

Storm Transposition Applications in Flood Modeling

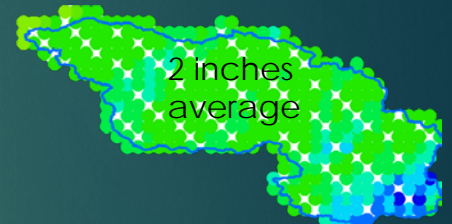
To model the effects of rainfall on a watershed, engineers traditionally use **design storms** which are uniform in time and space. We propose the use of **storm transposition** in watershed modeling and planning as a more realistic and nuanced approach.

Design Storms Use Uniform Rainfall Patterns

Each design storm has the same rainfall timing patterns and same total rainfall for every point in a watershed.

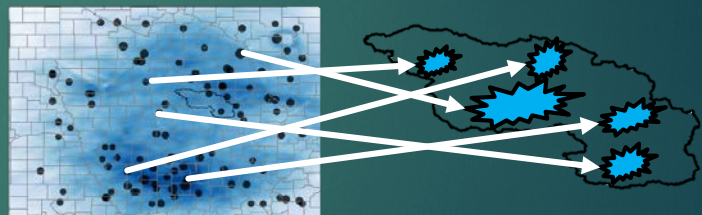


These storms do not resemble an actual storm, especially for large watersheds such as the Middle Cedar watershed shown here with a drainage area of 2,400 square miles. A real storm in a large watershed is shown on the right.



Storm Transpositions Have Unique and Localized Patterns

Transposing storm rainfall and timing data from **real storms** allows an engineer to model the effects of storms that are physically realistic that **really happened**.



A tool called **RainyDay** performs these transpositions so that engineers can input them in models. This is done by capturing rainfall data and then moving it onto the watershed of interest.

The resulting rainfall maps have a variety of rainfall patterns and timings and cause varying flood events depending on location and timing.

