show all downloads...



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- Internal (MRCC) storage inconsistencies across RCCs
- Clunky for custom tool development
- Complicated metadata
 - *Sub-hourly*
 - *Changing over time (e.g., winds, moisture)*
- Proprietary datasets

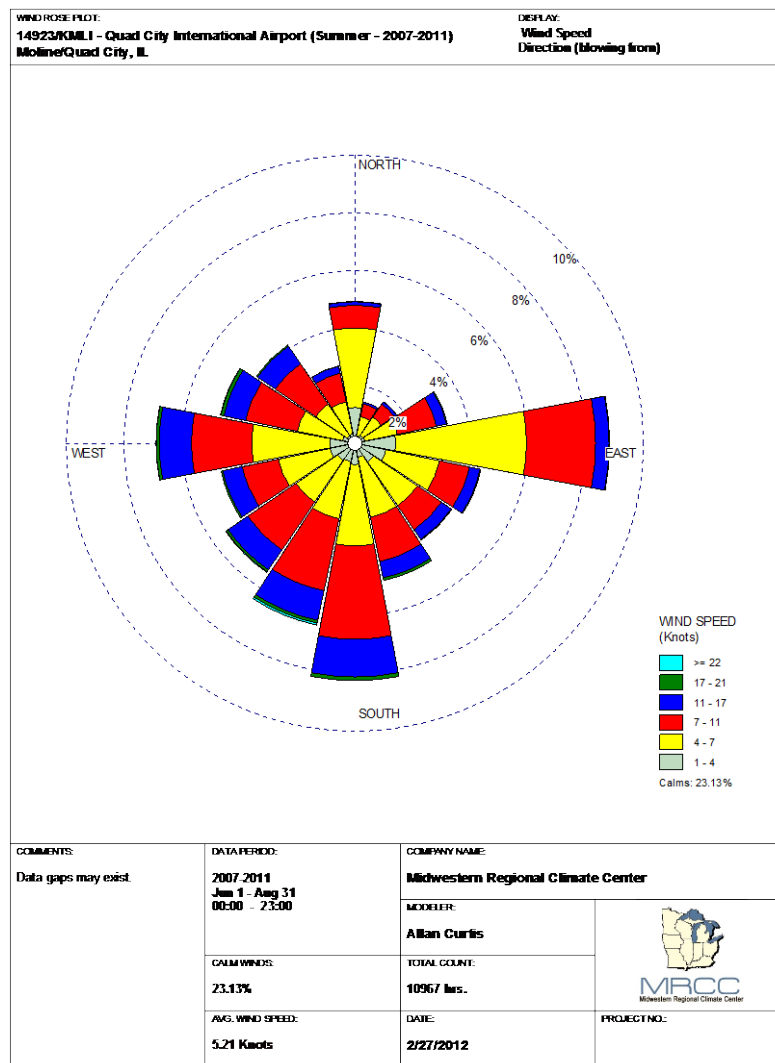
- Existing hourly at WRCC
 - *Missing data for recent years***
 - *Organized by data networks*
 - *Federal*
 - *State*
 - *Local*
 - *Research*
 - *Proprietary*
 - *Password protection option*
 - *Multiple value-added tools developed*
 - *Simple design*
- Plan to integrate web service calls
- Solution: MRCC & WRCC team up = synched hourly database with WS potential

Progress so far...

- MRCC backfilled missing hourly data
- Servers set up at MRCC & WRCC to synchronize data
- Data lister developed to access historical data from database
 - *Password protection setup for proprietary datasets*

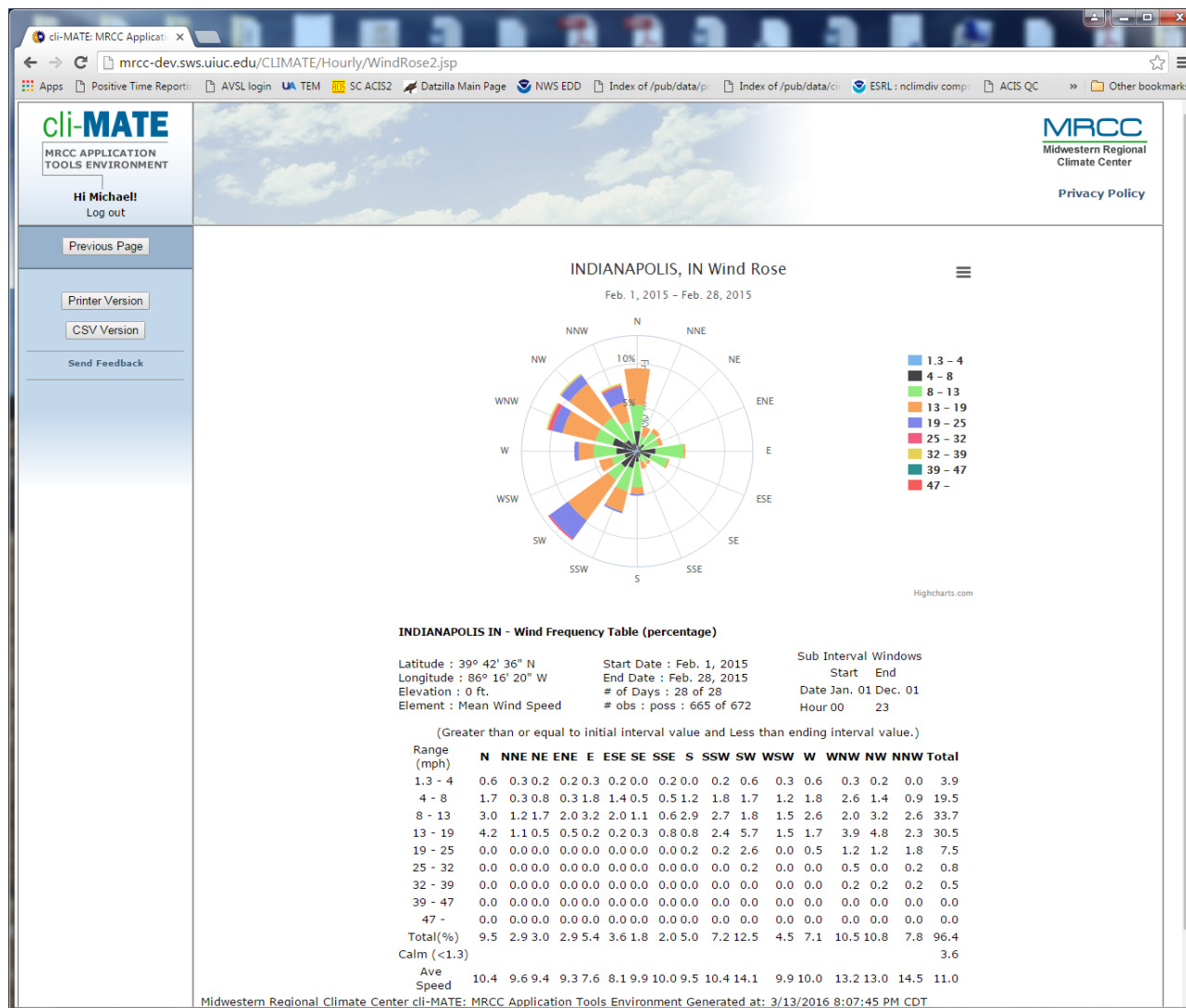
- Wind rose interface
- Advancement to the MRCC ReMAPP (Regional Mesoscale Application Partners Project) and MMC (Midwest Mesonet Consortium) online program
- Integration with MRCC VIP hourly products (duration of freeze events; chilling hours)

By Fall 2016



WRPLOT View - Lakes Environmental Software

By Fall 2016



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By Fall 2016

The screenshot shows a web browser window with the URL www.wrcc.dri.edu/cgi-bin/rawMAIN.pl?lakbtv. The page title is "BURLINGTON VT". On the left, there is a sidebar with a "Back to: Home Page" button and a "NOTE:" section. Below the note is a list of links: [Daily Summary](#), [Daily Summary \(with Wind Chill and Heat Index\)](#), [Daily Summary Time Series](#), [Monthly Summary](#), [Monthly Summary \(w/ Et data\)](#), [Monthly Summary Time Series](#), [Graph of last 7 days](#), [Time Series Graph](#), [Wind Rose Graph and Tables](#), [Wind Stability/Wind Rose Graph and Tables](#), [Frequency Distribution/Histogram](#), [Data Lister](#), [Data Inventory \(Monthly Graphic\)](#), [Station Metadata and Photos](#), [Current 7-day forecast \(NWS\) \(May not work correctly for some Central and Southern U.S. states.\)](#), [Climate Summary Info](#), and [Wind Rose Climatology](#). At the bottom of the sidebar, it says "Western Regional Climate Center; wrcc@dri.edu". The main content area displays a table of data for each month from 1986 to 2012. The months are listed in a single row for each year, and the years are listed in a single column. The text "BOLD, Red indicates some data available for month and year." is at the top of the table. The table shows that data is available for all months from 1986 to 2012, with the text "BOLD, Red" indicating that some data is available for the month and year.

Back to:
[Home Page](#)

NOTE:
To print data frame (right side), click on right frame before printing.

- [Daily Summary](#)
- [Daily Summary \(with Wind Chill and Heat Index\)](#)
- [Daily Summary Time Series](#)
- [Monthly Summary](#)
- [Monthly Summary \(w/ Et data\)](#)
- [Monthly Summary Time Series](#)
- [Graph of last 7 days](#)
- [Time Series Graph](#)
- [Wind Rose Graph and Tables](#)
- [Wind Stability/Wind Rose Graph and Tables](#)
- [Frequency Distribution/Histogram](#)
- [Data Lister](#)
- [Data Inventory \(Monthly Graphic\)](#)
- [Station Metadata and Photos](#)
- [Current 7-day forecast \(NWS\) \(May not work correctly for some Central and Southern U.S. states.\)](#)
- [Climate Summary Info](#)
- [Wind Rose Climatology](#)

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wrcc@dri.edu

crn-out1.html

Show all downloads...

BURLINGTON VT

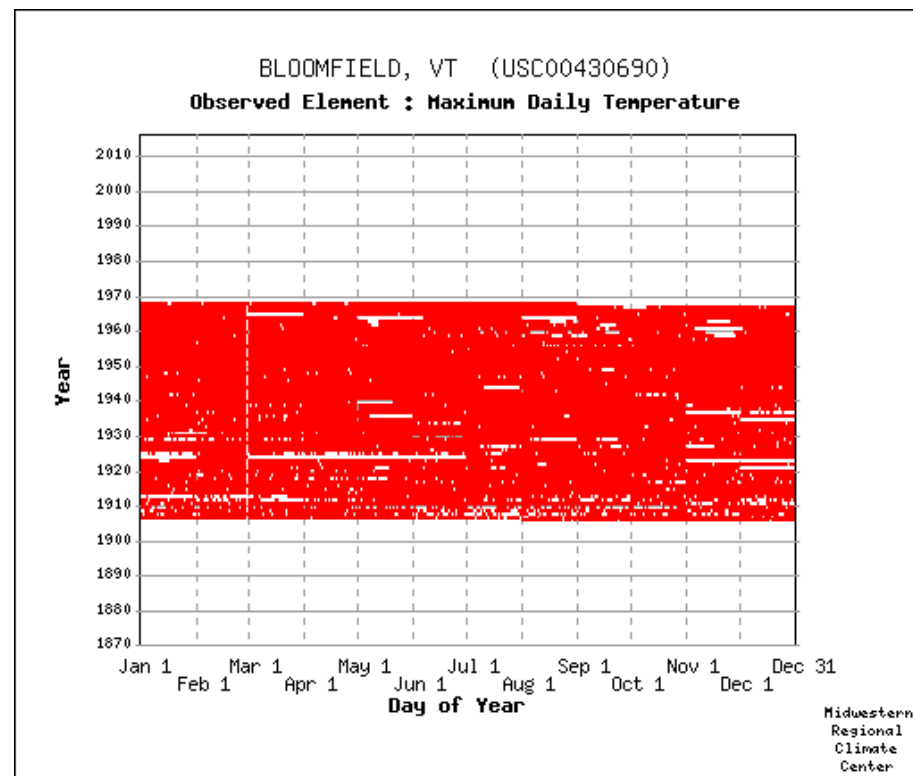
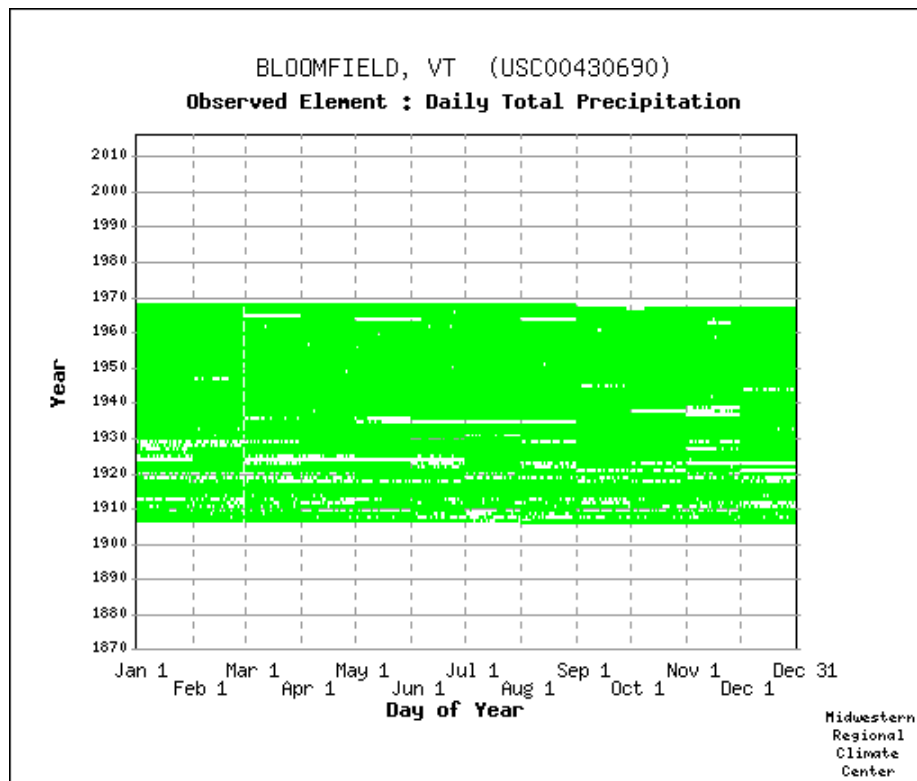
BOLD, Red indicates some data available for month and year.

2012	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2004	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2001	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1994	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1993	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1992	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1991	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1990	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1989	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1988	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1987	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec



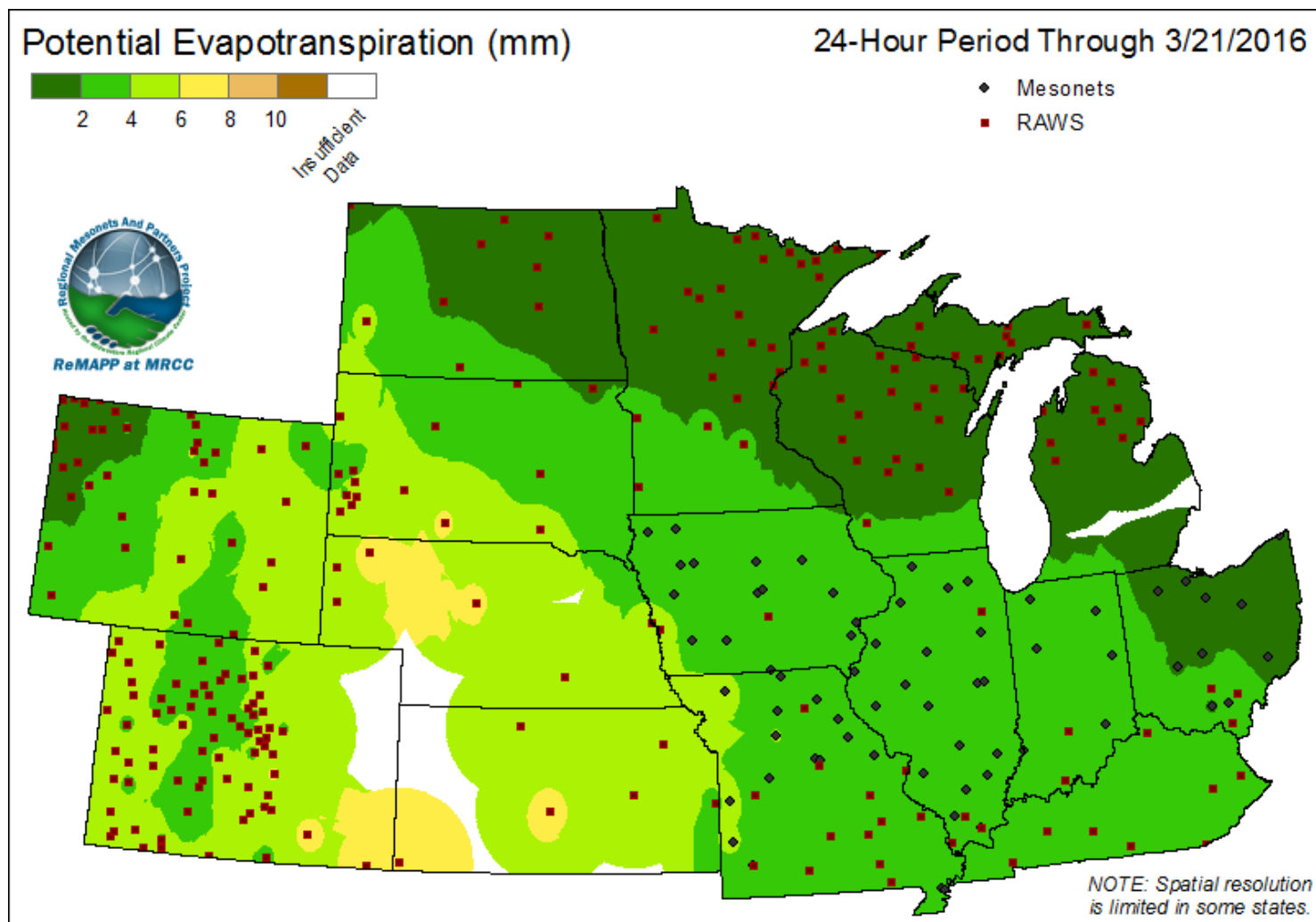
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By Fall 2016

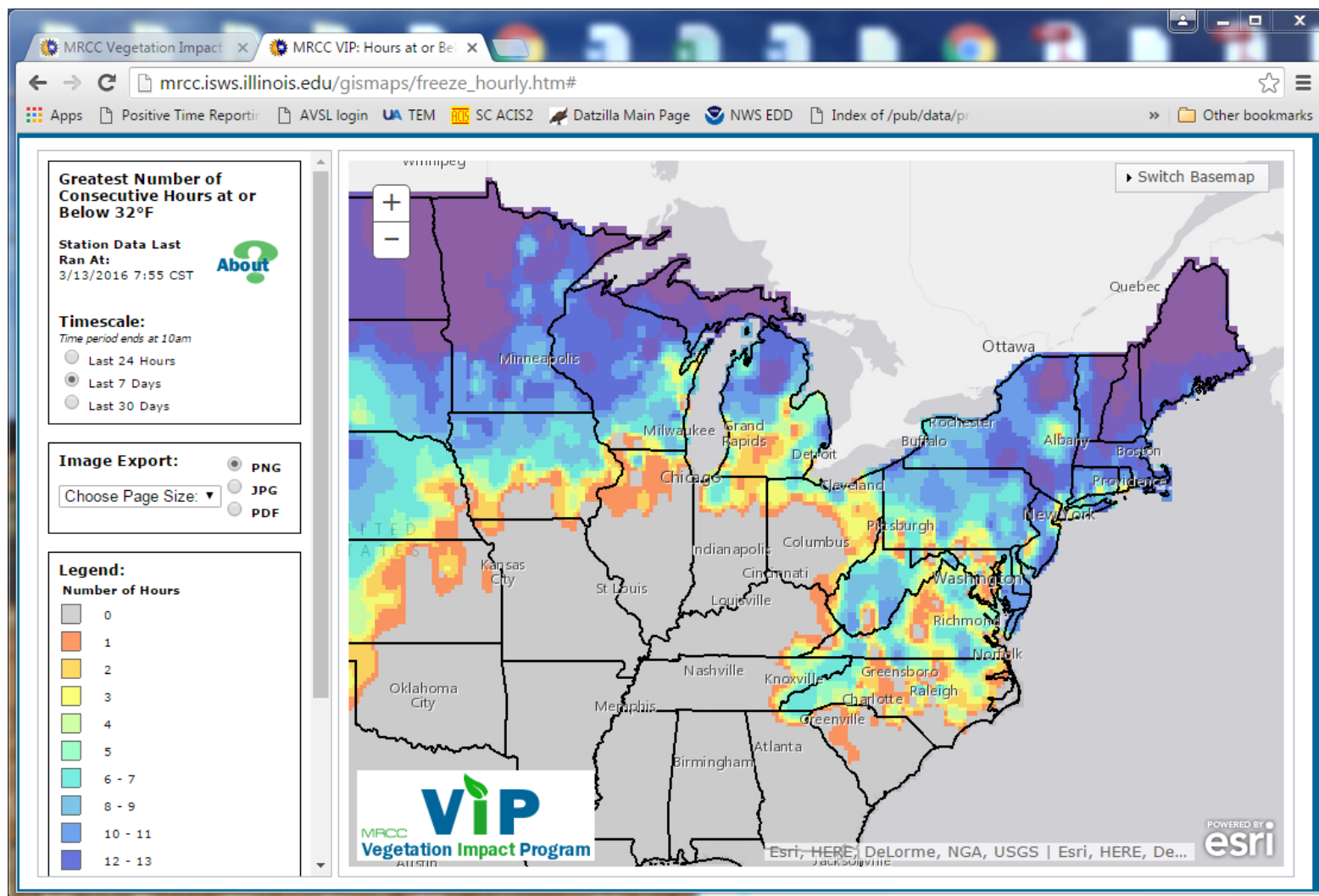


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By Fall 2016



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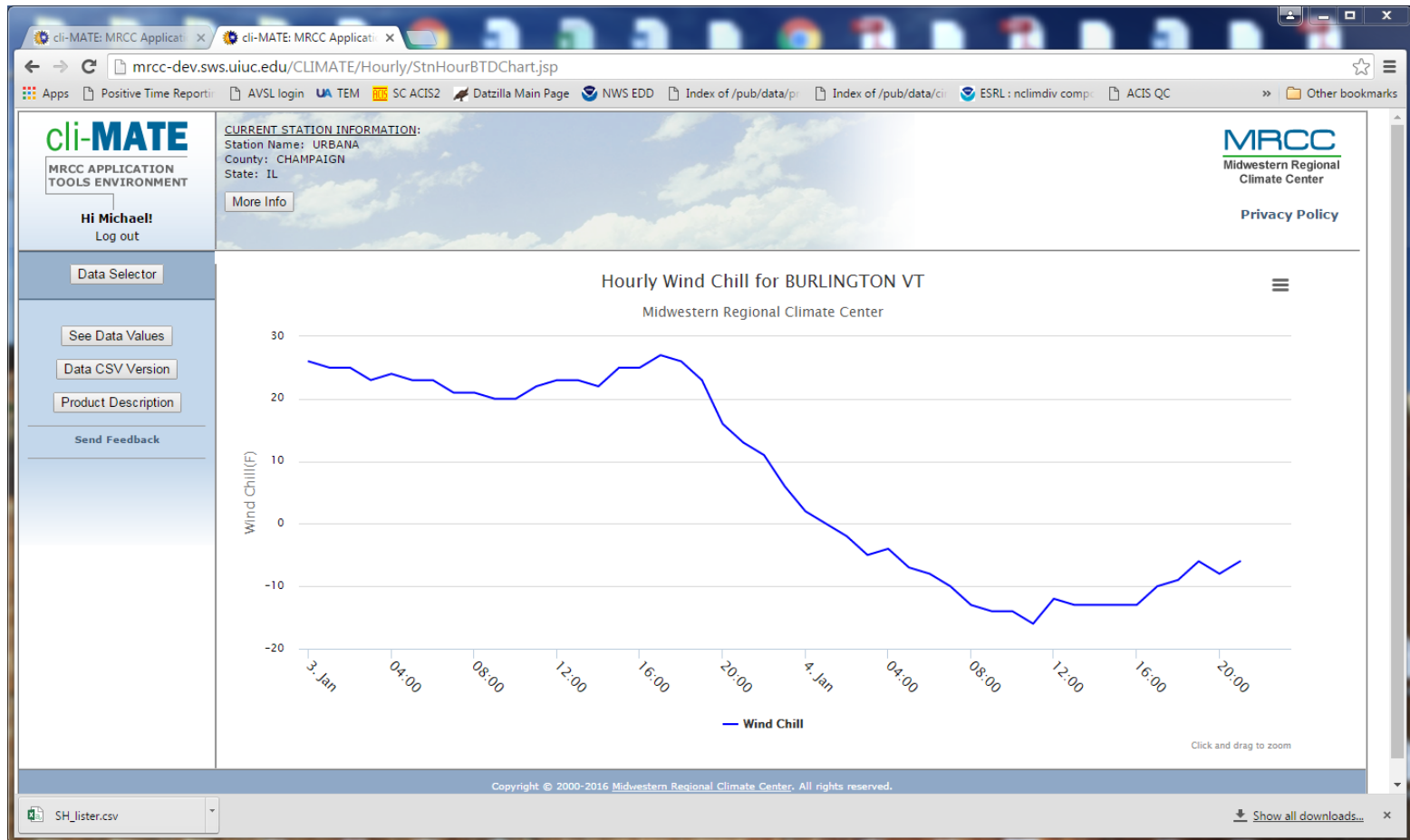


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Over next 1-2 years

- Climatology interfaces
 - *Dew point*
 - *Heat index*
 - *Wind chill*
 - *Wind roses*
- Time series, graphing
- Custom mapping

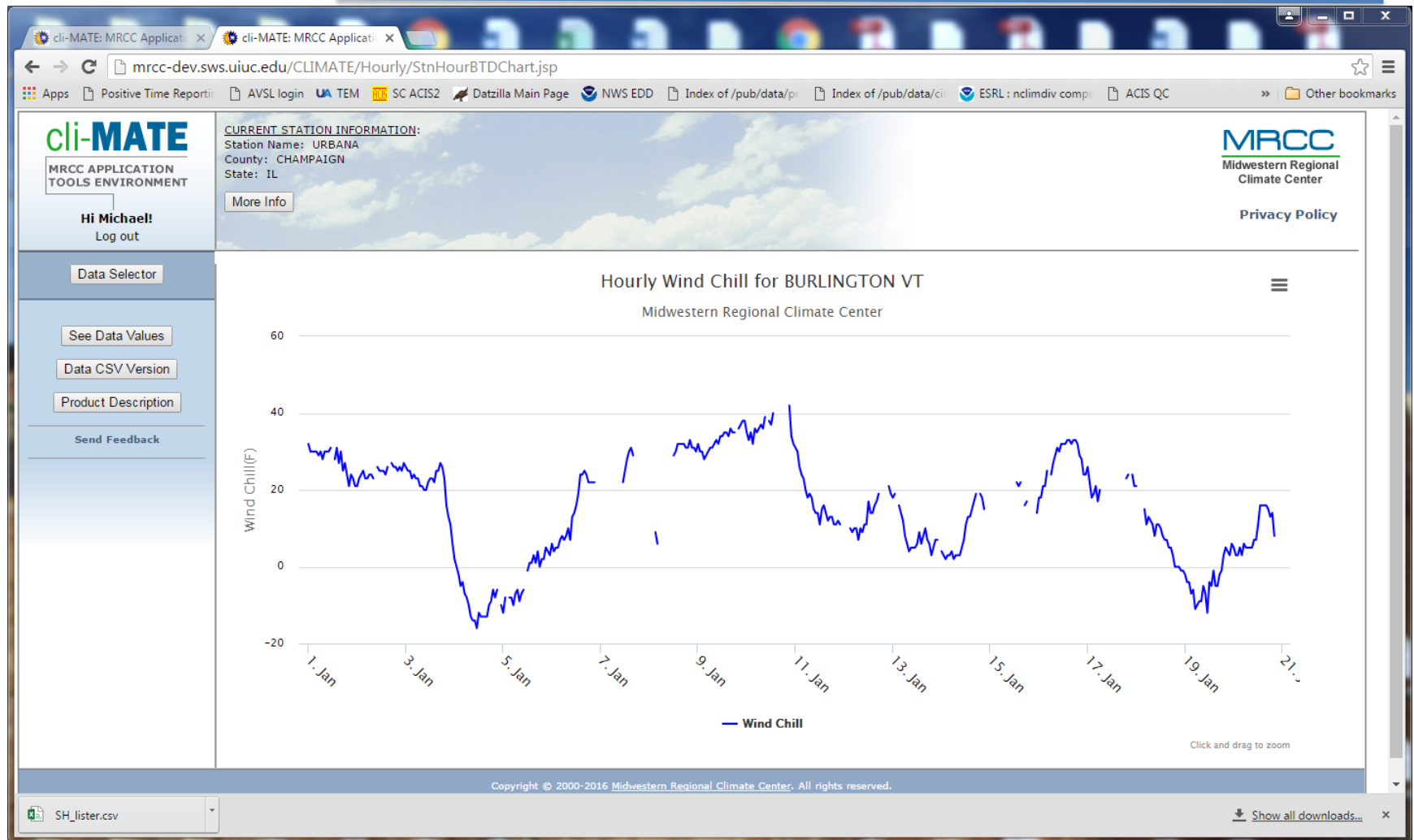
Over next 1-2 years



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Over next 1-2 years



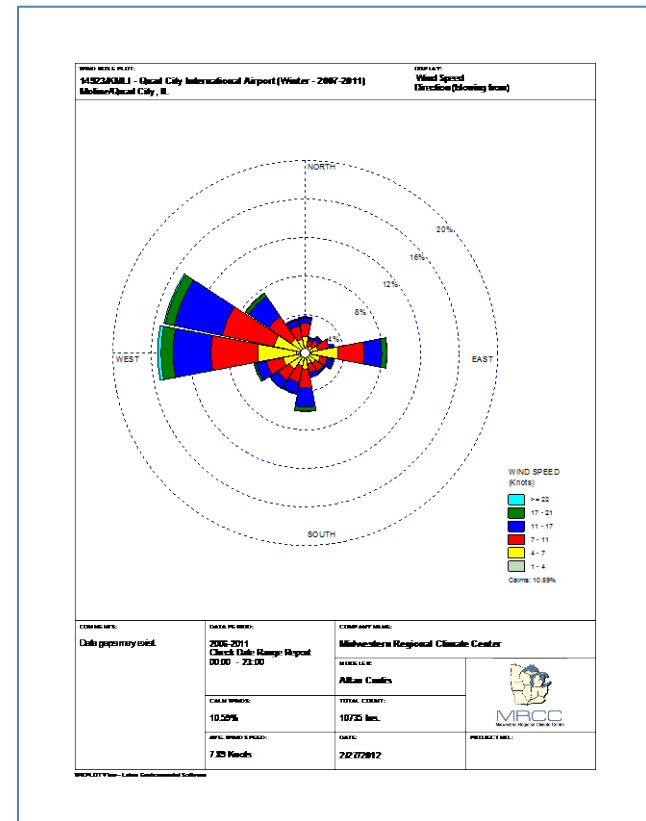
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- *More value-added tools dependent upon hourly data*
- *Synchronized network of databases*
- *Better access for hourly data via RCCs, Web Services*

Through RCC Partnerships ..

- *It can happen!*



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