

IDF Curve Projections for NY

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Northeast Regional
Climate Center

Downscaling Approaches

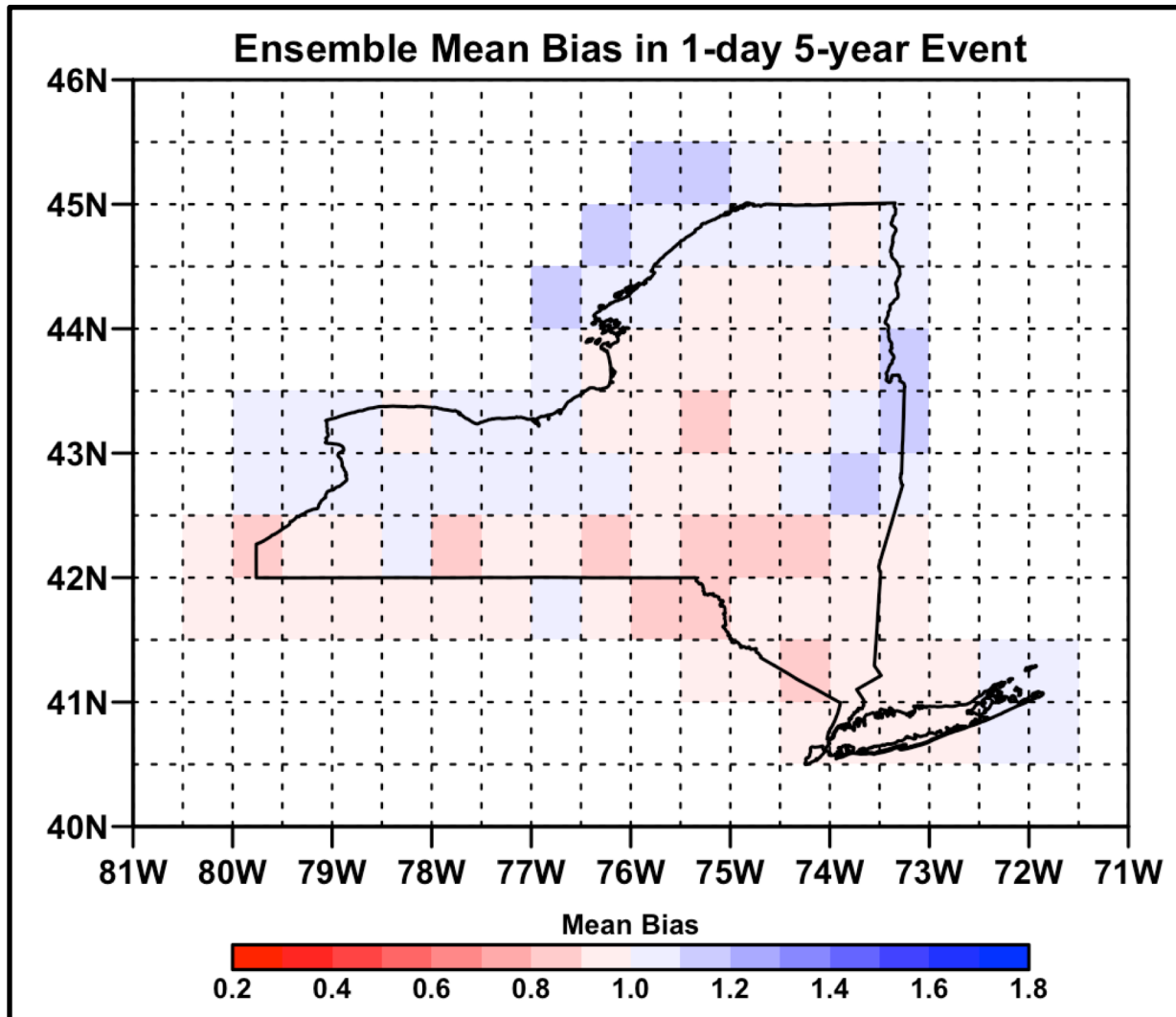
- 1) Dynamical Downscaling (CORDEX) (also NARCCAP)
 - Regional climate models (RCMs) run at 50-km resolution and driven by atmosphere–ocean general circulation (AOGCM) models

- 2) “Statistical” Downscaling – Delta Method (CMIP5)
 - Compares model-simulated precipitation extremes between historical and future periods (at GCM resolution)

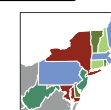
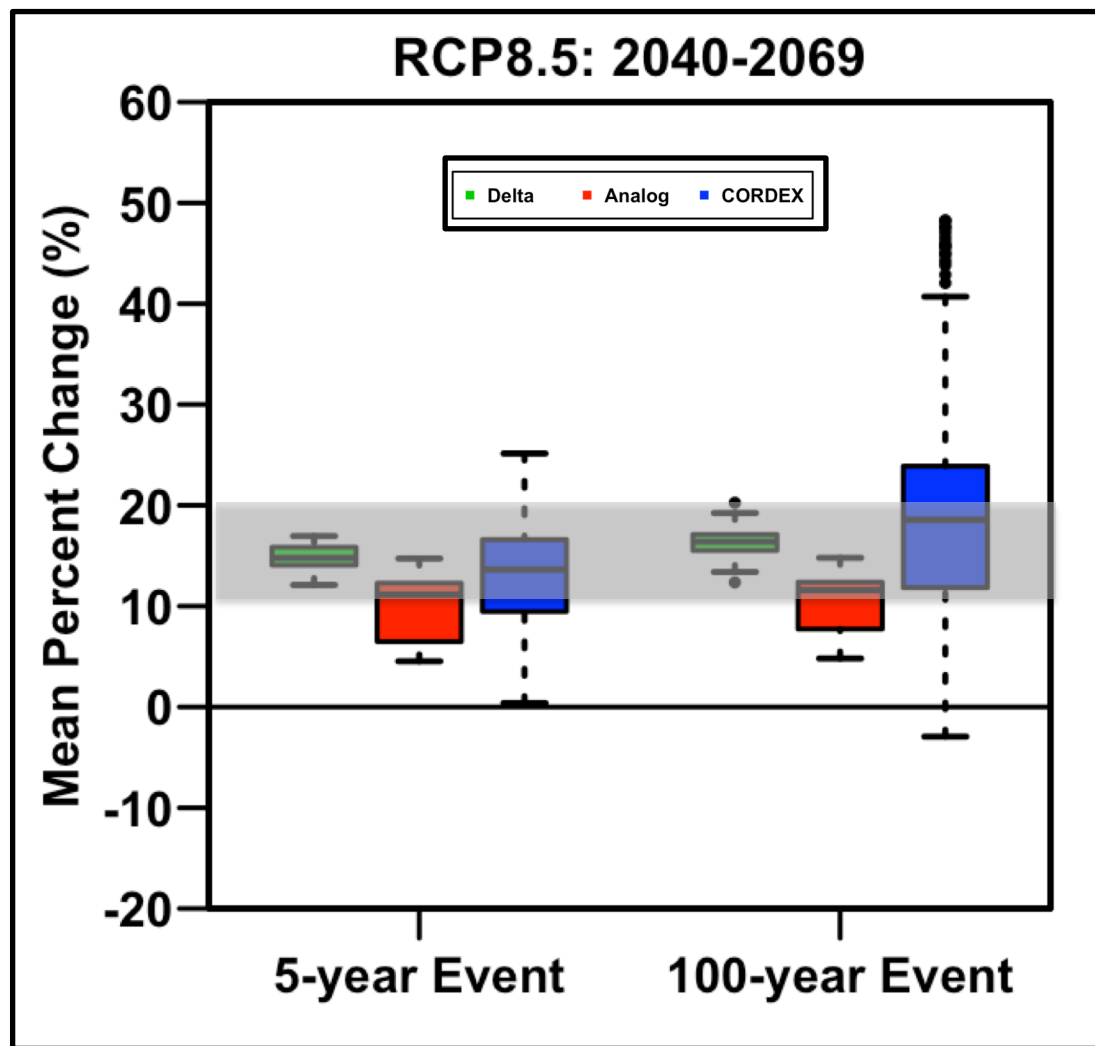
- 3) Statistical Downscaling – Analog Method (CMIP5)
 - Uses historical weather map analogues to predict the occurrence of extreme precipitation on a given day



Analog vs Observed Ensemble Mean Bias



Projected Changes in 1-day 5- and 100-Year Rainfall Amounts Relative to 1970–1999



Intensity Duration Frequency Curves for New York State

Future Projections for a Changing Climate

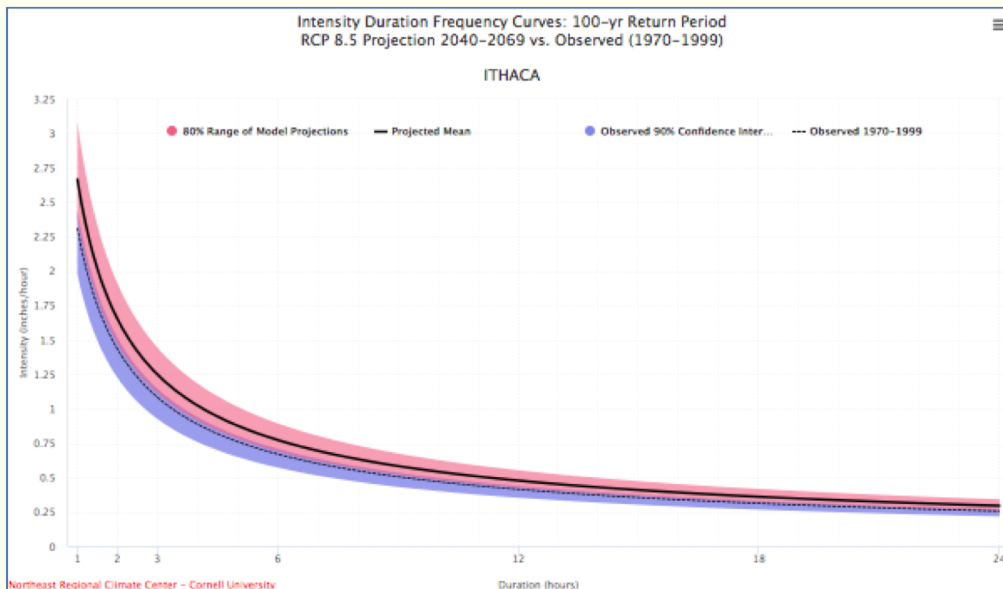
- Station-specific IDF Graphs
- Statewide Maps of Projected Changes
- Probability of Occurrence
- Technical Document

Select a Station Location by Clicking Map



Need Help? View an Instructional [Video](#)

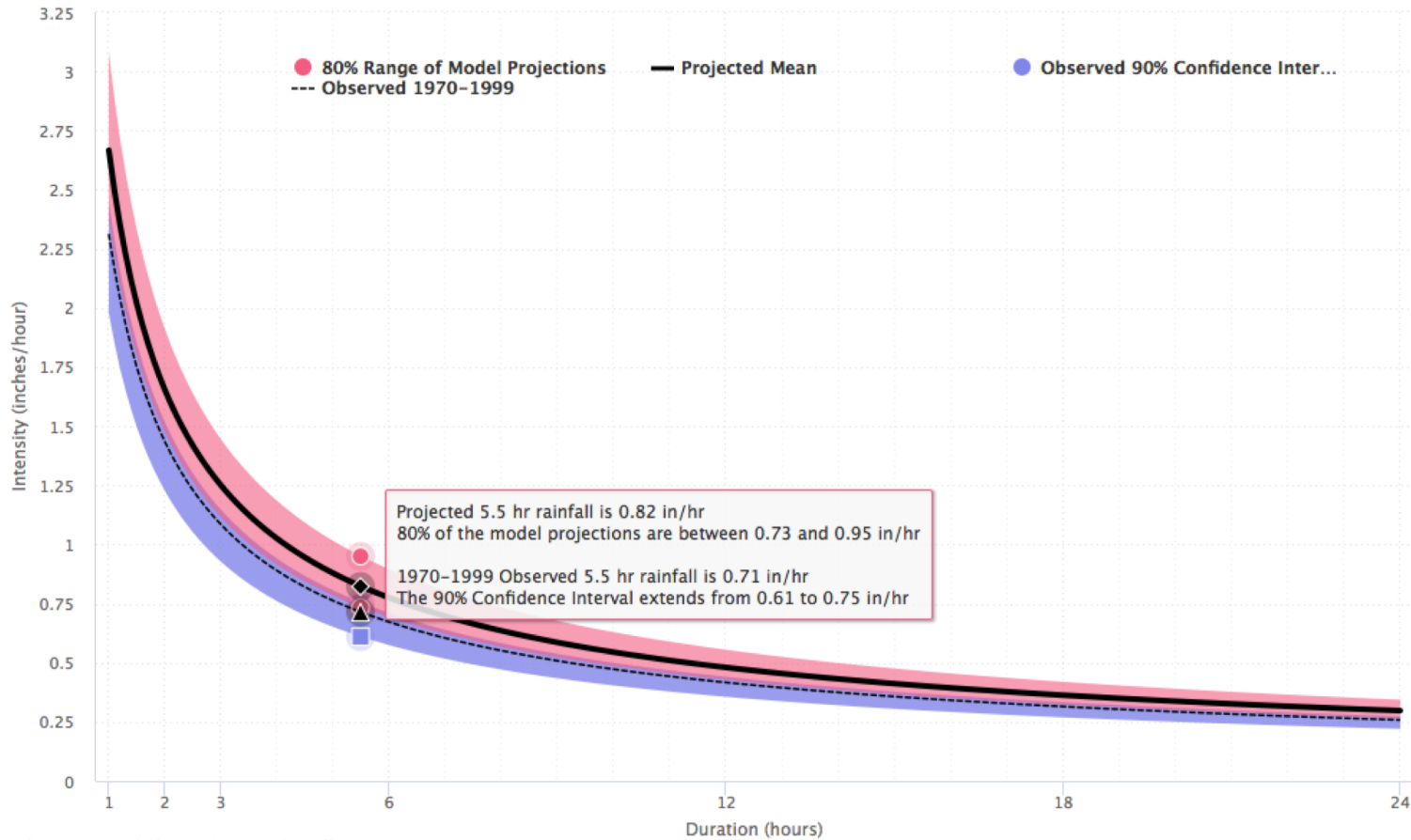
About this Project Numerous studies have documented significant increases in both the frequency and magnitude of extreme precipitation in the northeastern U.S. since the mid-to-late 20th century. The most recent assessment from the Intergovernmental Panel on Climate Change (IPCC) suggests that the frequency and magnitude of extreme precipitation in this region will likely continue to increase throughout the 21st century. Such changes could greatly exacerbate the societal impacts of extreme precipitation in the future. In consideration of these impacts, the Northeast Regional Climate Center (NRCC) has partnered with the New York State Energy Research and Development Authority (NYSERDA) to downscale global climate model output and create extreme precipitation projections that will ultimately be incorporated into climate change adaptation planning for New York State. [Read more...](#)



Duration (hrs)	Projected 2040-2069 Intensity Ensemble Member			Observed 1970-1999 Intensity with Confidence Interval (CI) Bounds		
	10 th	Mean	90 th	Low CI	Mean	High CI
1	2.38	2.67	3.08	1.98	2.31	2.45
2	1.47	1.65	1.91	1.23	1.43	1.52
3	1.11	1.25	1.44	0.93	1.08	1.15
6	0.69	0.77	0.89	0.57	0.67	0.71
12	0.43	0.48	0.55	0.36	0.42	0.44
18	0.32	0.36	0.42	0.27	0.31	0.33
24	0.27	0.30	0.34	0.22	0.26	0.27

Intensity Duration Frequency Curves: 100-yr Return Period RCP 8.5 Projection 2040-2069 vs. Observed (1970-1999)

ITHACA



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Duration (hrs)	Projected 2040-2069 Intensity Ensemble Member ①			Observed 1970-1999 Intensity with Confidence Interval (CI) Bounds ②		
	10 th	Mean	90 th	Low CI	Mean	High CI
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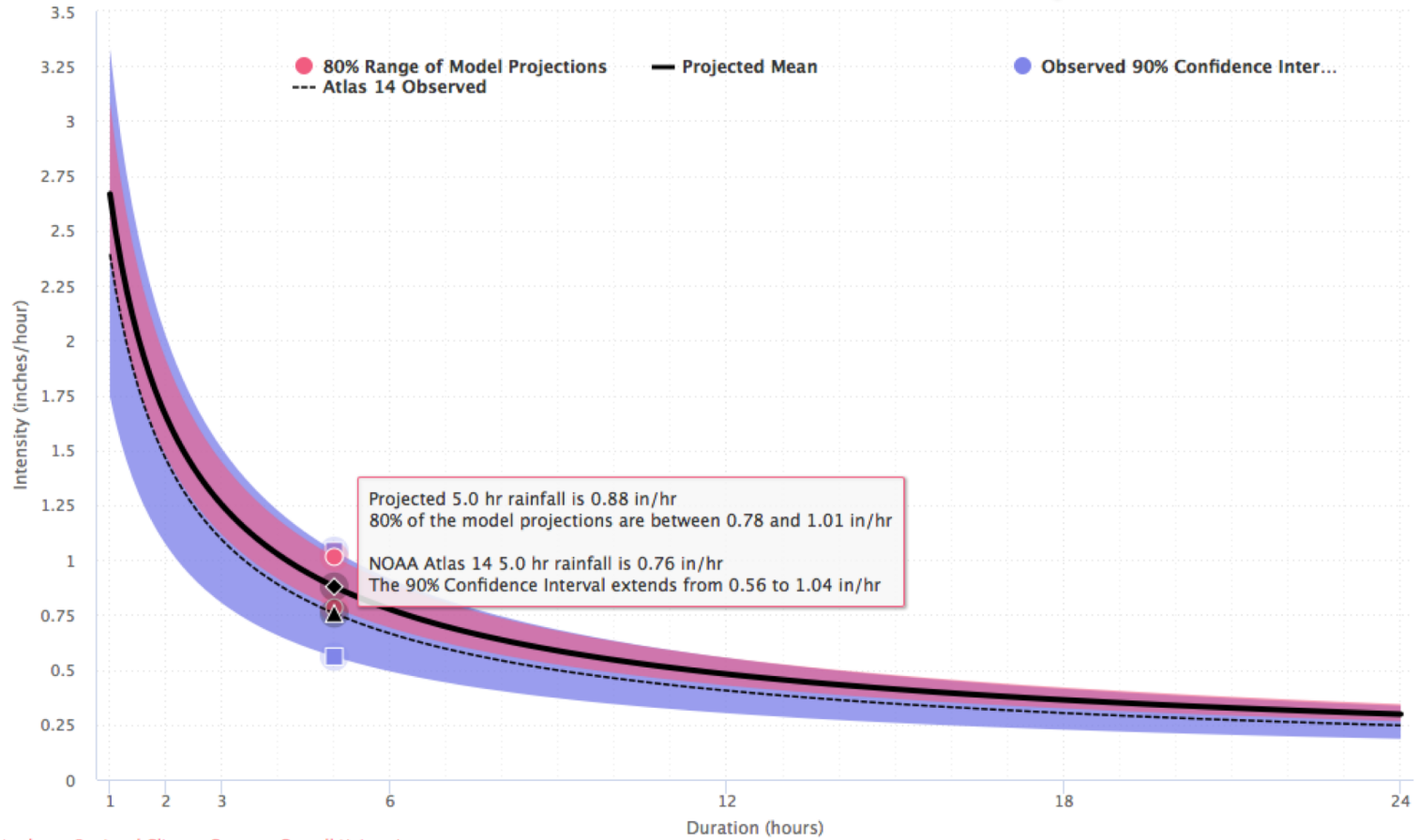


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Intensity Duration Frequency Curves: 100-yr Return Period RCP 8.5 Projection 2040-2069 vs. NOAA Atlas 14

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Duration (hrs)	Projected 2040-2069 Intensity Ensemble Member			Observed NOAA Atlas 14 Intensity with Confidence Interval (CI) Bounds		
	10 th	Mean	90 th	Low CI	Mean	High CI
1	2.38	2.67	3.08	1.74	2.39	3.33
2	1.47	1.65	1.91	1.07	1.46	2.02
3	1.11	1.25	1.44	0.80	1.09	1.51
6	0.69	0.77	0.89	0.49	0.66	0.91
12	0.43	0.48	0.55	0.30	0.40	0.55
18	0.32	0.36	0.42	0.23	0.30	0.41
24	0.27	0.30	0.34	0.19	0.25	0.34



SELECT MAP **OPTIONS**

Return Period

- 2-yr
- 5-yr
- 10-yr
- 25-yr
- 50-yr
- 100-yr

Emission Scenario

- High RCP 8.5
- Low RCP 4.5

Time Period

- 2010-2039
- 2040-2069
- 2070-2099

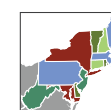
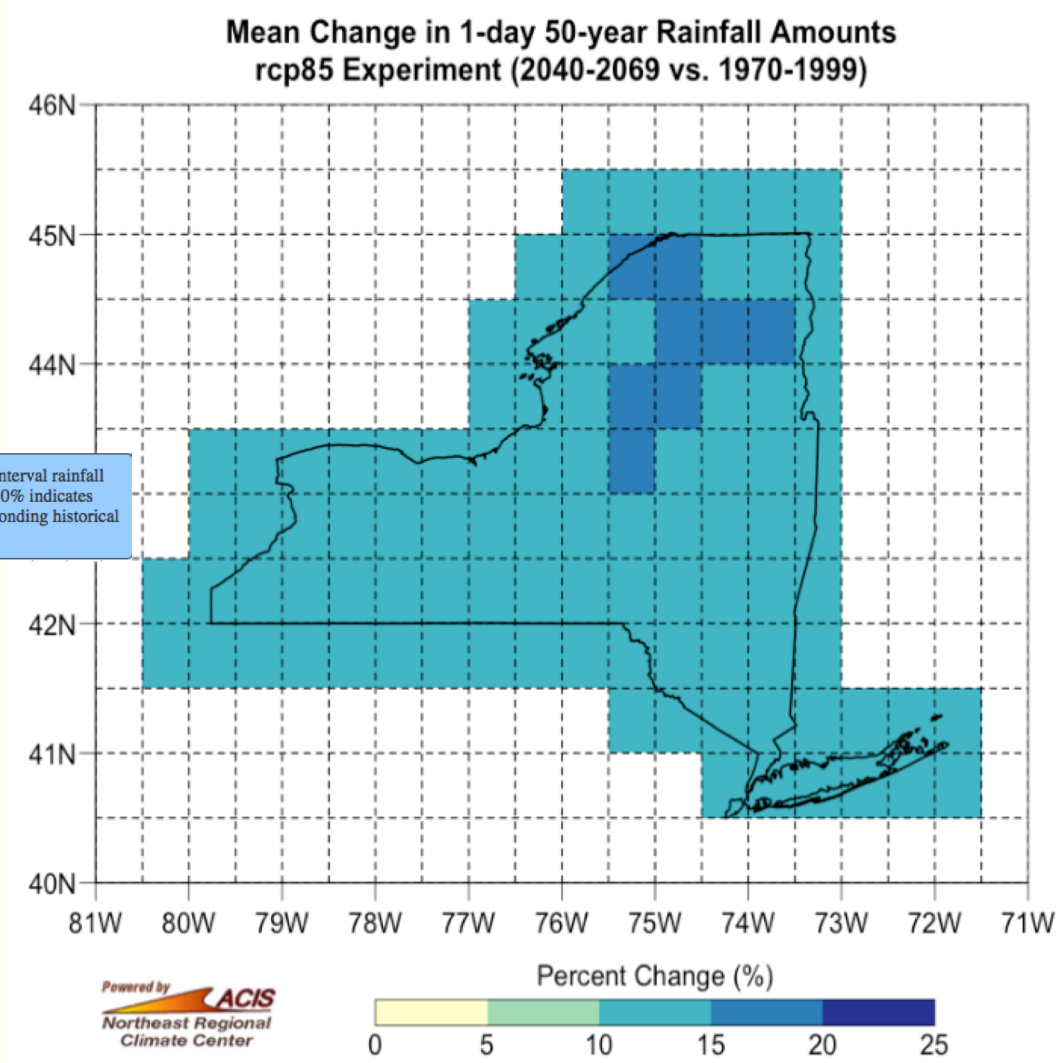
Ensemble Member

- 10th
- Mean
- 90th

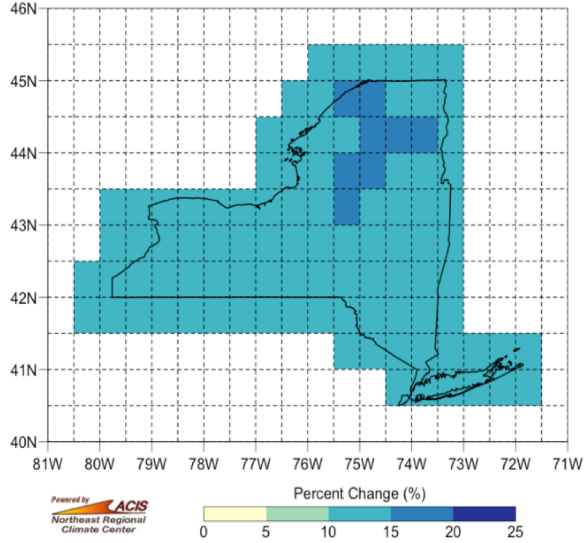
Map Type

- Percent change
- Relative return period

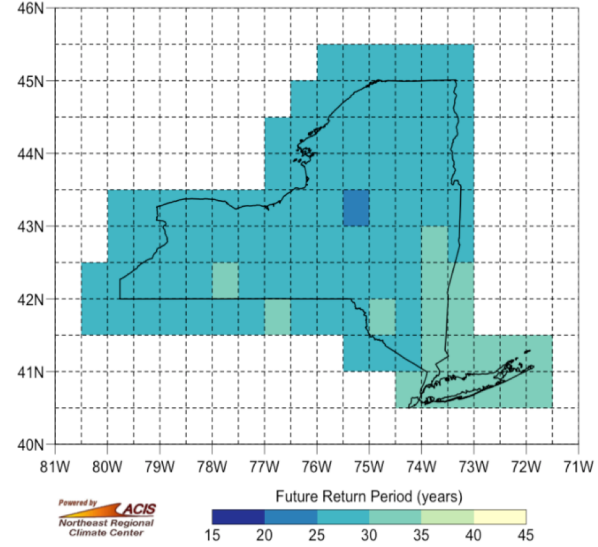
Map shows the percent change in the 2040-2069 recurrence interval rainfall amount relative to the 1970-1999 value. A mapped value of 10% indicates that the future rainfall amount is 10% higher than the corresponding historical value.



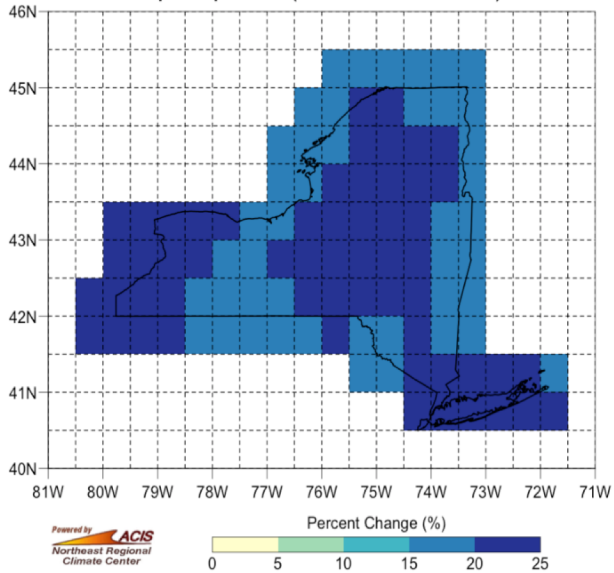
Mean Change in 1-day 50-year Rainfall Amounts
rcp85 Experiment (2040-2069 vs. 1970-1999)



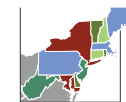
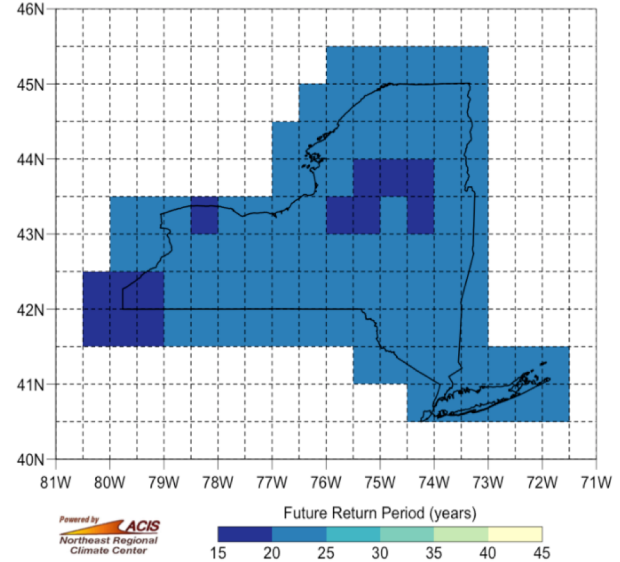
Mean Future Return Periods: 1-day 50-year Rainfall Amounts
rcp85 Experiment (2040-2069 vs. 1970-1999)



Mean Change in 1-day 50-year Rainfall Amounts
rcp85 Experiment (2070-2099 vs. 1970-1999)



Mean Future Return Periods: 1-day 50-year Rainfall Amounts
rcp85 Experiment (2070-2099 vs. 1970-1999)



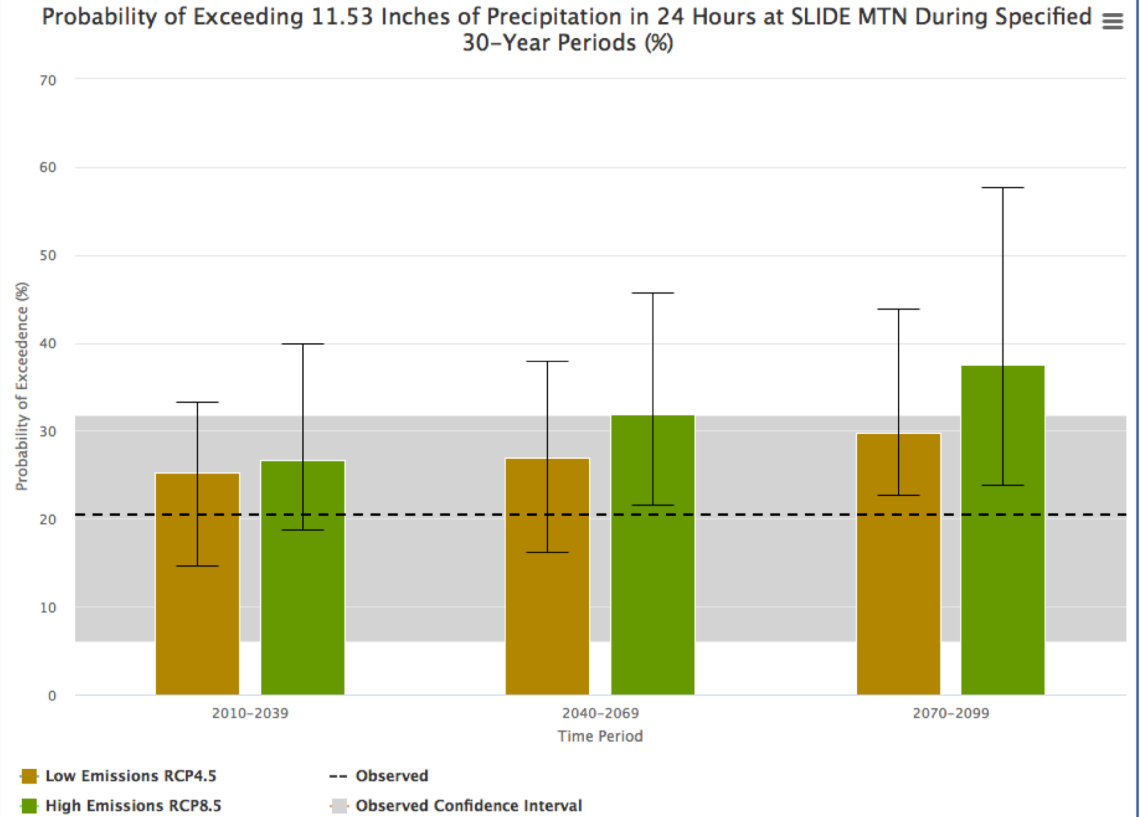
Select precipitation EVENT DURATION

1-hr
 2-hr
 3-hr
 6-hr
 12-hr
 18-hr
 24-hr

Enter PRECIPITATION AMOUNT

11.53

Recalculate

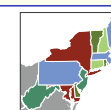


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	Probability of Exceeding 11.53 Inches of Precipitation in 24 Hours at SLIDE MTN During Specified 30-Year Periods (%)						
	Observed (1970-1999)	Projected (2010-2039)		Projected (2040-2069)		Projected (2070-2099)	
			RCP 4.5	RCP 8.5	RCP 4.5	RCP 8.5	RCP 4.5
Mean	20	25	27	27	32	30	38
Lower Bound	6	15	19	16	22	23	24
Upper Bound	32	33	40	38	46	44	58



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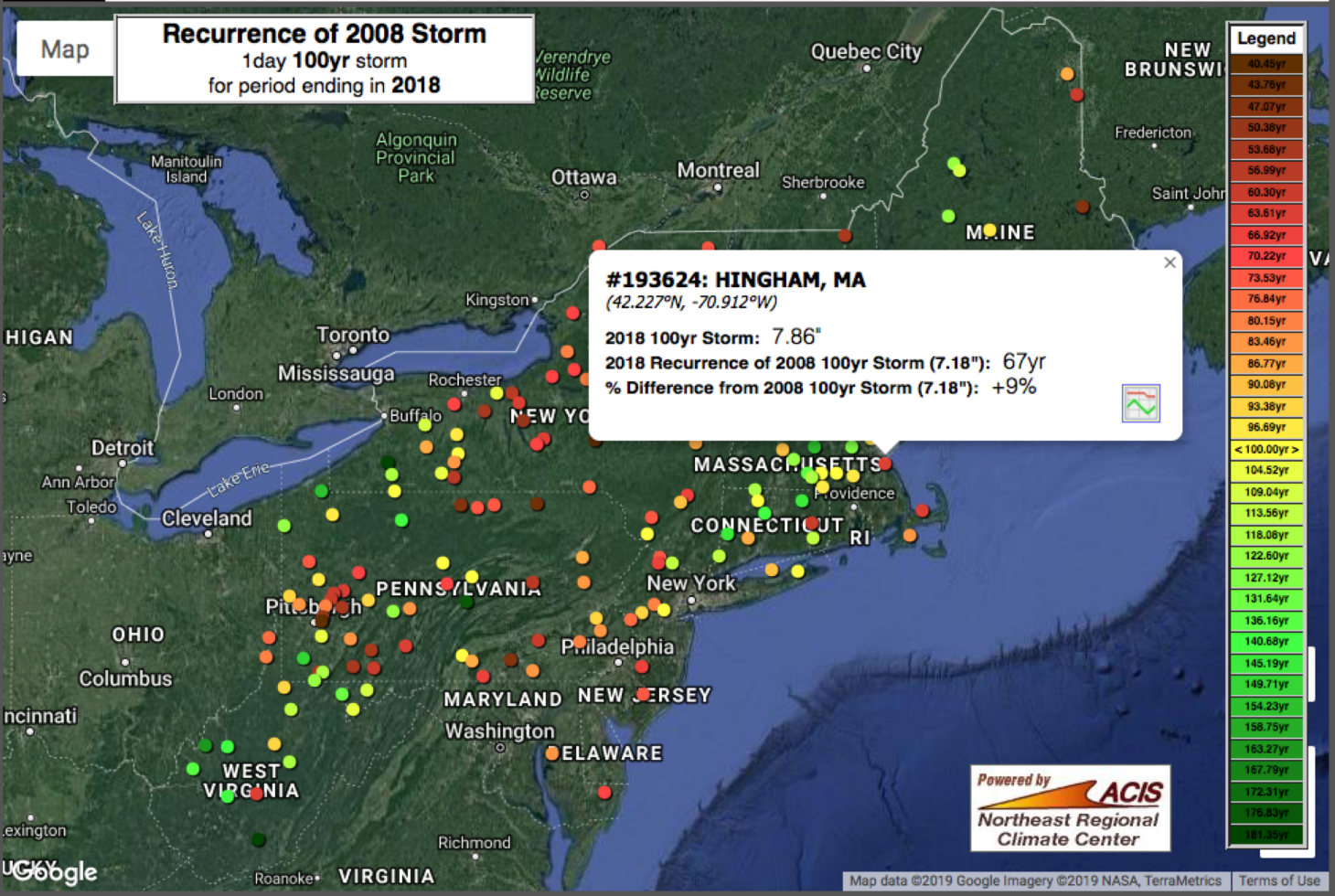
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Extreme Precipitation in a Changing Climate

Info **Map** Graph



Options: Recurrence: 100yr (1%) End Year: 2018 Color Code: Recurrence of 2008 Storm Refresh Map



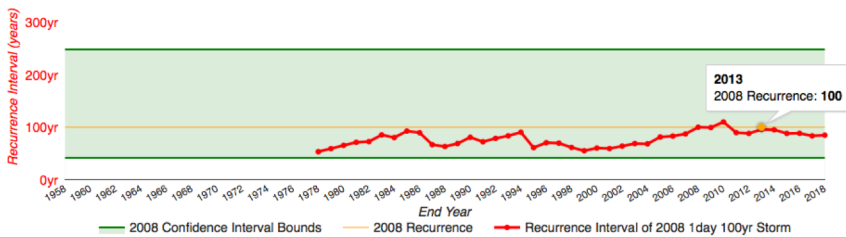
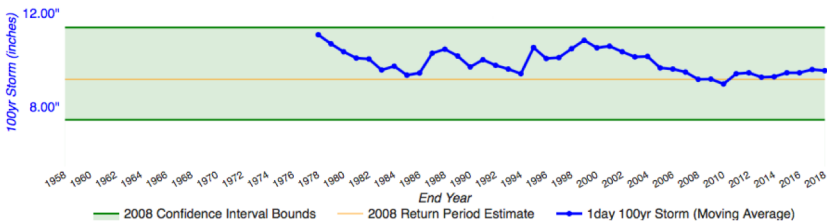
Extreme Precipitation in a Changing Climate

Info Map Graph



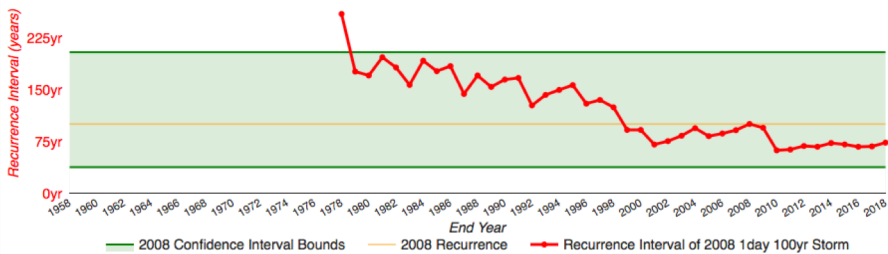
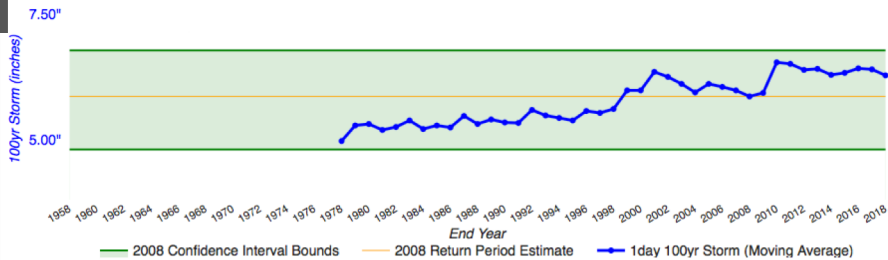
Options: Recurrence: 100yr (1%) State: NH - New Hampshire Station: #276818: PINKHAM NOTCH (NH) Refresh Graph

Extreme Precipitation Statistics: #276818 PINKHAM NOTCH (NH)

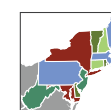


Options: Recurrence: 100yr (1%) State: NY - New York Station: #300785: BOONVILLE 4 SSW (NY) Refresh Graph

Extreme Precipitation Statistics: #300785 BOONVILLE 4 SSW (NY)



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THANK YOU!