

PRECIP.NET

Extreme Precipitation in New York & New England *An Interactive Web Tool for Extreme Precipitation Analysis*

About this Project

Data & Products

Daily Monitoring

Documentation

Select Product ?

Extreme Precipitation
Tables - HTML ?

Extreme Precipitation
Tables - Text/CSV ?

Partial Duration Series -
by Point ?

Partial Duration Series -
by Station ?

Distribution Curves -
Graphical ?

Distribution Curves -
Text/TBL ?

Intensity Frequency
Duration Graphs ?

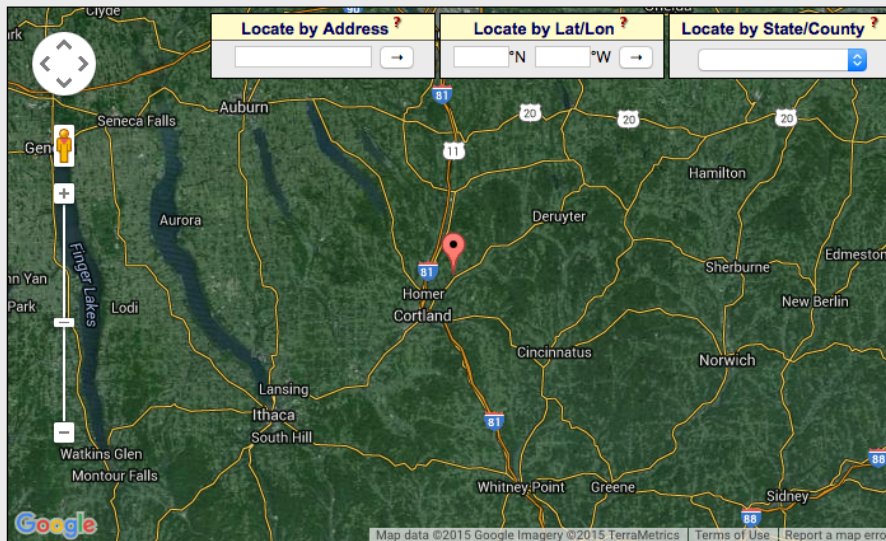
Precipitation Frequency
Duration Graphs ?

GIS Data Files ?

Regional/State Maps ?

Select Location ?

Double-click the map to place a marker, or enter address or latitude/longitude.



Select Options ?

Smoothing ?

Yes

Delivery ?

Popup

Submit

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This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC)



Natural Resources Conservation Service (NRCS)



Contact: precip@cornell.edu

Art DeGaetano

Northeast Regional
Climate Center

Dept. Earth and
Atmospheric Science,
Cornell University

Project History

- USDA NRCS funded project for updated New York New England extreme precipitation atlas
- Match the products and output of NOAA Atlas 14 for NRCS compatibility.
- Add additional products to supplement NRCS hydrologic design.
- Produce automated real-time monitoring tools.

Data

- 2,070 Coop Stations
- 649 daily stations in eastern Canada.
- Start of record to end of 2008
- At least 20 year and <25% of data record missing
- Available NOAA hourly and sub-hourly datasets

AUTOMATIC NRCC QC Process

Data is pre-screened by NOAA and climate center staff each month, and flagged if suspect, erroneous, or an accumulated value.

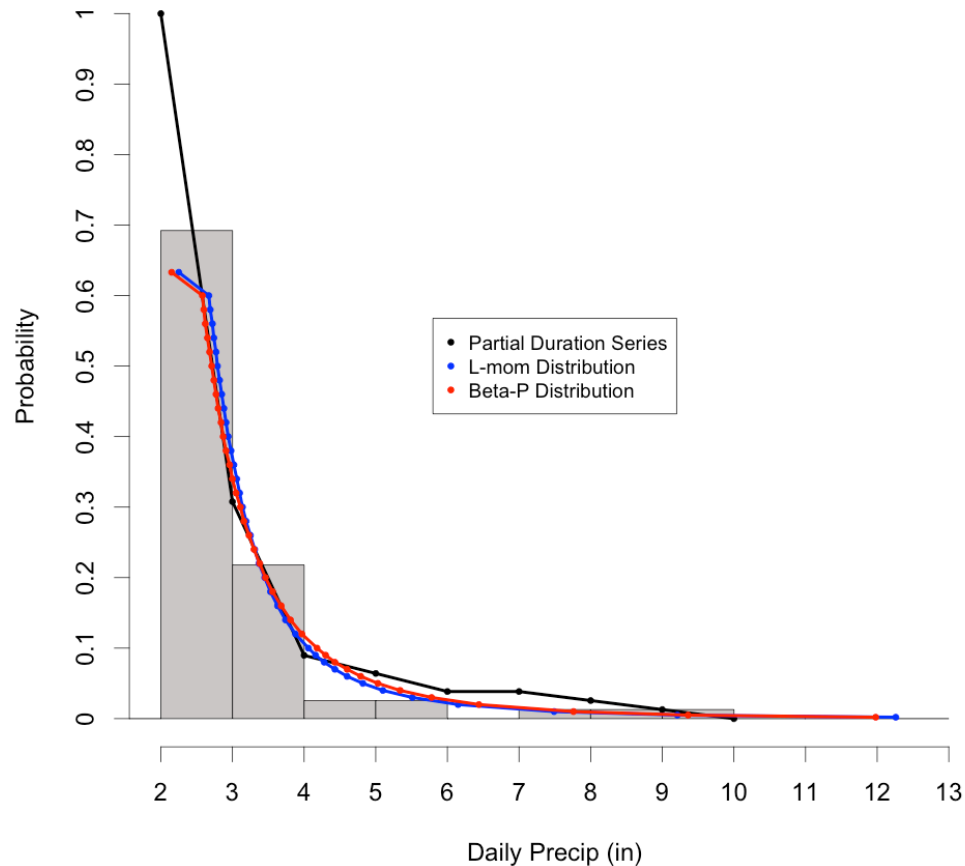
Unusually high daily data values are checked against nearby stations. If a daily rainfall value exceeds 10", at least two nearby stations (within 200 miles) must also have reported amounts of at least 5". If a daily rainfall value exceeds 5", at least two nearby stations must also have reported amounts of at least 3".

Hourly precipitation data are checked against corresponding daily data. For each hour's data, at least one nearby station must have recorded a higher daily total rainfall amount.

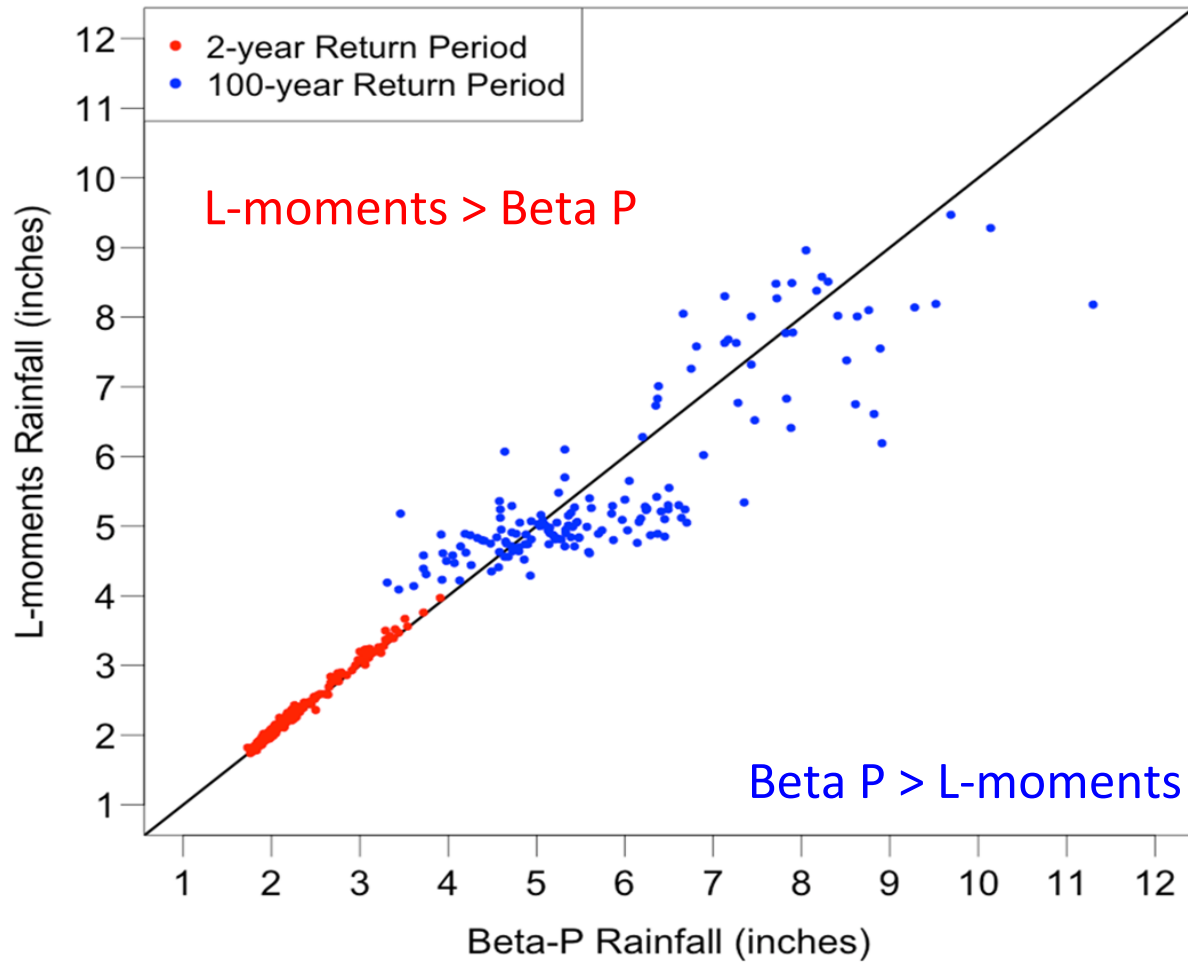
After the distribution is run for the entire Northeast, stations outside more than 2 standard deviations than the mean of all stations are removed.

PDS Series and Beta P Distribution Fit

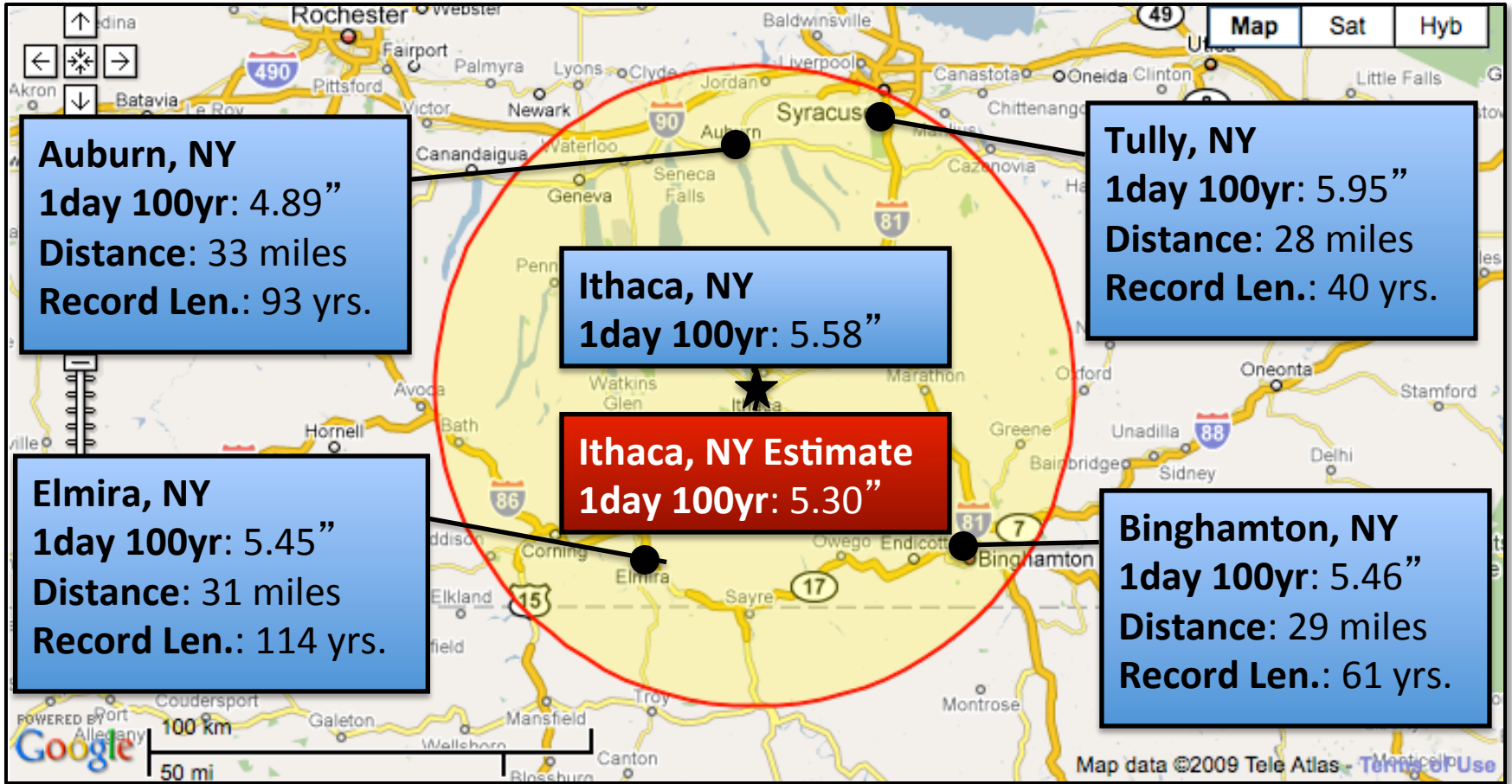
**Partial Duration Series Density &
Probability of Daily Precip > X (N=78)**
WEST OTIS, MA (199371)



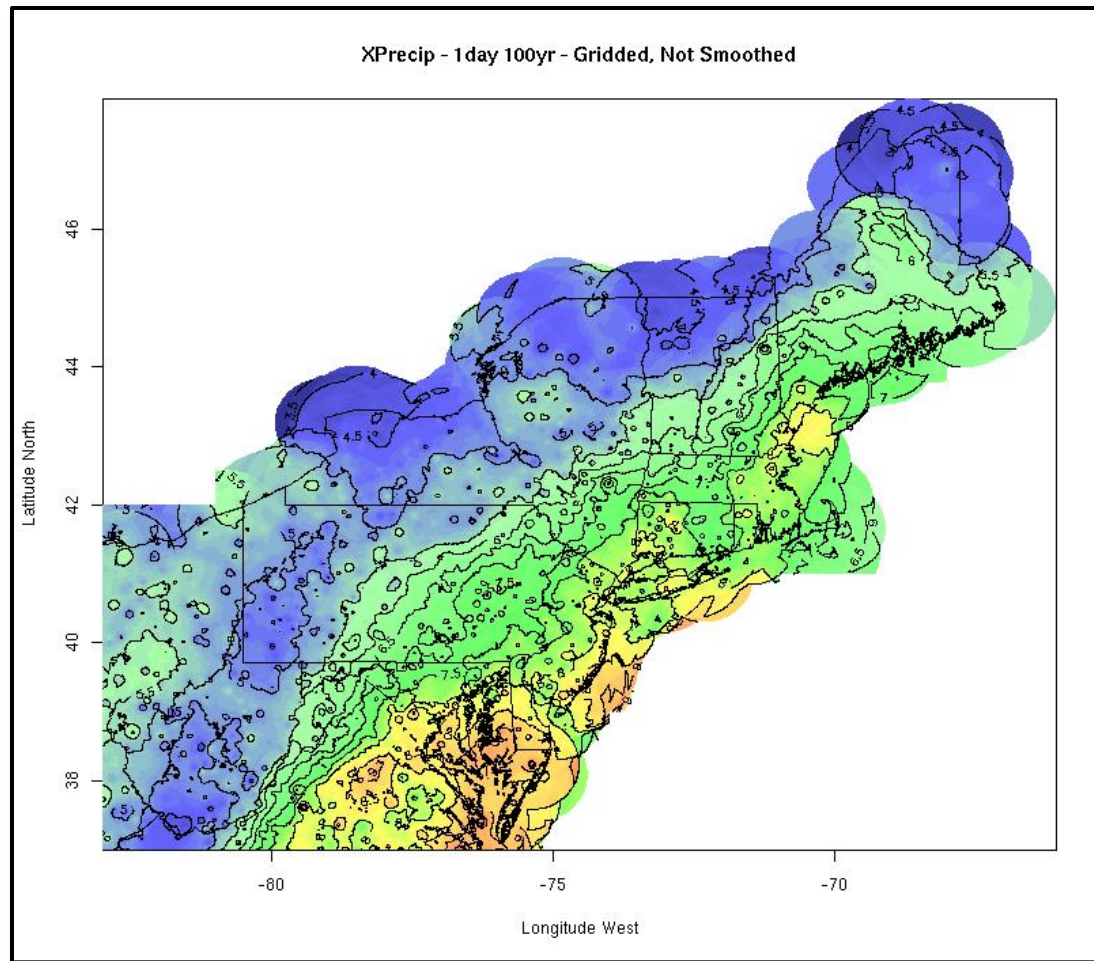
Beta-P vs. L-moments



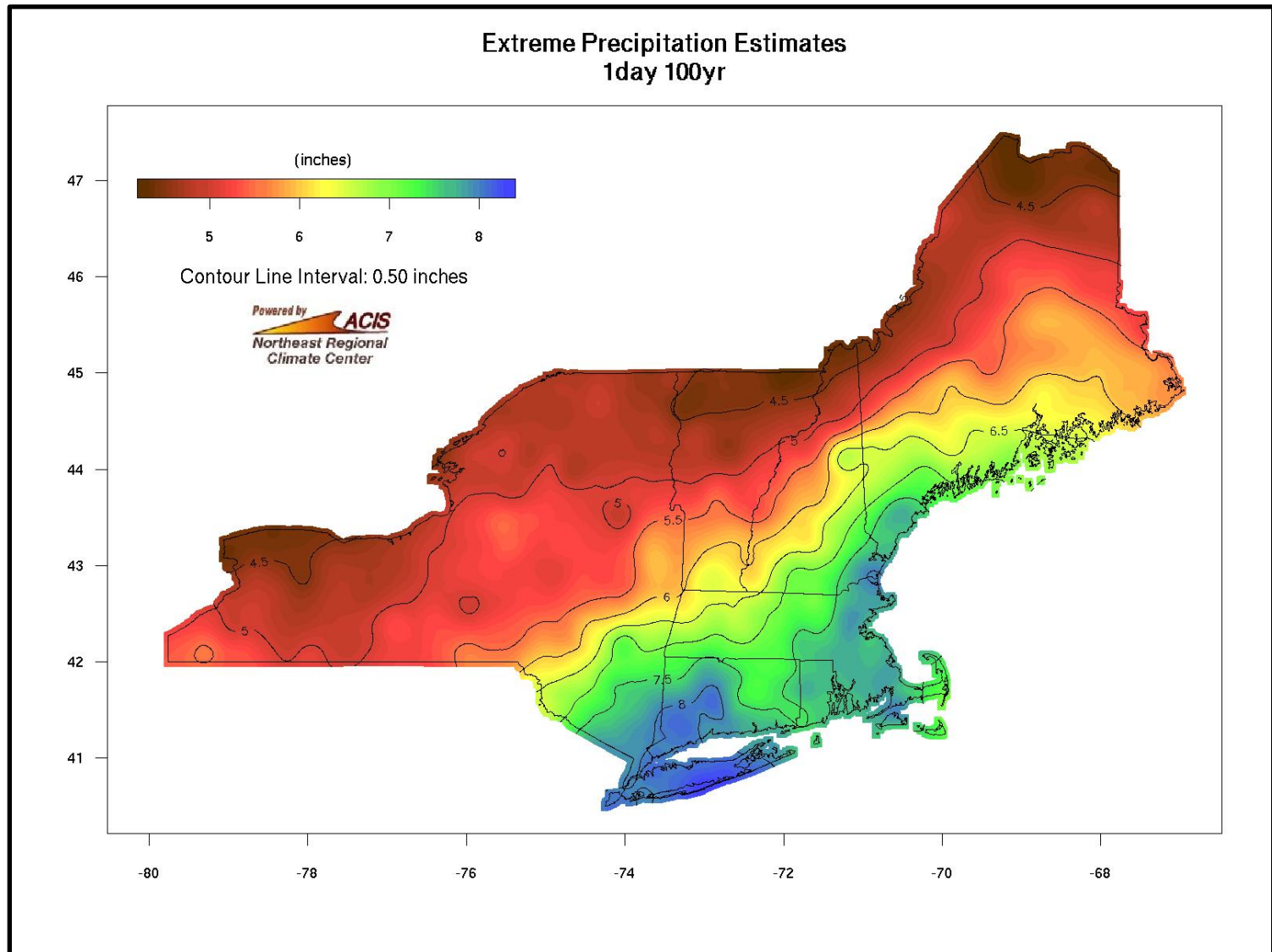
Regionalization



Gridded Data



Smoothed Final Output

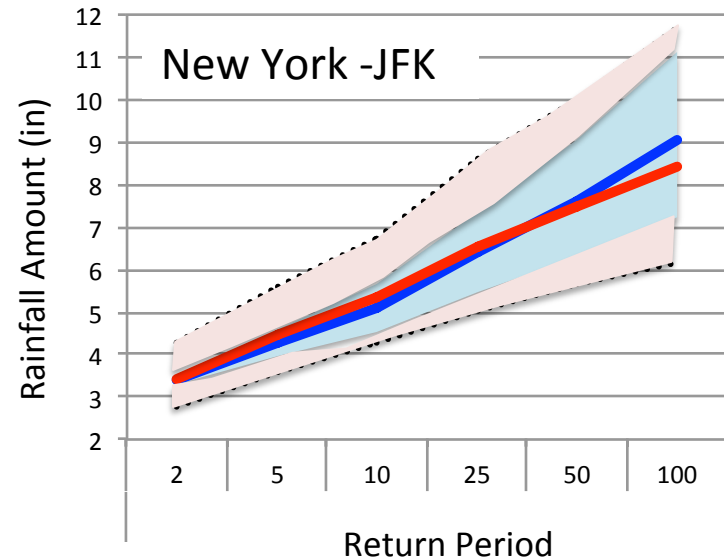
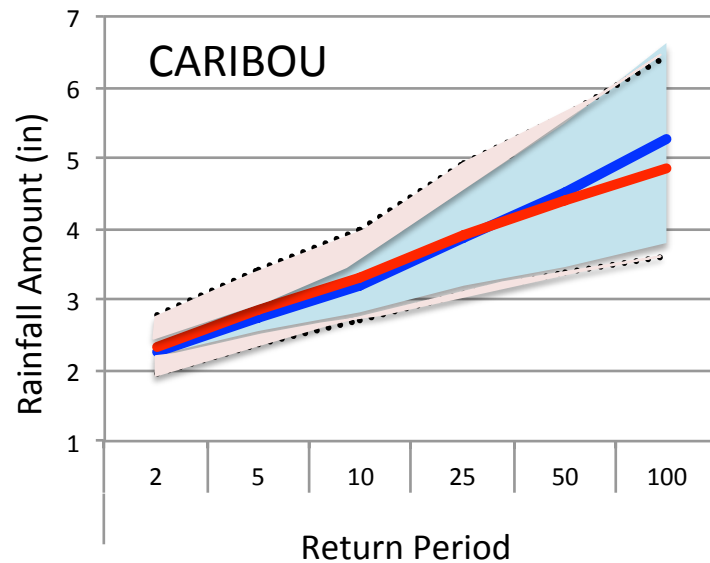
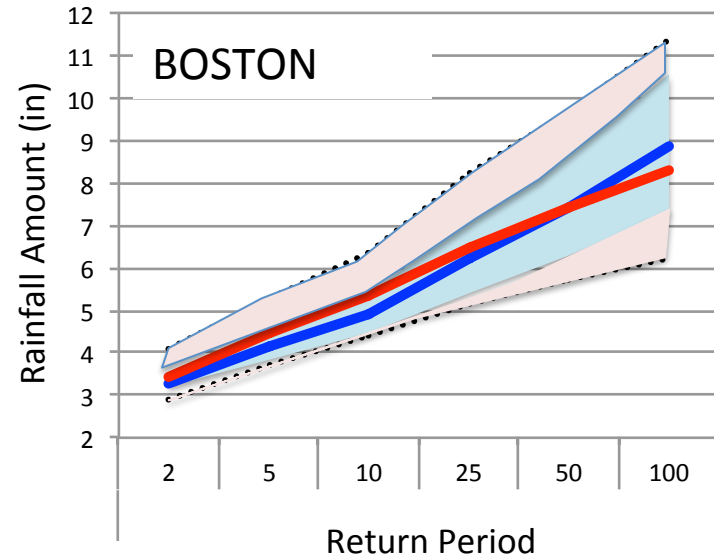
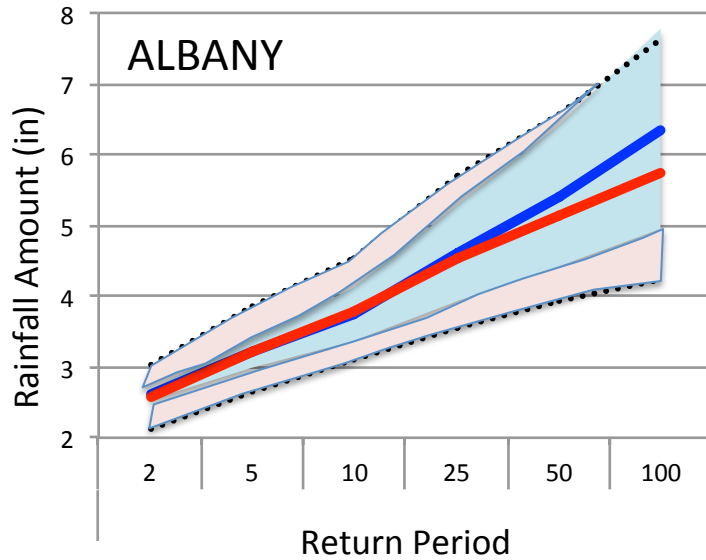


Confidence Intervals Approach

➤ Monte Carlo Approach

- Draw 1,000 x-year samples from fit Beta-P distribution at each station.
- Refit Beta-P based on random samples.
- Compute return period amounts for confidence intervals (90%)

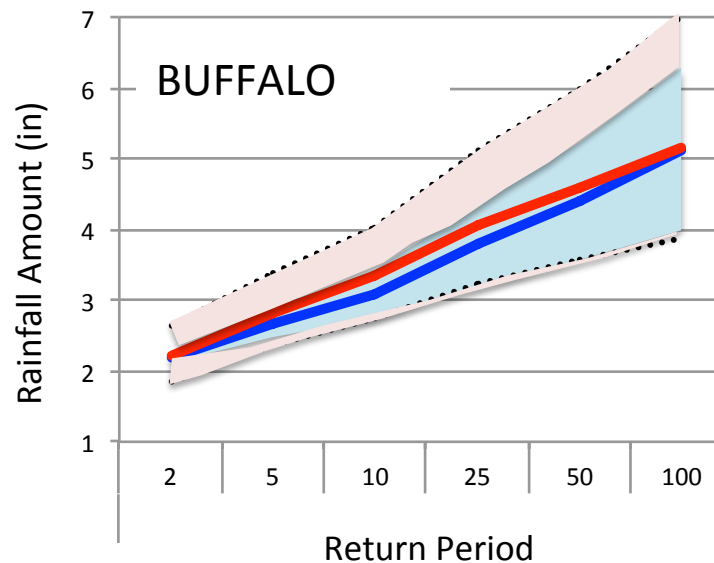
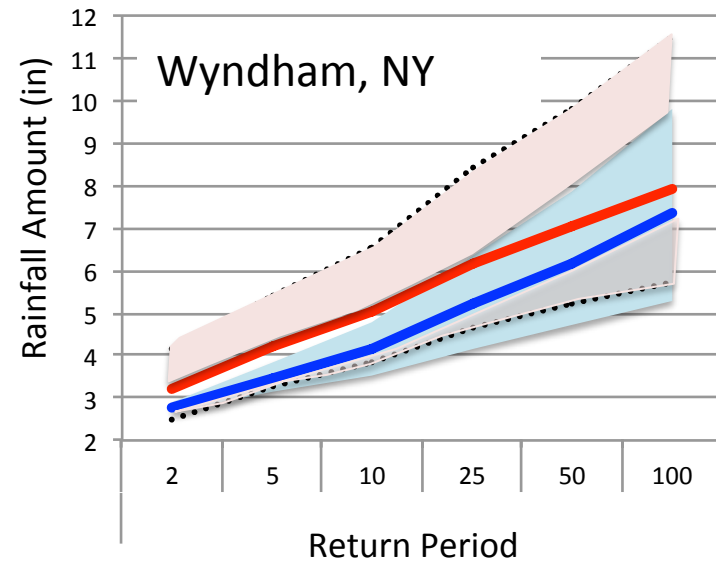
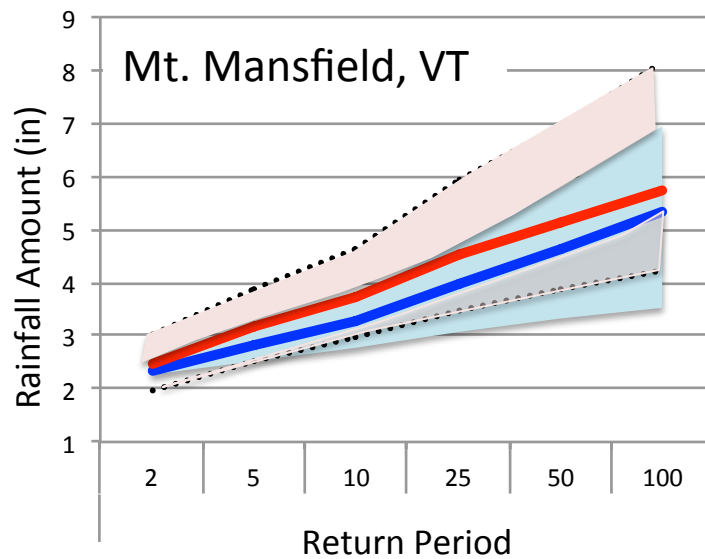
Select Precip.net Atlas-14 Comparisons



Atlas-14

Precip.net

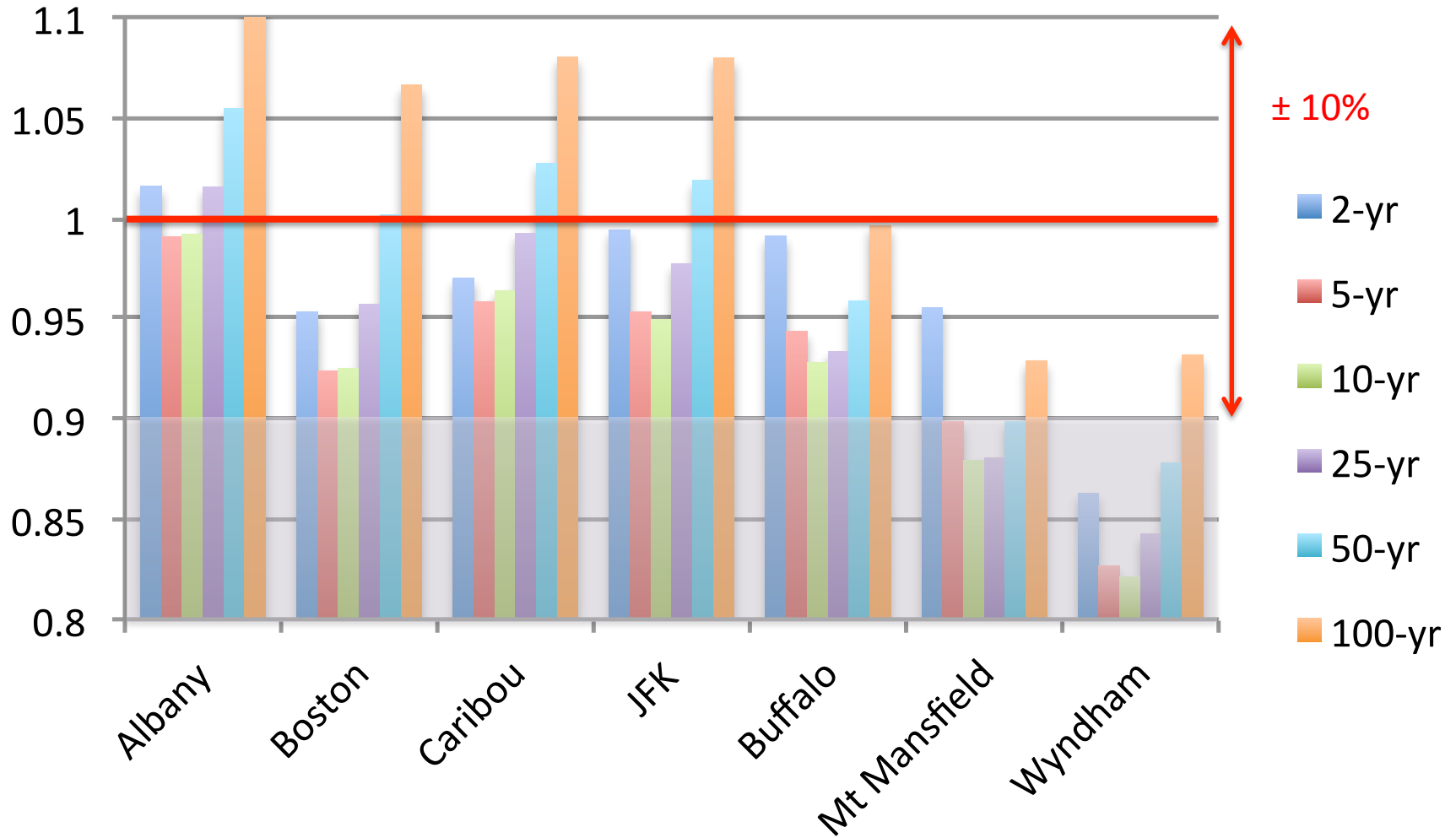
Select Precip.net Atlas-14 Comparisons



Atlas-14

Precip.net

Ratio Precip.net to Atlas-14



Extreme Precipitation in New York & New England

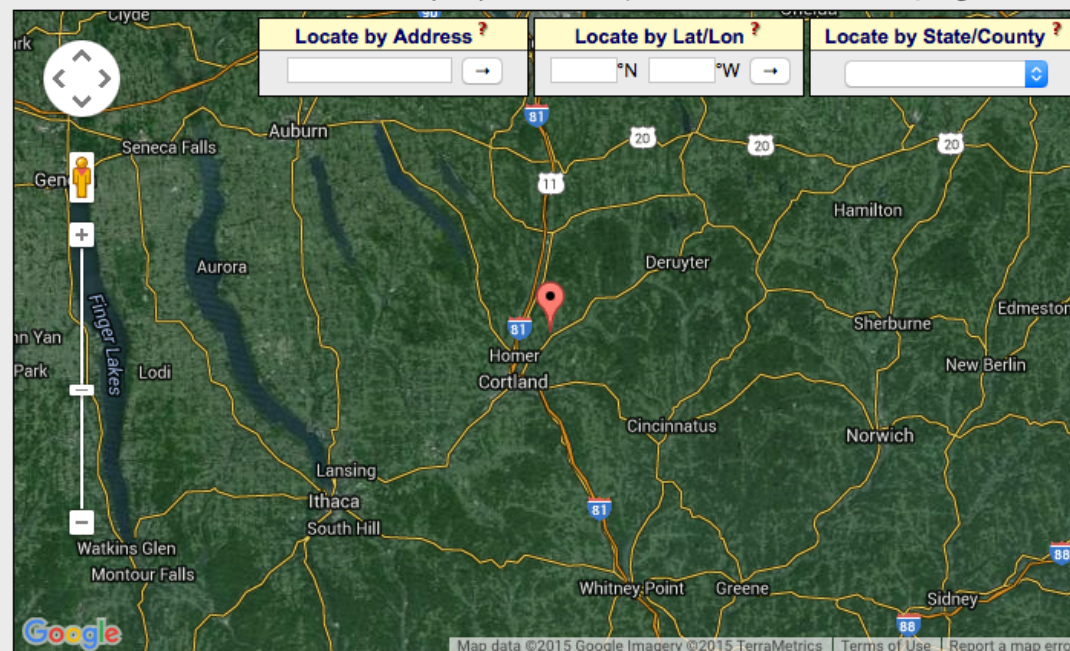
An Interactive Web Tool for Extreme Precipitation Analysis

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[Smoothing ?](#)Yes [Delivery ?](#)Popup [Submit ?](#)

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	76.113 degrees West
Latitude	42.666 degrees North
Elevation	0 feet
Date/Time	Thu, 22 Oct 2015 11:27:04 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.42	0.52	0.69	0.86	1.05	1yr	0.74	0.95	1.19	1.42	1.68	1.97	2.27	1yr	1.75	2.18	2.63	3.19	3.65	1yr
2yr	0.32	0.50	0.62	0.81	1.02	1.26	2yr	0.88	1.13	1.43	1.70	2.01	2.35	2.66	2yr	2.08	2.55	2.99	3.58	4.12	2yr
5yr	0.38	0.60	0.75	1.00	1.28	1.58	5yr	1.10	1.41	1.79	2.13	2.49	2.87	3.23	5yr	2.54	3.11	3.61	4.27	4.88	5yr
10yr	0.43	0.68	0.86	1.17	1.52	1.88	10yr	1.31	1.67	2.13	2.52	2.92	3.35	3.75	10yr	2.96	3.61	4.18	4.89	5.56	10yr
25yr	0.51	0.82	1.04	1.43	1.90	2.37	25yr	1.64	2.08	2.68	3.15	3.62	4.09	4.58	25yr	3.62	4.40	5.07	5.84	6.59	25yr
50yr	0.58	0.93	1.19	1.67	2.26	2.83	50yr	1.95	2.47	3.20	3.74	4.27	4.77	5.32	50yr	4.22	5.12	5.87	6.68	7.51	50yr
100yr	0.67	1.08	1.39	1.97	2.69	3.36	100yr	2.32	2.93	3.80	4.42	5.01	5.56	6.20	100yr	4.92	5.96	6.81	7.65	8.55	100yr
200yr	0.76	1.24	1.61	2.31	3.20	4.01	200yr	2.76	3.48	4.53	5.24	5.89	6.49	7.22	200yr	5.74	6.95	7.90	8.76	9.74	200yr
500yr	0.92	1.52	1.98	2.88	4.03	5.06	500yr	3.48	4.39	5.70	6.55	7.29	7.96	8.85	500yr	7.05	8.51	9.63	10.47	11.59	500yr

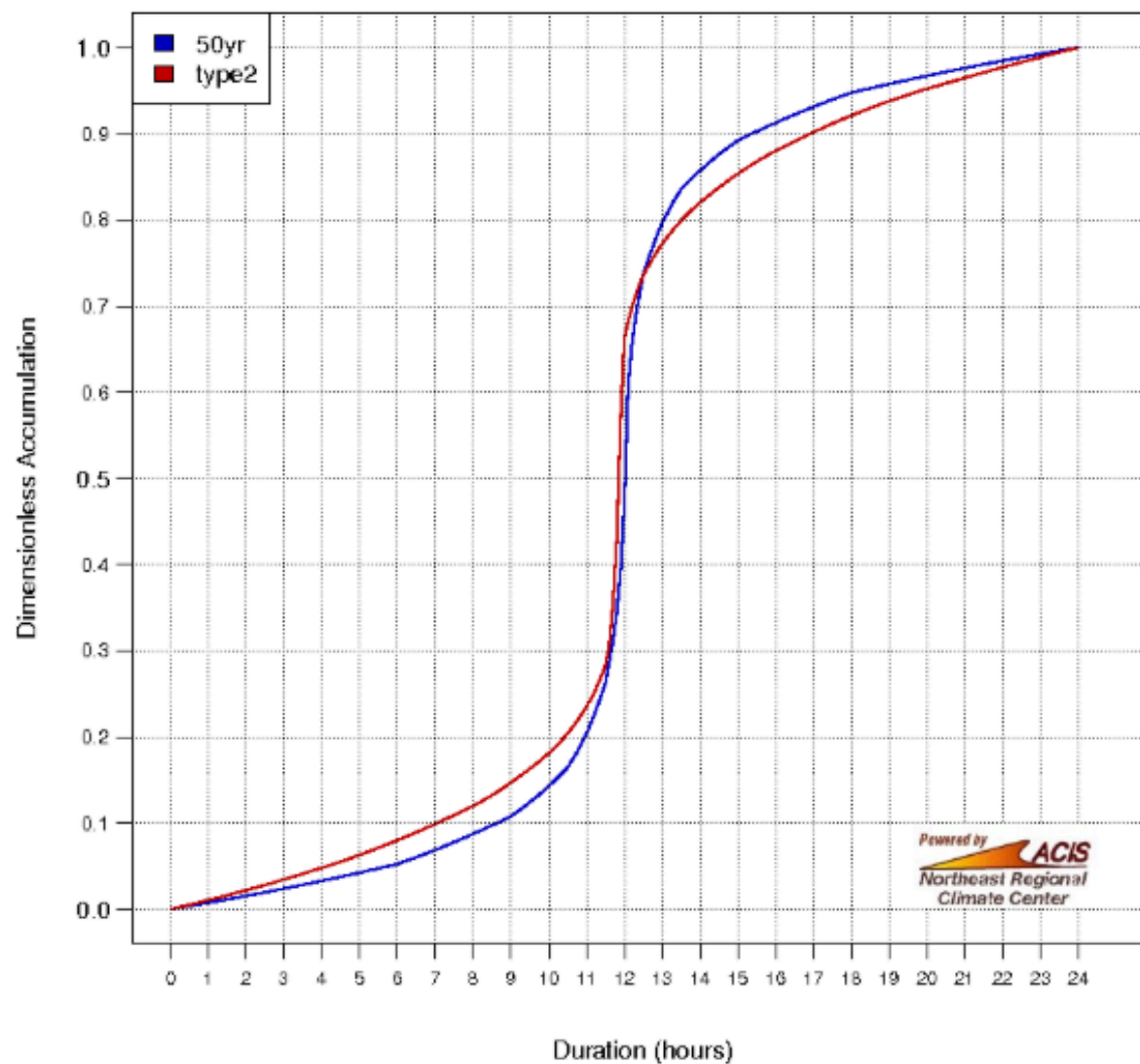
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.38	0.47	0.63	0.78	0.88	1yr	0.67	0.86	0.98	1.15	1.49	1.81	2.01	1yr	1.60	1.94	2.40	2.86	3.30	1yr
2yr	0.31	0.48	0.60	0.81	1.00	1.11	2yr	0.86	1.09	1.24	1.53	1.87	2.29	2.56	2yr	2.03	2.46	2.90	3.48	4.02	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.34	5yr	1.01	1.31	1.47	1.80	2.24	2.69	3.02	5yr	2.38	2.91	3.38	4.02	4.59	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.52	10yr	1.14	1.48	1.66	2.01	2.51	3.03	3.40	10yr	2.68	3.27	3.78	4.47	5.07	10yr
25yr	0.43	0.66	0.82	1.17	1.54	1.80	25yr	1.33	1.76	1.97	2.34	2.91	3.57	3.98	25yr	3.16	3.83	4.39	5.14	5.80	25yr
50yr	0.47	0.72	0.89	1.29	1.73	2.04	50yr	1.49	2.00	2.22	2.60	3.25	4.03	4.48	50yr	3.57	4.31	4.92	5.73	6.41	50yr
100yr	0.52	0.79	0.99	1.43	1.96	2.32	100yr	1.69	2.27	2.52	2.89	3.62	4.58	5.06	100yr	4.05	4.87	5.52	6.38	7.10	100yr
200yr	0.57	0.86	1.09	1.58	2.21	2.64	200yr	1.91	2.58	2.85	3.21	4.04	5.20	5.73	200yr	4.60	5.51	6.18	7.12	7.87	200yr
500yr	0.84	1.25	1.61	2.35	3.34	3.15	500yr	2.88	3.08	3.38	3.68	4.65	6.16	6.77	500yr	5.45	6.51	7.19	8.22	9.03	500yr

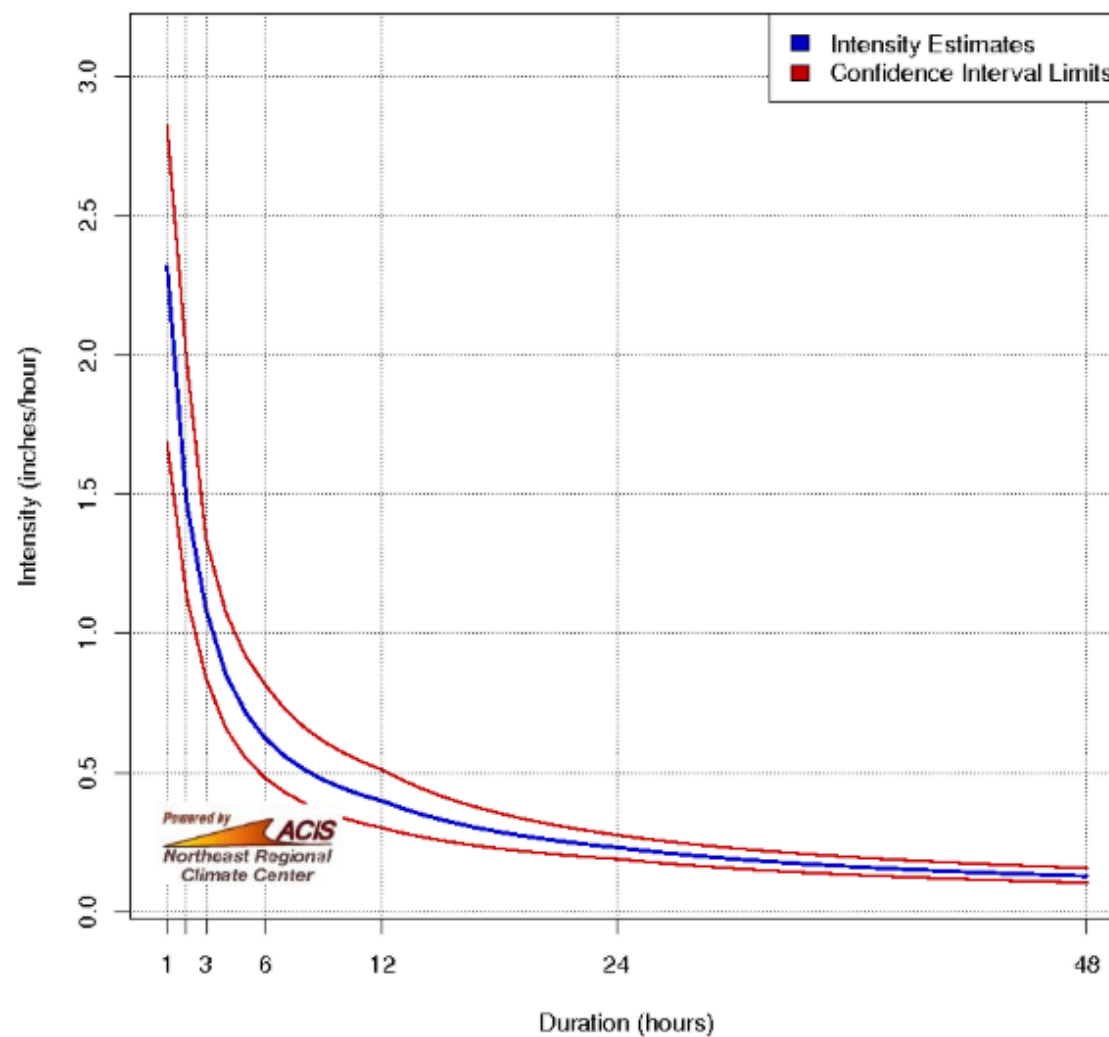
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.75	0.92	1.04	1yr	0.79	1.02	1.20	1.51	1.82	2.13	2.45	1yr	1.89	2.35	2.84	3.44	3.89	1yr
2yr	0.34	0.53	0.65	0.88	1.08	1.21	2yr	0.93	1.18	1.33	1.66	2.03	2.44	2.75	2yr	2.16	2.64	3.09	3.72	4.25	2yr
5yr	0.41	0.64	0.79	1.08	1.38	1.58	5yr	1.19	1.55	1.71	2.11	2.58	3.08	3.46	5yr	2.72	3.32	3.85	4.56	5.21	5yr
10yr	0.49	0.75	0.93	1.30	1.68	1.96	10yr	1.45	1.92	2.08	2.55	3.15	3.67	4.14	10yr	3.25	3.98	4.56	5.35	6.08	10yr
25yr	0.61	0.94	1.16	1.66	2.19	2.62	25yr	1.89	2.56	2.70	3.31	4.10	4.65	5.26	25yr	4.12	5.06	5.72	6.61	7.47	25yr
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200yr	1.04	1.56	1.98	2.87	4.00	5.04	200yr	3.45	4.93	4.87	5.99	7.52	7.93	9.11	200yr	7.02	8.76	9.62	10.69	11.95	200yr
500yr	1.20	1.79	2.30	3.35	4.76	6.75	500yr	4.11	6.60	6.32	7.80	9.84	10.05	11.60	500yr	8.89	11.16	12.14	13.22	14.71	500yr

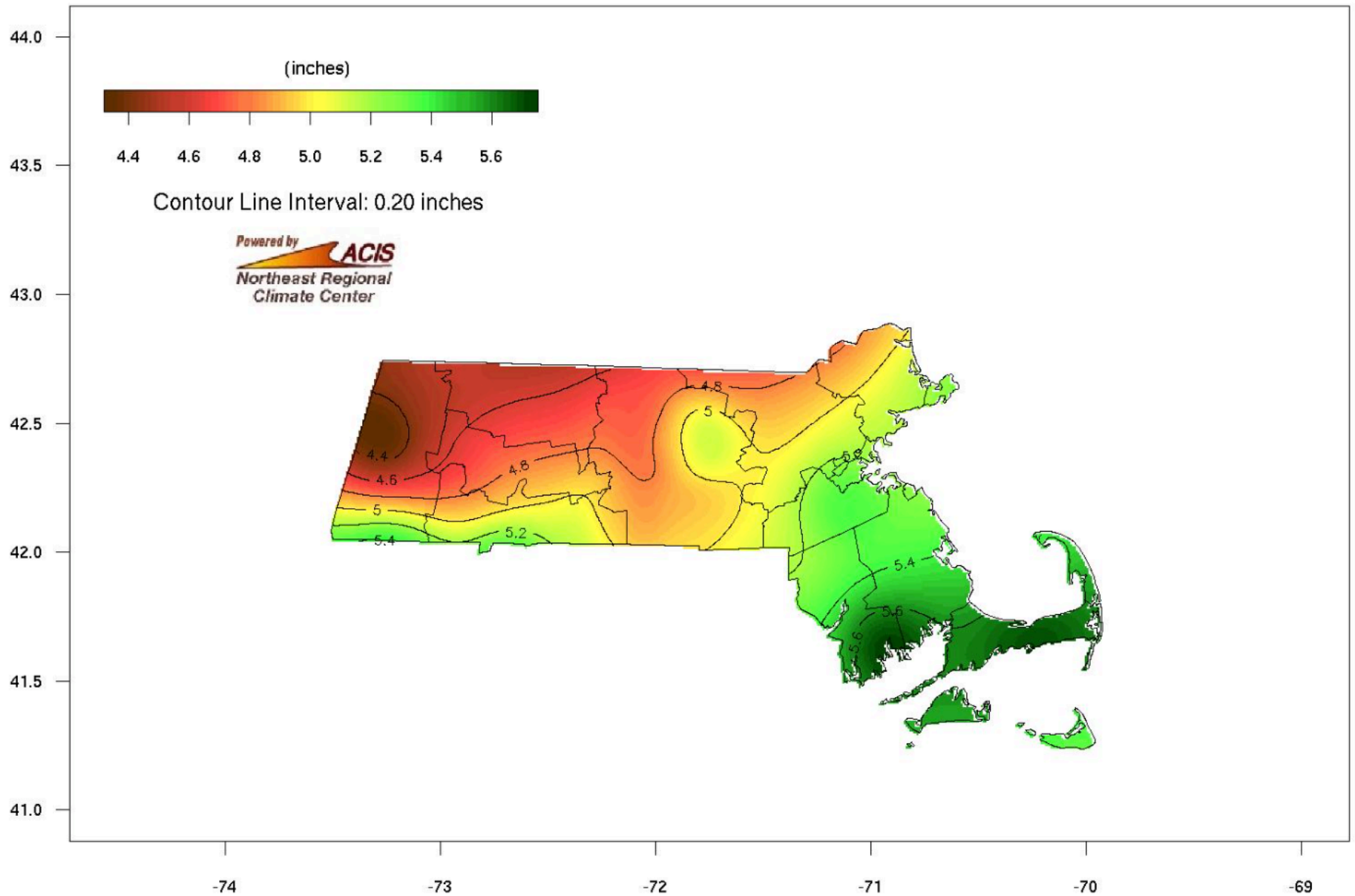
Precipitation Distribution
(42.666N, -76.113W) – 50yr/Type2 – Smoothed



Intensity Frequency Duration – 100yr
(42.666N, -76.113W)



Extreme Precipitation Estimates 12hr 50yr



About this Project

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View: **Map** Table Calendar

Date: 2011-08-28

Duration: 1day

CONTINUE >>

200yr: Slide Mtn, NY

100yr: Barre Montpelier Ap, VT

100yr: Ellenburg Depot, NY

100yr: Mohonk Lake, NY

100yr: Mt Washington, NH

100yr: Rosendale 2 E, NY

100yr: Saint Johnsbury, VT

50yr: Bloomingburg 2 Sw, NY

50yr: Burlington, CT

50yr: Peru 2 Wsw, NY

50yr: South Hero, VT

50yr: Thomaston Dam, CT

50yr: Walden 1 Ese, NY

25yr: Albany Ap, NY

25yr: Bakersville, CT

25yr: Burlington Intl Ap, VT

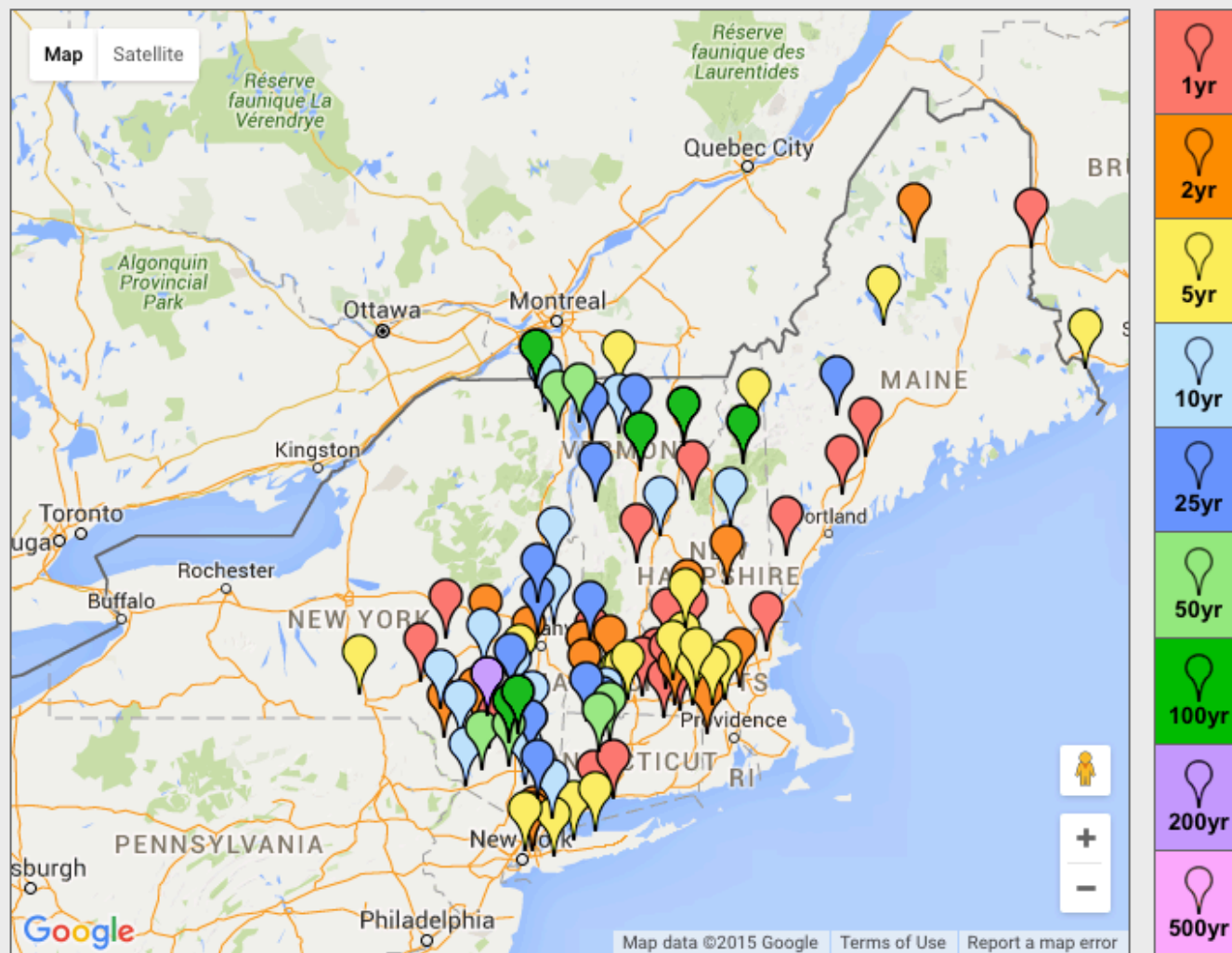
25yr: East Jewett, NY

25yr: Farmington, ME

25yr: Morrisville Stowe State Ap.

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Real-time monitoring is in BETA testing. Please be patient - products may take 10-15 seconds to load.



Extreme Precipitation in a Changing Climate

[Info](#)[Map](#)[Graph](#)

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Cornell University

**Options:**

Recurrence: 100yr (1%)

End Year: 2014

Color Code: Percent Difference from 2008

[Refresh Map](#)

Percent Difference from 2008

1day 100yr storm
for period ending in 2014

#300042: ALBANY AP, NY

(42.743°N, -73.809°W)

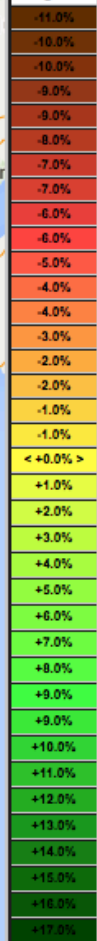
2014 100yr Storm: 6.49"

2014 Recurrence of 2008 100yr Storm (5.76"): 65yr

% Difference from 2008 100yr Storm (5.76"): +13%

% Difference from 1958 100yr Storm (6.35"): +2%

Legend



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Map data ©2015 Google, INEGI Terms of Use

precipchange.eas.cornell.edu

Options:

Recurrence:

100yr (1%)

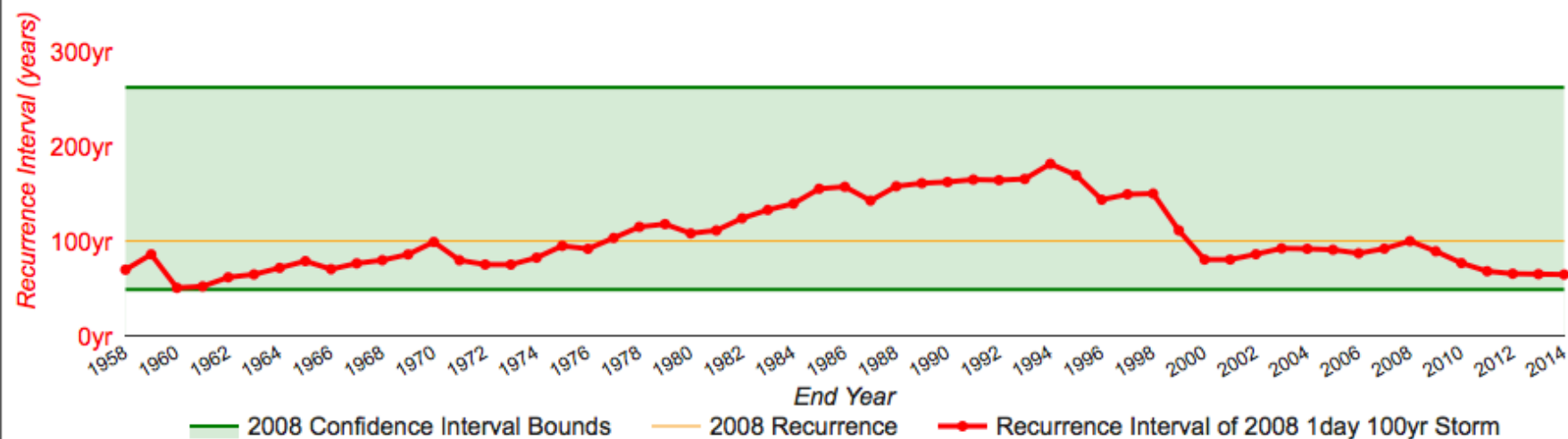
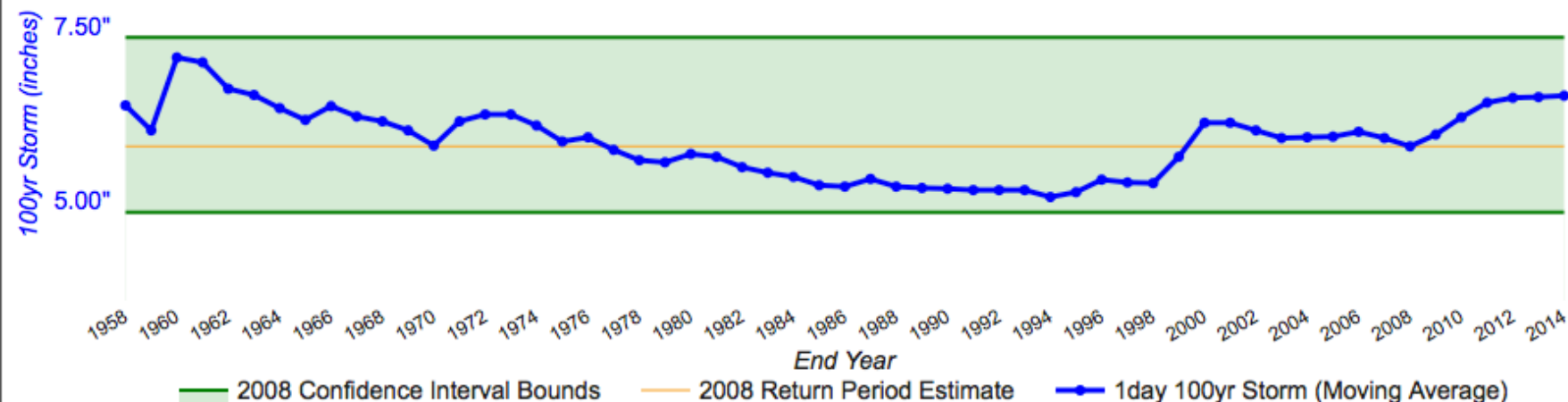
State:

NY - New York

Station:

#300042: ALBANY AP (NY)

Refresh Graph

Extreme Precipitation Statistics: #300042 ALBANY AP (NY)Powered by
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Northeast Regional
Climate Center



THANK YOU!