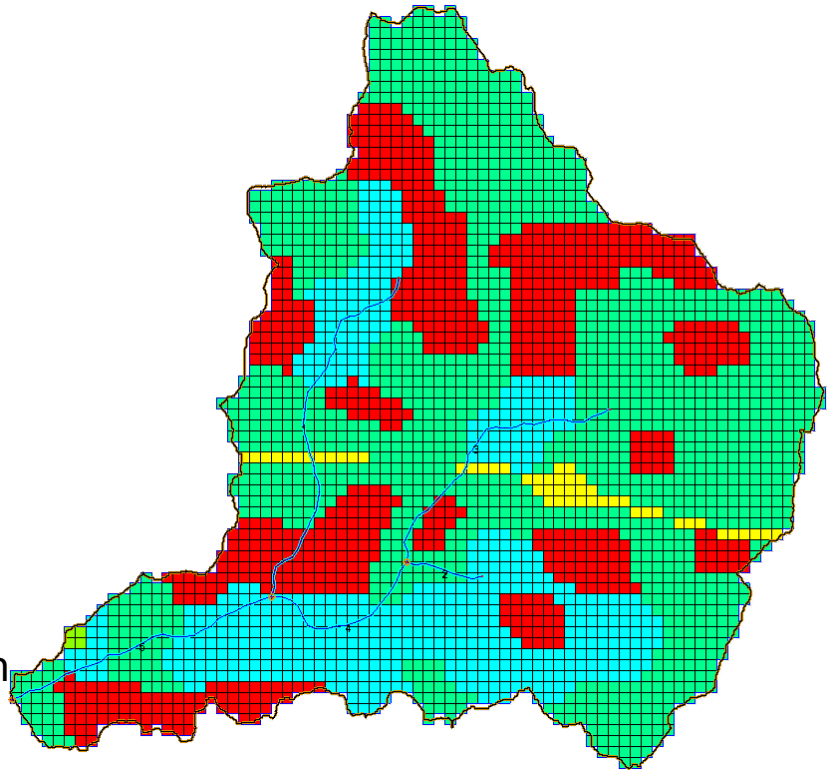
Setting up Rainfall methods

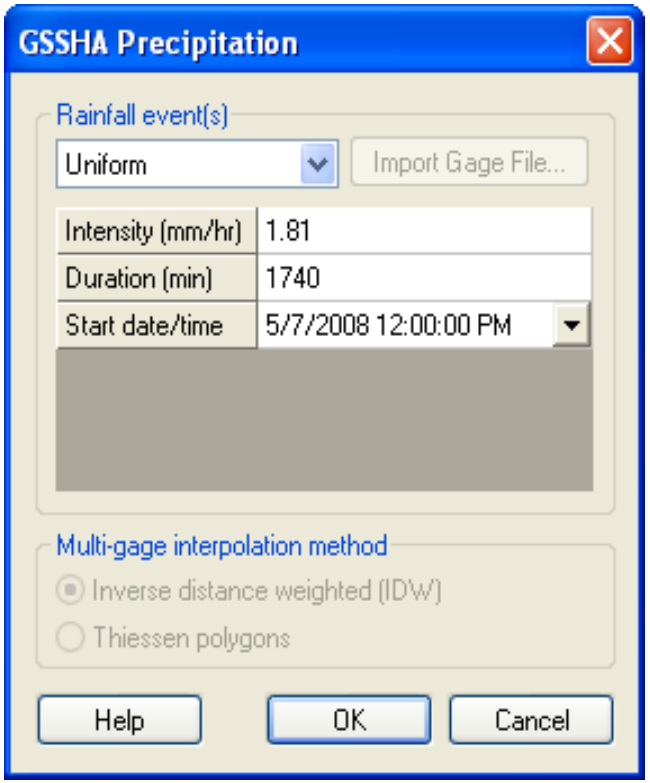
Base Model

- We will continue working with the Judys Branch Watershed
- The base model that you will open has the following processes defined:
  - Uniform Precipitation
  - Distributed Infiltration
  - Distributed overland flow roughness
- You will change the precipitation methods to :
  - Uniform
  - Gage
  - Hyetograph
  - Nexrad Radar
- You will run the model with each of these precipitation methods and compare the results
- You will be using a real storm obtained from NOAA and use different temporal and spatial distributions
- The Nexrad Radar rainfall also corresponds to the same time period as gage data



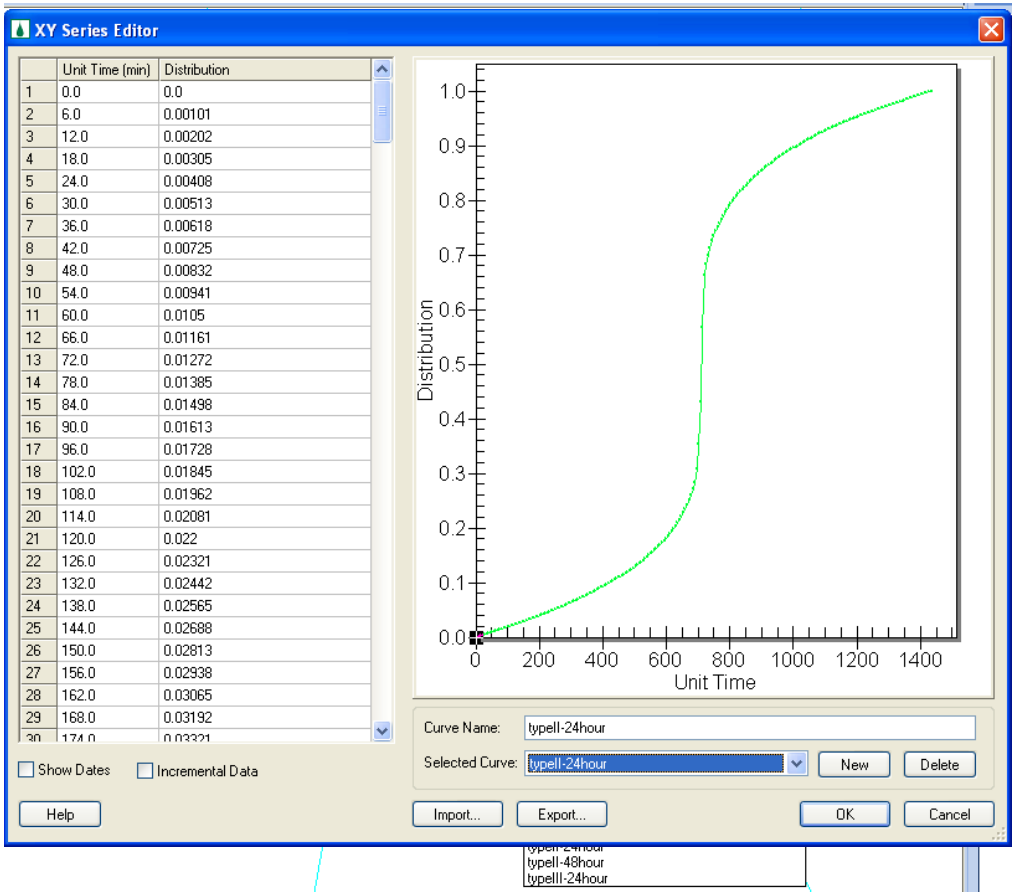
Using Uniform Precipitation

- The rainfall depth is uniformly distributed over time and is assumed to have same intensity all over the watershed
- Intensity: mm/hr
- Duration: min



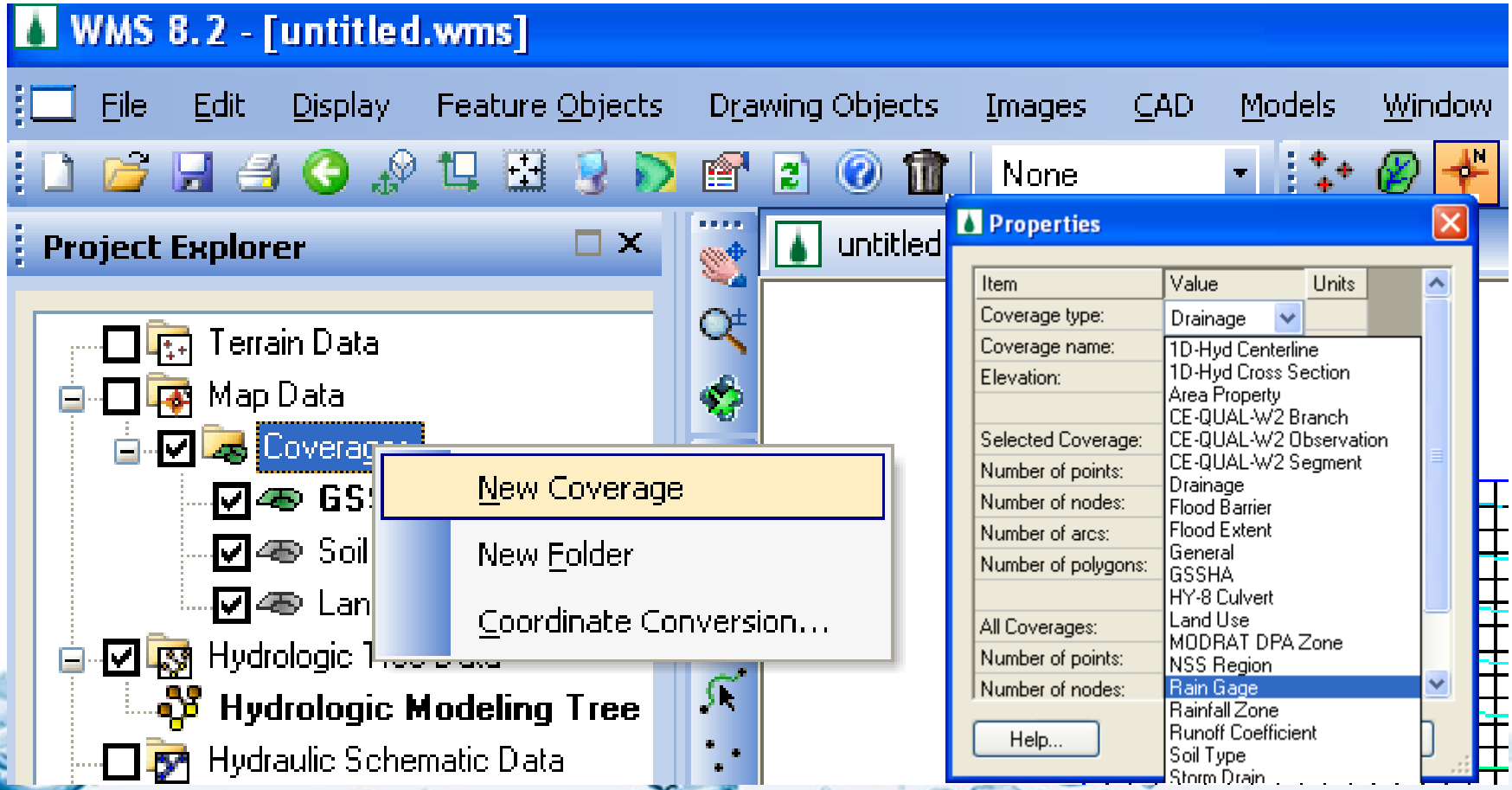
Using a design storm hyetograph

- This option is useful if the normalized temporal distribution is available (eg NRCS storms)
- The distribution is defined in the XY series editor and total storm depth(mm) is defined.
- This method can be used for multiple gages too



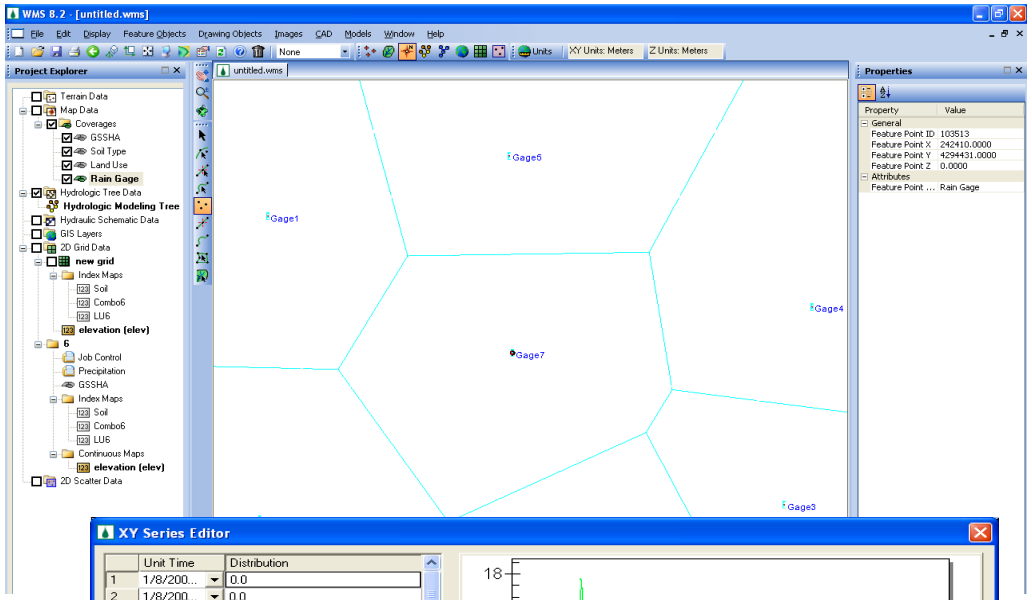
Using Rain gages with IDW interpolation

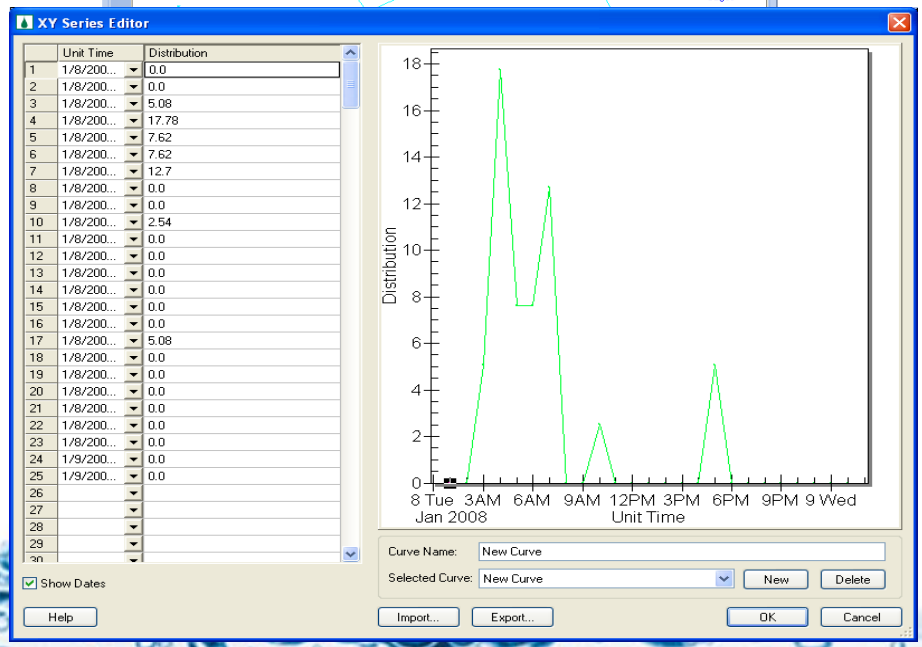
- Multiple gages can be used but each gage must have the same temporal distribution of rainfall
- A rain gage coverage is created



Using Rain gages with IDW interpolation

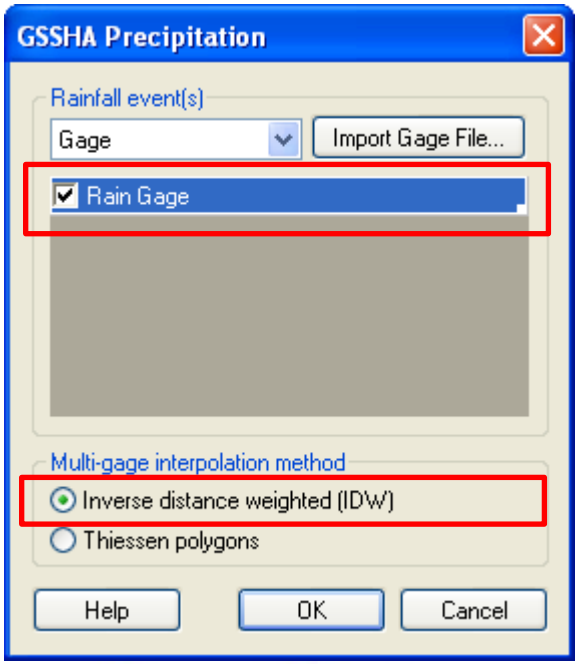
- Once the gages are created, they will be plotted and Thiessen polygons are generated automatically.
- The gages are created in the rain gage coverage
- You can then define the temporal distribution of the storms for each gage





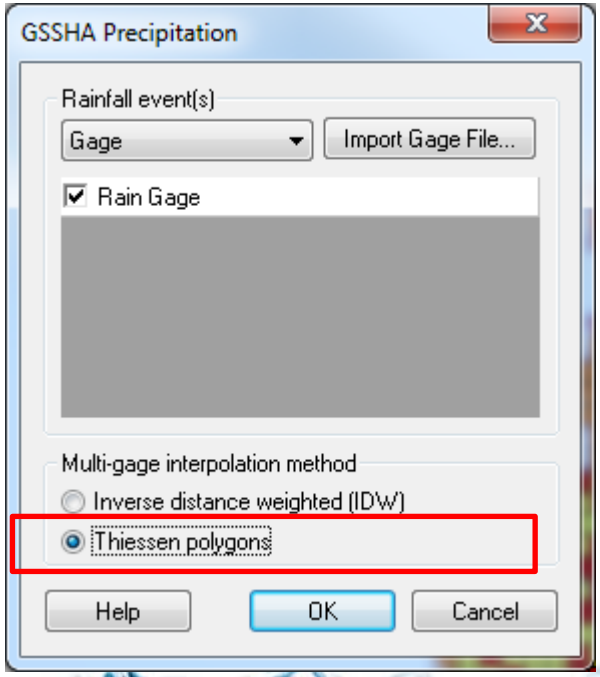
Using Rain gages with IDW interpolation

- Once all the gages are defined, go back to GSSHA | Precipitation and select "Rain Gage" coverage to be used to get the gage information



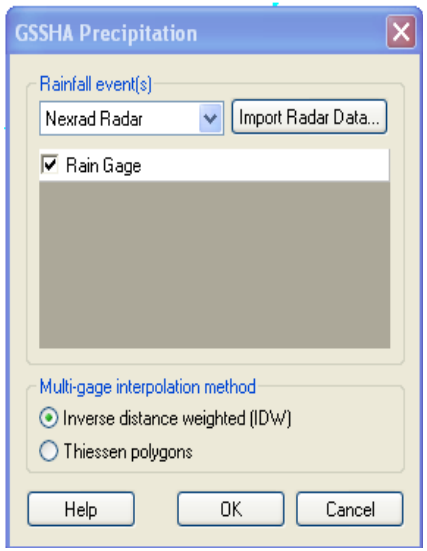
Using Rain gages with Thiessen Polygon interpolation

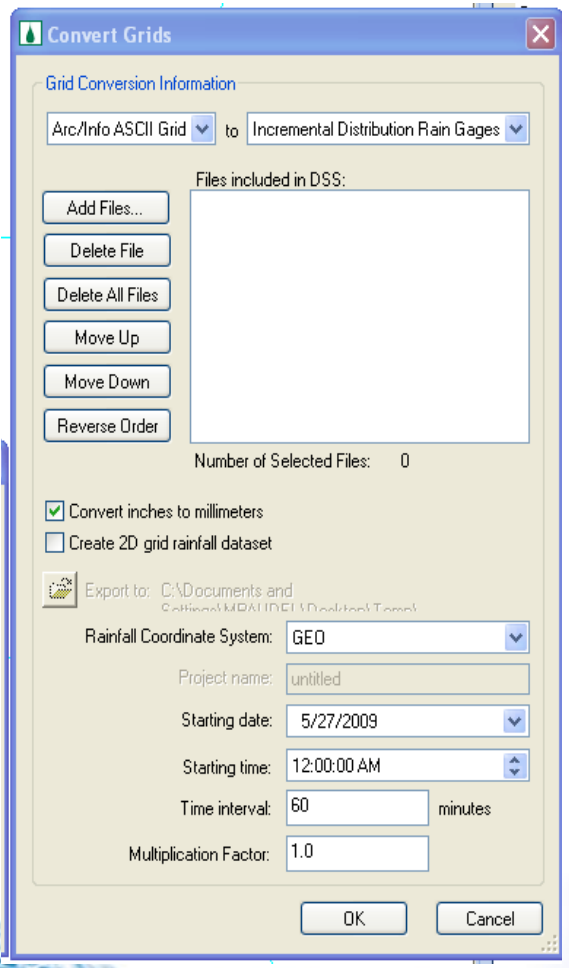
- After running the previous model, go back to GSSHA | Precipitation and select "Rain Gage" coverage to be used to get the gage information and select *Thiessen polygons*
- Rerun the model

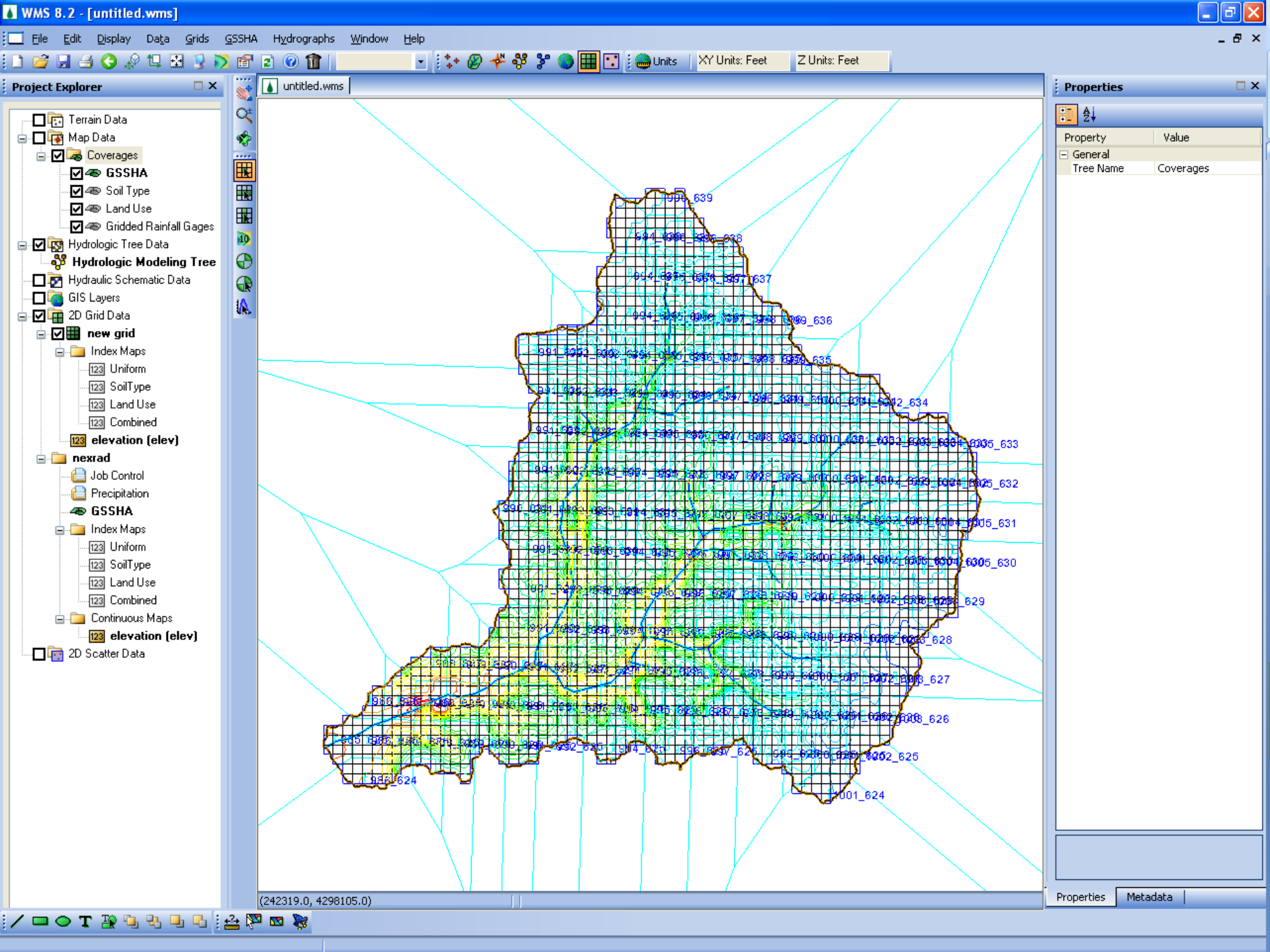


Using NEXRAD Radar data

- NEXRAD radar data is used to define the spatially and temporally varying rainfall
- It involves more computation compared to previous methods.
- This will be discussed in more detail next.






WMS 8.2 - [untitled.wms]
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Units
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Z Units: Feet
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Terrain Data
Map Data
Coverages
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Land Use
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Hydrologic Tree Data
Hydrologic Modeling Tree
Hydraulic Schematic Data
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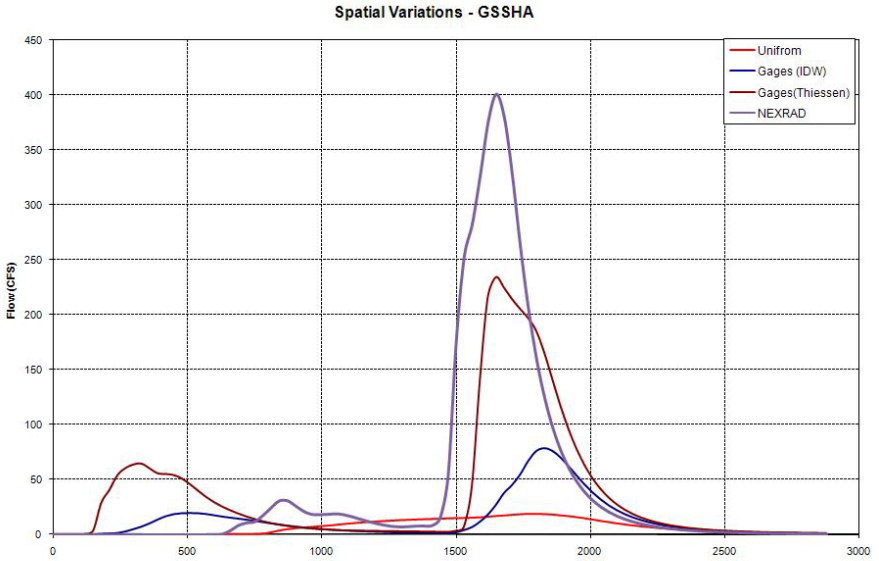
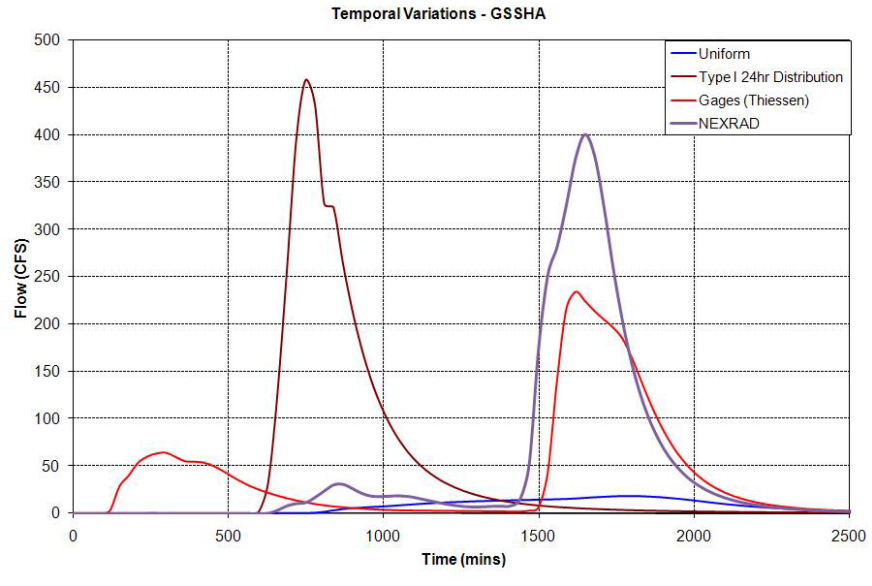
Results

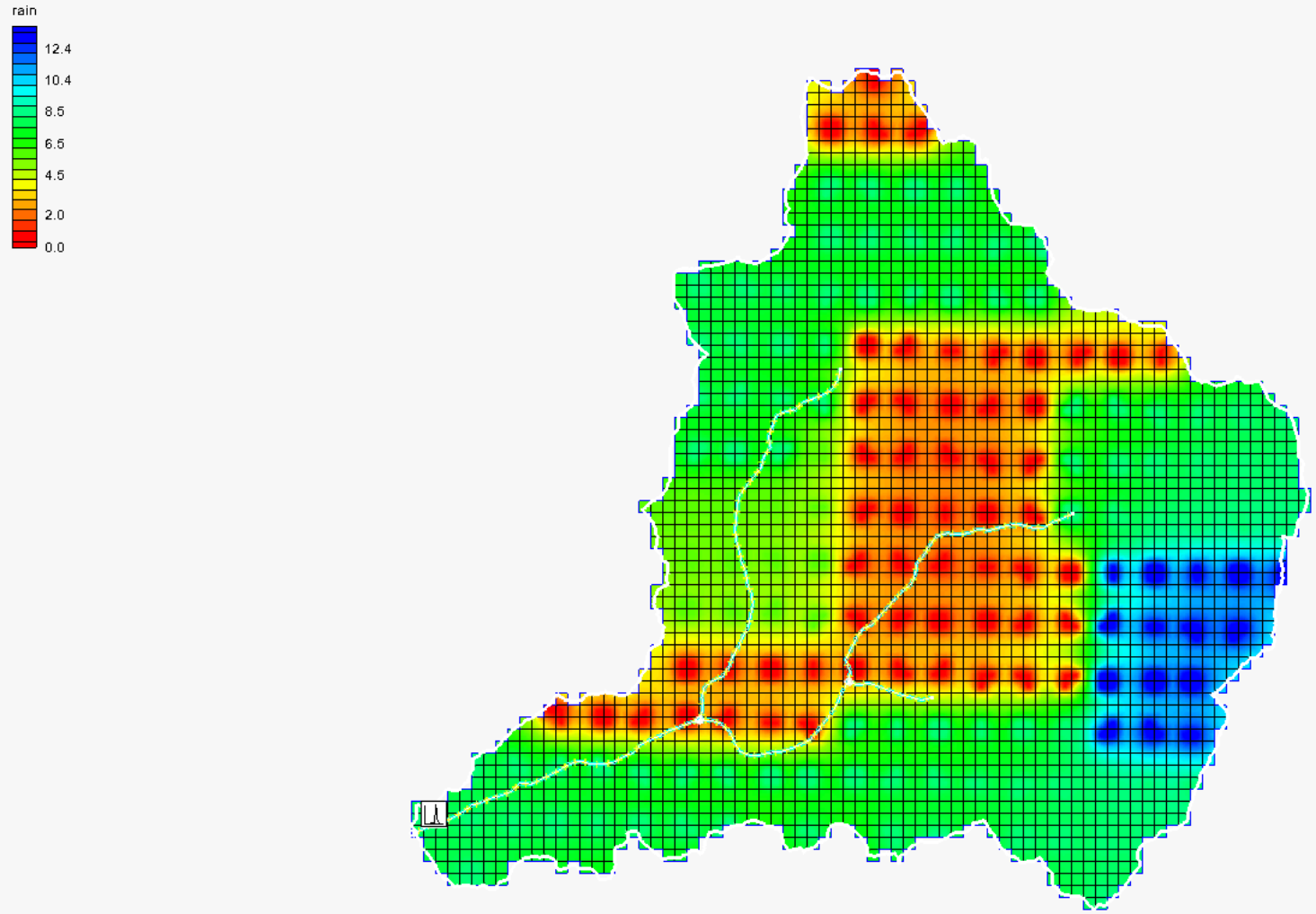
- At the end of each simulation run with a different precipitation method, you will copy the outflow hydrograph ordinates to a spreadsheet and compare the results



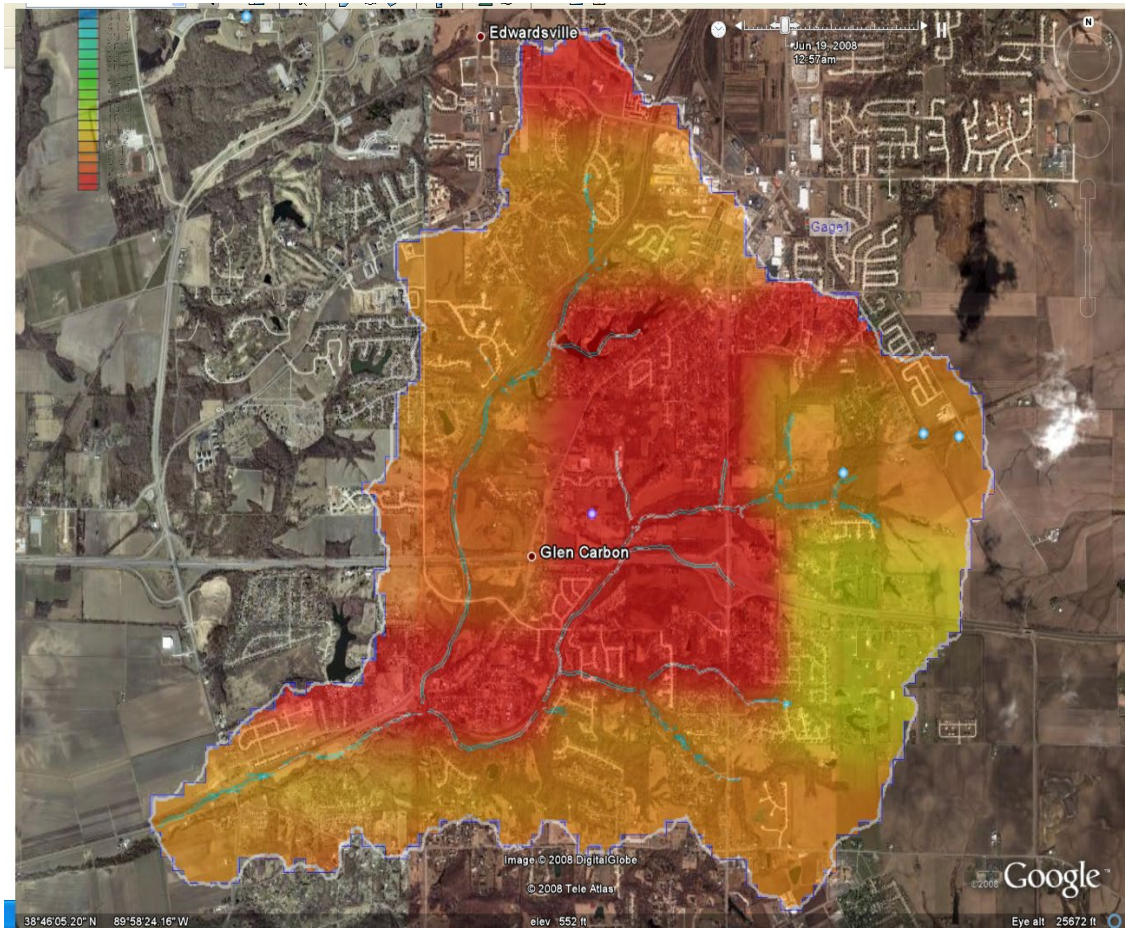


Visualizing the Rainfall Data

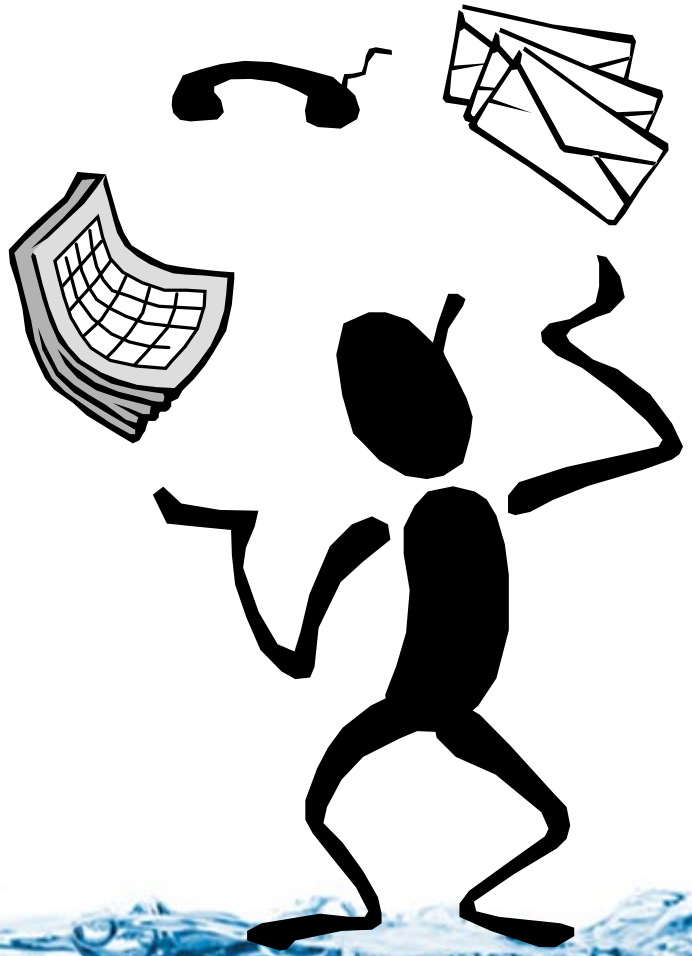
- The spatial variation of the precipitation can be animated in WMS



Animations in Google Earth



Demonstration



Workshop