

Overview of tools featured on the ‘Climate and Weather Tools for Stormwater Planning in the Great Lakes Region’ webinar, hosted by GLISA on July 27th, 2020

[NOAA Atlas 14 Point Precipitation Frequency Estimates](#)

This tool contains information on precipitation frequency and can be used to learn about the frequency with which certain amounts of precipitation in given time intervals can be expected. This information is available for the United States and its territories. Along with 90% confidence intervals of the precipitation frequency estimates, the tool includes supplementary information about temporal distributions of heavy precipitation and analyses of seasonality and trends in annual precipitation. Outputs of the tool include CSV and GIS files of the precipitation frequency data, cartographic maps, and graphical representations of the precipitation frequencies.

[NOAA Quantitative Precipitation Forecasts](#)

This tool shows forecasted liquid precipitation totals for given time intervals from the next six hours to the next seven days. The Quantitative Precipitation Forecasts tool is a part of the larger NOAA Water Resources Dashboard that houses links to different categories of water related tools including future projections and forecasts, current conditions, historical data, and long-term planning resources. Using the Quantitative Precipitation Forecasts tool can help to identify the possibility of wet weather, including extreme weather events.

[NOAA Climate Explorer](#)

This tool has historical observations, modeled data, and future projections based on high and low emission scenarios for multiple different climate indicators including temperature and precipitation. This tool also allows users to explore different extreme thresholds for precipitation, coastal flooding, and heat. This information is displayed in the form of interactive maps and graphs with options to show different emission scenarios or extreme thresholds. These maps and graphs, along with the underlying data, can be downloaded directly from the tool for use in presentations, other tools, or other purposes. This tool is part of the U.S. Climate Resiliency Toolkit and gives an understandable overview of the climate in a given area and projections for the future.

[EPA National Stormwater Calculator](#)

This tool uses soil conditions, land cover, and historic rainfall records in a selected area to estimate annual rainfall and the amount of runoff from a specific site. Users can input information about the site and then select the types of low impact development (LID) controls, or green infrastructure projects, that they would like to implement in the simulation. The tool also includes multiple different climate change scenarios on two future time scales: mid-century and end of century. By implementing LID controls and exploring different climate change scenarios, the user can gather information about their site and projects that could be beneficial. On top of this, users can compare more than one scenario through the tool. Outputs of the tool include downloadable precipitation and evaporation data and a results page that summarizes the findings of the tool based on the user’s selections.

See following pages for more information on each tool.

NOAA Atlas 14 Point Precipitation Frequency Estimates

https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Overview:

This tool contains information on precipitation frequency and can be used to learn about the frequency with which certain amounts of precipitation in given time intervals can be expected. This information is available for the United States and its territories. Along with 90% confidence intervals of the precipitation frequency estimates, the tool includes supplementary information about temporal distributions of heavy precipitation and analyses of seasonality and trends in annual precipitation.

Outputs:

Outputs of the tool include CSV and GIS files of the precipitation frequency data, cartographic maps, and graphical representations of the precipitation frequencies. The downloadable files can be used in other software to aid in other analyses.

Applications:

Atlas 14 data are used as standards for designing, constructing, and operating infrastructure in a way to withstand heavy precipitation events and flooding. The data can also be used in the planning of water supply availability. For example, stormwater management systems and wastewater treatment plants can use these standards for new designs and operational planning.

Directions:

- Select your location in the tool using the map, a specific latitude and longitude, a specific address, or a specific station
- Once the location is selected, the tool automatically outputs a table where the rows are duration and the columns are frequency (PF Tabular)
- The tool will also automatically output graphical representations of the frequency and duration values along with 90% confidence intervals (PF Graphical)
- Other supplementary products, including a cartographic map and seasonality analysis, can be viewed in the “Supplementary Information” tab

NOAA Quantitative Precipitation Forecasts

<https://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml>

Overview:

This tool shows forecasted liquid precipitation totals for given time intervals from the next six hours to the next seven days. The Quantitative Precipitation Forecasts tool is a part of the larger NOAA Water Resources Dashboard that houses links to different categories of water related tools including future projections and forecasts, current conditions, historical data, and long-term planning resources. Using the Quantitative Precipitation Forecasts tool can help to identify the possibility of wet weather, including extreme weather events.

Outputs:

Outputs of this tool include maps of the United States overlaid with the predicted precipitation totals for the chosen time period. These time periods include totals for the next six hours all the way up to totals for the next seven days.

Applications:

Using this tool can help decision makers plan for potential wet weather and flooding based on the predicted amount of liquid precipitation for their location. With the forecasted totals and their individual knowledge of their local infrastructure, decision makers can be better equipped to prepare for extreme events and develop strategies for the mitigation of potential hazards.

Directions:

- Choose the time period for which you would like to see the forecasted liquid precipitation totals using the links in the table at the top of the webpage
- The page will automatically update to include the available forecasts for the time period that you chose
- To view precipitation total contours on a map of the United States, click on your desired forecast
- The colored contours on the map represent different liquid precipitation totals for different areas of the United States
- The map also gives information about when the forecast was made and the period of time for which it is valid

NOAA Climate Explorer

<https://crt-climate-explorer.nemac.org/>

Overview:

This tool has historical observations, modeled data, and future projections based on high and low emission scenarios for multiple different climate indicators including temperature and precipitation. This tool also allows users to explore different extreme thresholds for precipitation, coastal flooding, and heat. This information is displayed in the form of interactive maps and graphs with options to show different emission scenarios or extreme thresholds. This tool is part of the U.S. Climate Resiliency Toolkit and gives an understandable overview of the climate in a given area and projections for the future.

Outputs:

The maps and graphs displayed as part of the Climate Explorer, along with the underlying data, can be downloaded directly from the tool for use in presentations, other tools, or other purposes.

Applications:

This tool can be used to investigate how climate conditions in a user's area are projected to change in future decades. This information can be used to understand potential vulnerabilities in the community and identify areas of improvement for increased resiliency.

Directions:

- Select your location to automatically generate regional and station-based climate information
- On the regional scale, you can look at climate charts and maps that show historical and projected values for variables such as precipitation and temperature
 - The future projections follow high and low emission scenarios
- To see data on a more local level, use the map to select your desired station
- On the station scale, you can look at historical temperature and precipitation data as well as historical exceedance of chosen thresholds
- The figures and underlying data can be downloaded for use outside of the Climate Explorer

EPA National Stormwater Calculator

<https://www.epa.gov/water-research/national-stormwater-calculator>

Overview:

This tool uses soil conditions, land cover, and historic rainfall records in a selected area to estimate annual rainfall and the amount of runoff from a specific site. Users can input information about the site and then select the types of low impact development (LID) controls, or green infrastructure projects, that they would like to implement in the simulation. The tool also includes multiple different climate change scenarios on two future time scales: mid-century and end of century. By implementing LID controls and exploring different climate change scenarios, the user can gather information about their site and projects that could be beneficial. On top of this, users can compare more than one scenario through the tool.

Outputs:

Outputs of the tool include downloadable precipitation and evaporation data and a results page that summarizes the findings of the tool based on the user's selections.

Applications:

The primary application of this tool is to investigate stormwater retention of a given site. Users can gather information on the largest daily rainfall amount that can currently be retained in their area and how this capacity can be increased through the implementation of low impact development tools. The projected costs and performance of these tools can also be analyzed in the Stormwater Calculator.

Directions:

- Select your location using the map or a specific address or zip code and enter the size of your site in acres
 - Move through the subsequent steps on the left side of the tool, following the directions
- A lot of the steps will auto fill based on the data housed within the tool but can be edited based on more specific information you have about your site
- Once you move through all of the steps the final page will display the results of your investigation
- The results pages, as well as certain data sets including precipitation and evaporation, can be downloaded directly from the tool