

# TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

UTAH

NATURAL RESOURCES CONSERVATION SERVICE

March 3, 2011

ENG - 210 - TECHNICAL NOTE UT21-11-03  
190-VI

SUBJECT: USE OF TYPE II DISTRIBUTION VERSUS NOAA ATLAS 14 DISTRIBUTIONS

Purpose. To transmit information on the use of Type II distribution versus NOAA Atlas 14 distributions.

Effective Date. Upon receipt.

Contents of Technical Note.

**Background:** NOAA Atlas 14 lists new design storm volumes for various durations from 5 minutes to 60 days per storm frequency. Twenty-four hour design distributions for each probability storm can be constructed using this data.

NRCS has developed a new version of the hydrology computer program called Win TR-20 that creates these new design rainfall distributions when the site's NOAA Atlas 14 data is imported. The Win TR-20 program can be used to analyze the site hydrology and various treatment practices based upon NOAA Atlas 14 data. The NOAA Atlas 14-based design rainfall amount and distribution can also be extracted from Win TR-20 and used in other hydrology models that do not offer this capability yet rely on user defined input for these two parameters. For more information about NOAA Atlas distribution see the White Paper for Rainfall Distribution for NOAA Atlas 14 Volume 2 by William Merkel, National Water Quality and Quantity Technology Development Team, NRCS, Beltsville, MD  
[http://www.wsi.nrcs.usda.gov/products/w2q/downloads/papers/NOAA\\_Atlas14\\_rainfall\\_distributions.pdf](http://www.wsi.nrcs.usda.gov/products/w2q/downloads/papers/NOAA_Atlas14_rainfall_distributions.pdf)

**Usage:** NOAA Atlas 14 distributions may be used in lieu of the NRCS Type II distribution, if the watershed is greater than 2,000 acres. Type II distribution is a conservative method and still can be used for areas greater than 2,000 acres and comparisons with local stream gages, calibrated ungaged hydrology, and USGS regression equations should be used for validation and calibrations of peak flows (i.e. engineering judgment). These comparisons should also take place for using distributions using NOAA Atlas 14 for validation and calibration of time of concentration, runoff curve numbers, and other hydrologic parameters.

WinTR20 will be used to convert the precipitation depths to a distribution. Note that a distribution is made for each 1, 2, 5, 10, 25, 50, 100, 200, and 500 year return interval. These distributions can be used in WinTR55.

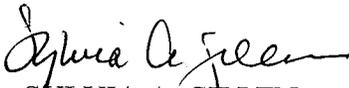
Note the file to be created from the Hydrometeorological Design Studies Center Precipitation Frequency Data Server (PFDS) to be imported into WinTR20 requires being in partial duration time series. It is recommended that annual maximum time series values be used in hydrologic calculations.

**Distribution:** For more information on importing NOAA Atlas 14 data go to Hydraulics and Hydrology Tools and Models - WinTR-20 web page (see link below) and view Module 9: Import of NOAA Atlas data (7.4 mb) and Module 9a: NOAA Atlas 14 rainfall distributions (1.3 mb).

Hydraulics and Hydrology Tools and Models - WinTR-20 – link:  
[http://www.wsi.nrcs.usda.gov/products/W2Q/H&H/Tools\\_Models/WinTR20.html](http://www.wsi.nrcs.usda.gov/products/W2Q/H&H/Tools_Models/WinTR20.html)

Filing Instructions. File in the Technical Notes notebook under ENG - General.

Contact. For more information about NOAA Atlas 14 distribution or depth or hydrology software contact Nathaniel Todea, Hydraulic Engineer, at (801) 524-4573 or [Nathaniel.Todea@ut.usda.gov](mailto:Nathaniel.Todea@ut.usda.gov)

  
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