

SPF Computation Process (Example-Trinity River below Five Mile Ck)

Populate HMR52 Editor in Metvue

Angles in MetVue should be listed clockwise from North. Requires conversion from WHA angles listed counter-clockwise from positive x-axis.

Computation Options Tab - Main

HMR52 Editor

Computation Options | Run Options | Output Options

basin shapefile: C:\HEC\GIS\tx_cnty_100_II_region2.shp

Browse...

Depth-Area-Duration Curve Options

☐ Use basin centroid

☐ Use Basin Area

☐ New curves for each storm position

☒ Use specified position Lon: -97.112 Lat: 32.8517

☐ Define Custom Curves

Populate From Maps

Storm Size Options

☐ Recompute for each location and rotation

☐ Force definition of entire curve

Time intervals to use: 4

☒ Use specific storm size

Area: 1273.0 sq mi.

Area (Sq Mi)	6 hr	12 hr	24 hr	48 hr	72 hr
10					
200					
1000					
5000					
10000					
20000					

Temporal Hyetograph Distribution Options

6 hr distribution: custom

Edit

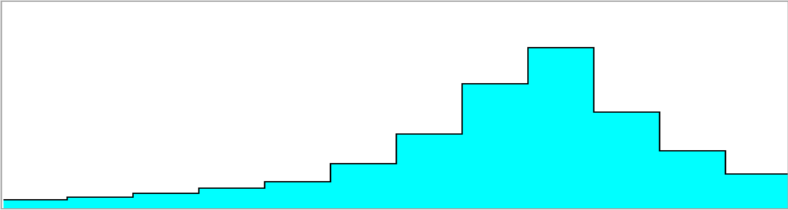
☒ Create shorter intervals

Interval: 1 Hour

Periods to subdivide: 4

1 hr to 6 hr ratio: ☒ Auto ☐ Use specified value: 0.3

6 Hour distribution pattern:



OK

Cancel

Computation Options Tab - Custom hyetograph pattern

Edit hyetograph pattern

Pattern Name: custom

New...

Delete

Ordinal

12

11

10

9

8

6

4

2

1

3

5

7

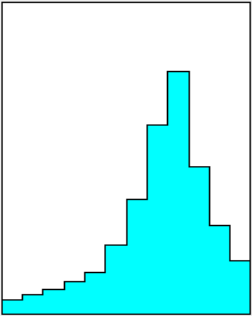
Move to top

Move up

Move down

Move to bottom

Hyetograph ordinal sample



OK

Cancel

Run Options Tab

Computation Options Run Options **Output Options**

☒ Run once for specified location ☐ Run for selected pattern

☐ Compute using same location as D-A-D curve (or centroid if D-A-D curve location not specified)

☒ Use specified position Longitude: Latitude:

☐ Rotate storm to align with basin

☒ Specify storm rotation degrees Preferred Orientation:

☐ Do not adjust depths for storm orientation

Output Options Tab

Computation Options Run Options **Output Options**

Output File:

Logging Options

☒ Log results to file Normal

For each storm position/rotation: ☐ Replace log file ☒ Append to log file

☒ Log results to screen

Hyetograph Output Options

☐ Set hyetograph ordinals to 0.0 prior to start of storm for Days

☐ Apply ratio of of the PMP starting Days before start of PMP

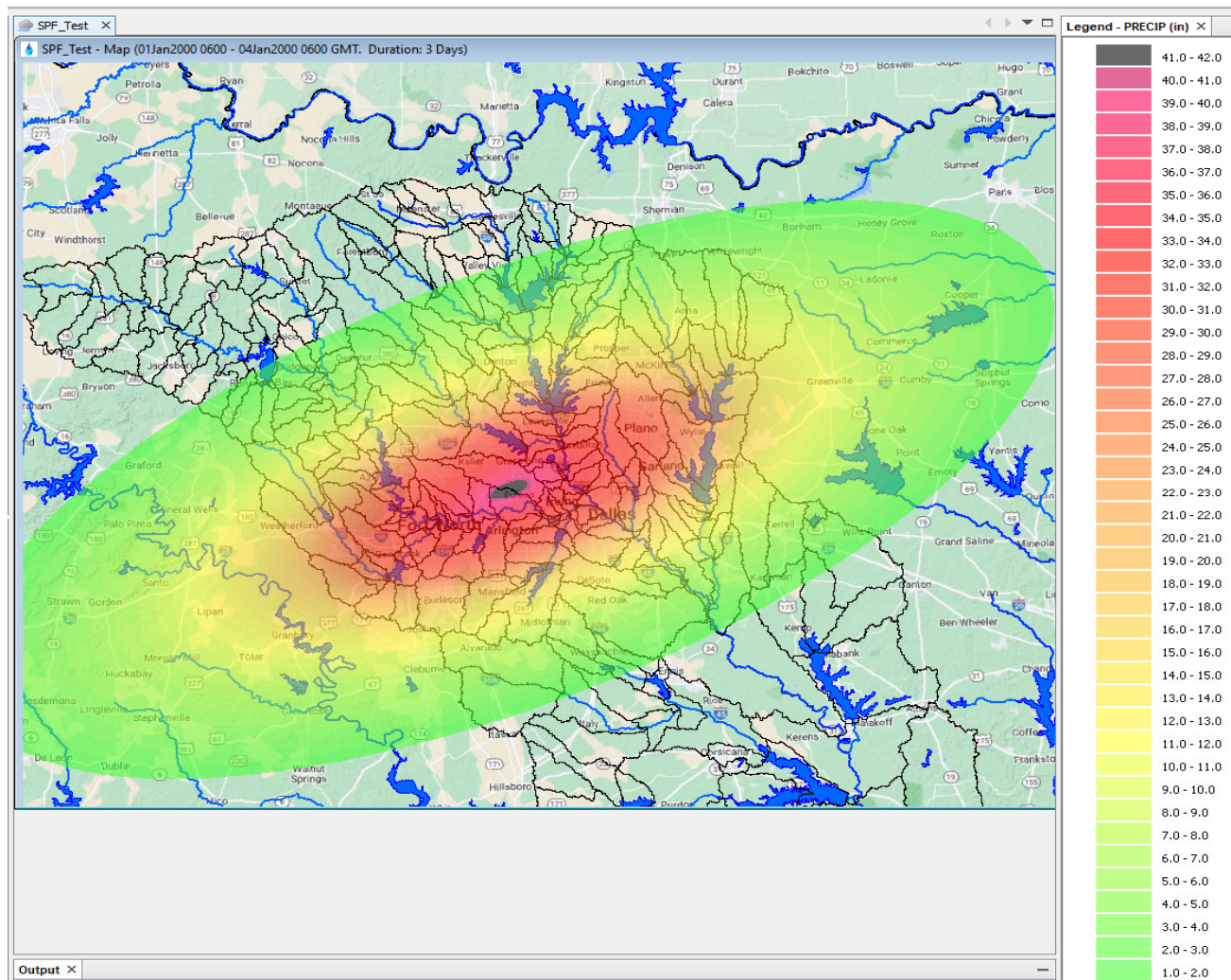
Start date of PMP:

☐ Set hyetograph ordinals to 0.0 following end of storm for Days

Hyetograph ordinals from 01Jan2000 0600 GMT up to 04Jan2000 0600 GMT will contain the PMP

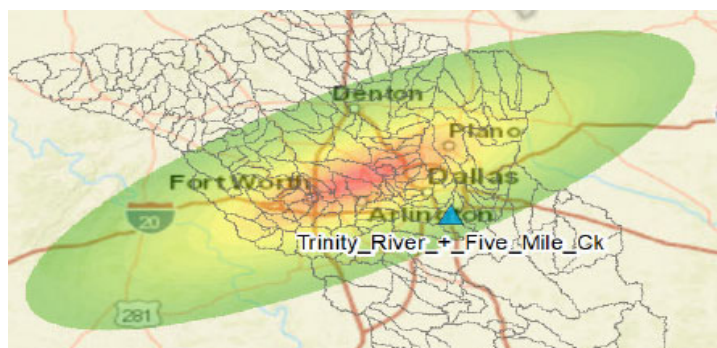
Check .log file after creating PMF storm and check coordinates, storm area and rotation

HMR PMP Storm is visible after selecting "Ok".



Check to see if storm orientation matches InFRM Trinity WHA Elliptical Storm orientation

InFRM Trinity WHA Elliptical Storm



Save PMF Storm to Gridded DSS file

Project TIN(s) to a Grid ✕

Save to: **DSS : SHG projection stored to DSS**

Target Extents From: ☐ Source Map Panel ☒ Source TIN ☐ Defined Polygon ☐ Custom

Input/Show Target Extents in: ☐ lat/lon ☒ SHG Coordinates

SHG X 1: SHG X 2:

SHG Y 1: SHG Y 2:

Grid Cell Size: Meters

Path Parts: A: B: C: F:

DSS File: Browse...

☐ Change Timezone Used to Write Data Central Standard Time Output Units:

☐ Apply Time Shift to TINs when Saving

Start Time: ☐ Explicit ☒ Relative Days

OK Cancel

Add PMP gridded DSS file into Metvue (Select DSS Paths)

Select Data ✕

Combine TINs: ☒ Temporally ☐ Spatially ☐ Both ☒ Use Cached Spatially Combined TINs

☒ Select Specific TIN(s) ☐ Select TIN(s) Based on Specified Criteria

DSS File: ... Catalog DSS file ☐ Allow Monthly DSS File Search

Active Read Constraints/Overrides: Temporal Combine Default(Aggregate) Spatial Combine Default (Average)

Time Filters...

Search/Selection/Aggregation Specifiers

Path Filter: A: B: C: D: E: F:

Available TINs: ☐ Show in Read Time Zone ☒ Show in Display Time Zone Available paths: 72

A	B	C	D	E	F
SHG	TRBFVM	PRECIP	01Jan2000:0000	01Jan2000:0100	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0100	01Jan2000:0200	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0200	01Jan2000:0300	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0300	01Jan2000:0400	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0400	01Jan2000:0500	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0500	01Jan2000:0600	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0600	01Jan2000:0700	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0700	01Jan2000:0800	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0800	01Jan2000:0900	PMF
SHG	TRBFVM	PRECIP	01Jan2000:0900	01Jan2000:1000	PMF

Add All Add Sel

Selected TINs: ☐ Show in Read Time Zone ☒ Show in Display Time Zone Selected paths: 72

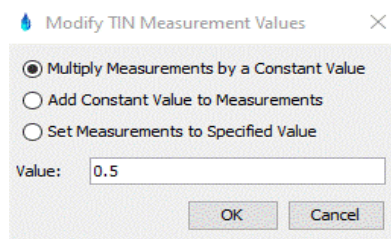
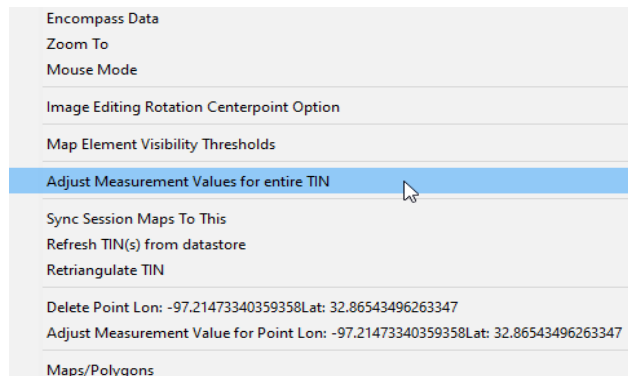
Path	Source Time Zone	File
/SHG/TRBFVM/PRECIP/01Jan2000:0000/01Jan2000:0100/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0100/01Jan2000:0200/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0200/01Jan2000:0300/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0300/01Jan2000:0400/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0400/01Jan2000:0500/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0500/01Jan2000:0600/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0600/01Jan2000:0700/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0700/01Jan2000:0800/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0800/01Jan2000:0900/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:0900/01Jan2000:1000/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...
/SHG/TRBFVM/PRECIP/01Jan2000:1000/01Jan2000:1100/...	Greenwich Mean Time	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Ad...

Remove All Remove Sel

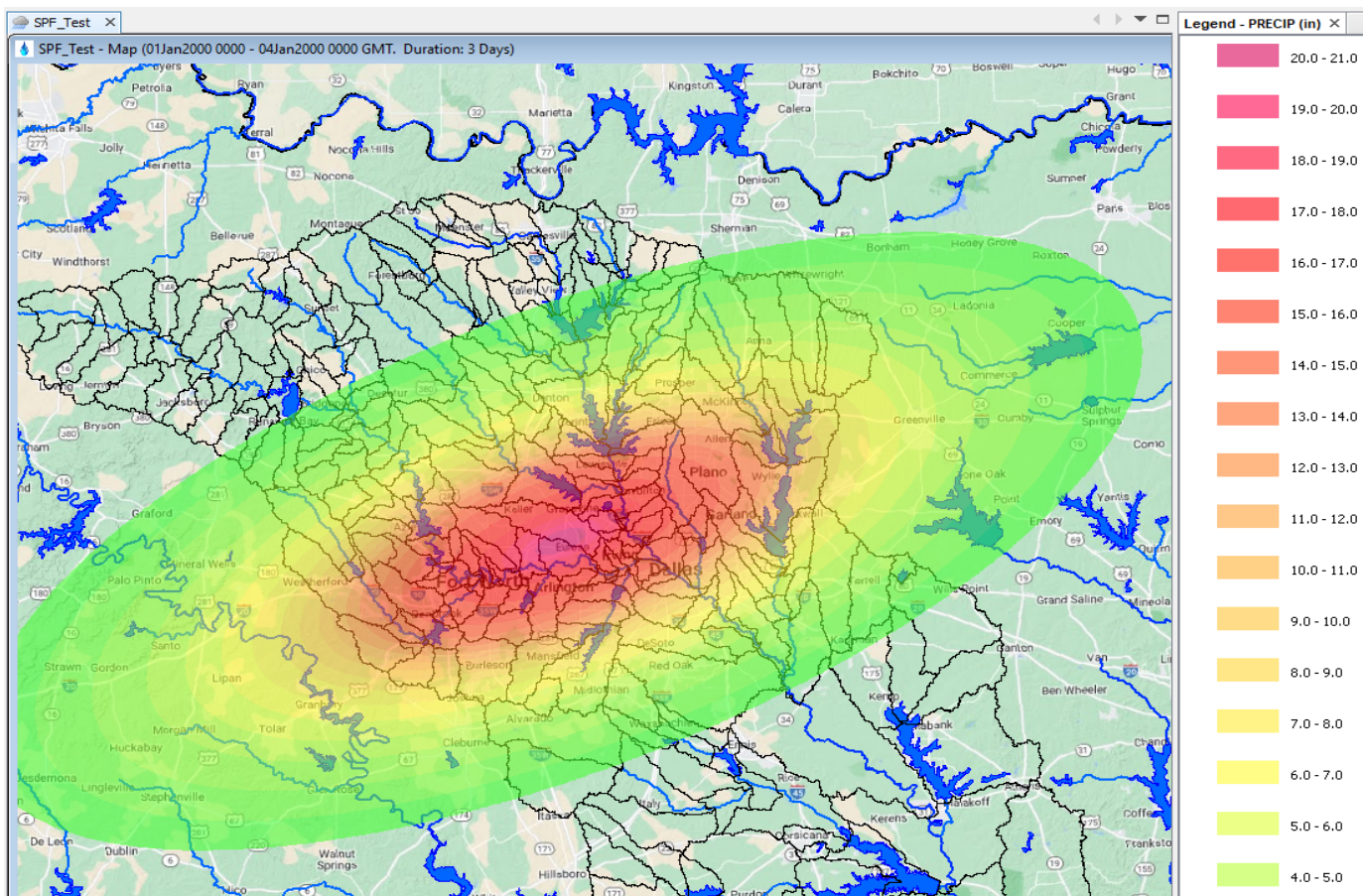
OK Cancel

Create SPF storm by reducing PMF storm by 50%.

Right click on map and select "Adjust Measurement Values for entire TIN"



Notice the resulting storm totals have been reduced by 50% from the PMF storm.



Save SPF Storm to Gridded DSS file



Project TIN(s) to a Grid

Save to: DSS : SHG projection stored to DSS

Target Extents From: ☐ Source Map Panel ☒ Source TIN ☐ Defined Polygon ☐ Custom

Input/Show Target Extents in: ☐ lat/lon ☒ SHG Coordinates

SHG X 1: -230 SHG X 2: 124

SHG Y 1: 446 SHG Y 2: 648

Grid Cell Size: 2000 Meters

Path Parts: A: SHG B: TRBFVM C: PRECIP F: SPF

DSS File: C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Addition\SPF\2024\PMF_SPF_Files\SPF_2024.dss Browse...

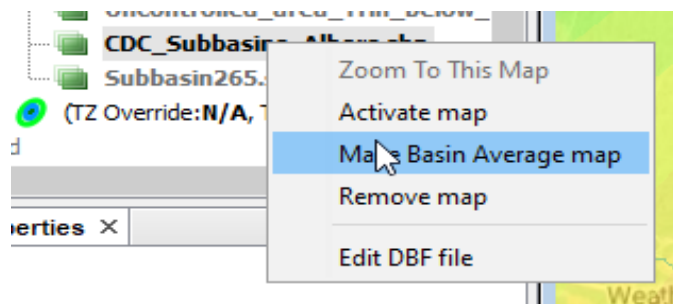
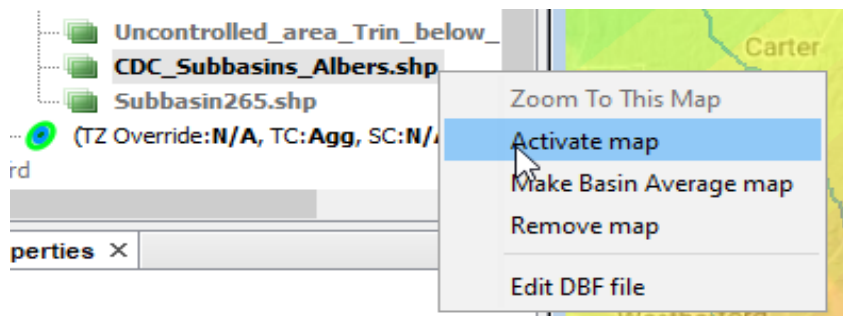
☐ Change Timezone Used to Write Data Central Standard Time Output Units: mm

☐ Apply Time Shift to TINs when Saving

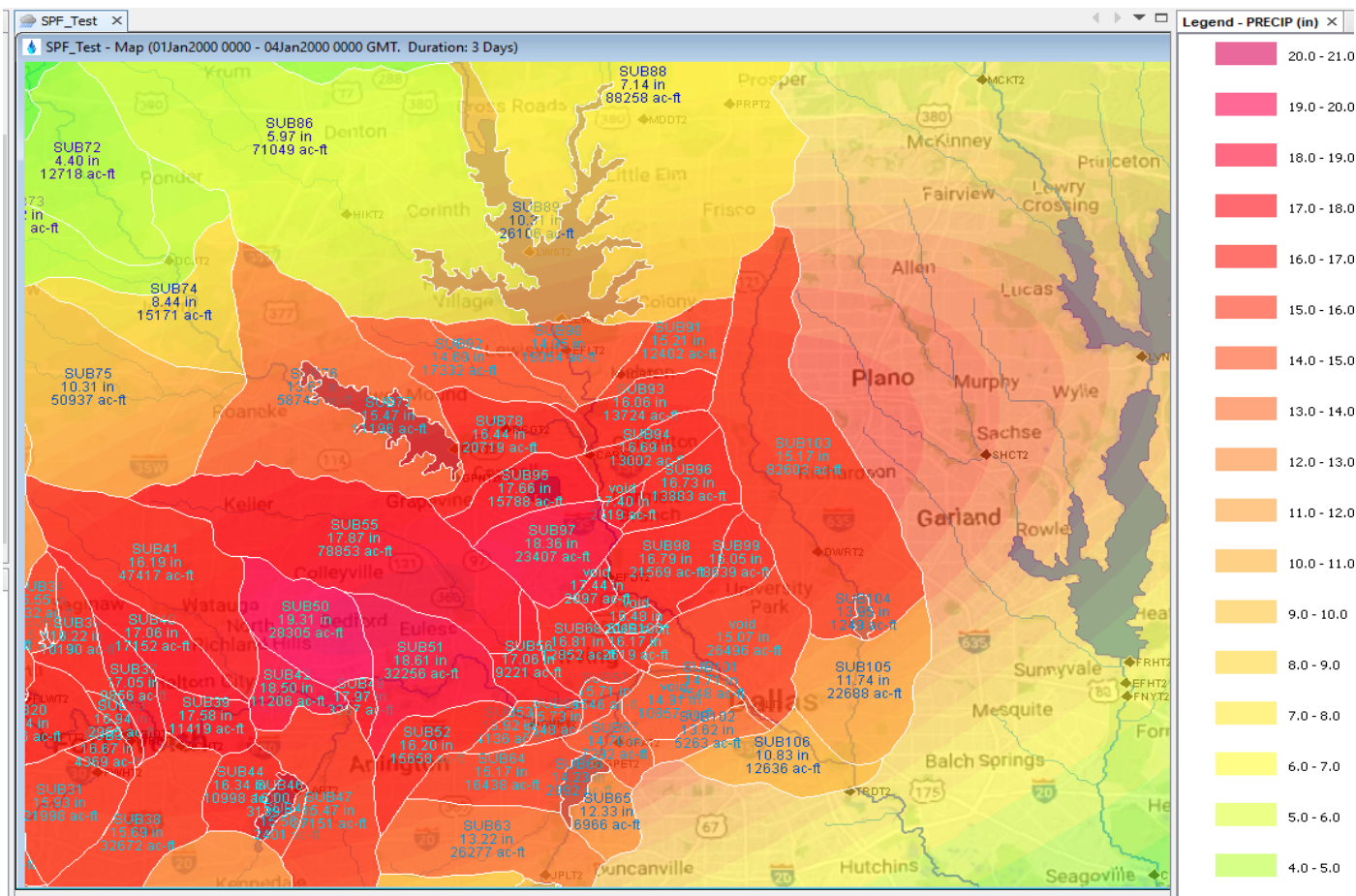
Start Time: ☐ Explicit ☒ Relative 0 Days

OK Cancel

Activate CDC Subbasins Shapefile by right clicking the map layer and selecting "Activate"



SPS subbasin averages will be visible

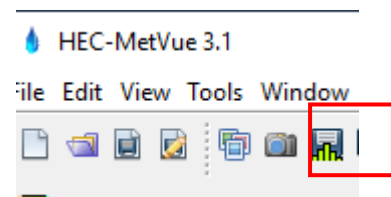


Copy the 2013 CDC HMS model to a new folder named after the junction of interest (i.e TRBFVM for Trinity below five mile creek)

Trinity > CDC > Updates > 2020_East_Fork_Addition > SPF > 2024 > HMS_Models > CDC_2024_Precip			
Name	Date modified	Type	Size
TRBEFK	3/22/2024 6:51 PM	File folder	
TRBFVM	8/14/2024 5:32 PM	File folder	

Create a subbasin average dss file

Select the Create Subbasin Time Series from TIN tool



Compute Time Series

Time Series Interval: 1 Hours Data Type: PER-CUM

Timezone for writing: Greenwich Mean Time

☒ Write to DSS: 020_East_Fork_Addition\SPF\2024\HMS_Models\CDC_2024_Precip\TRBFVM\SPF_BASINAVG_TRBFVM.dss Browse...

☒ Compute Entire Timespan ☐ Compute Missing or Stale Timespans Only

Basin Average Computation Method: ☐ TIN-Polygon Intersection ☒ Basin Polygon

DSS path: ☒ Override A: TRINITY B: <default> C: PRECIP-INC ☒ Override F: SPF

☐ Write to text file: \Erickson\Programs\HEC_METVUE\HEC-MetVue_31_Portable\HEC-MetVue_31_Portable\HEC-MetVue_3.1 Browse...

☐ Append to text file

☐ Write to Basin Average Panel

Text Format: ☒ Tabular ☐ Shef ☐ Legacy Forecast ☐ CSV Format Options...

☐ Display Validation Editor Before Saving Results

☒ Display Time Zone (GMT) ☐ Storage Time Zone (GMT)

Time Offset for Tree View Rollup: 0000

All gridded data will be processed as grid cell averages.

OK Cancel

Change the DSS file and Pathnames for the Walker Branch gages to link to the SPS basin average dss file recently created.

Make sure HMS is closed when revising the .gage file or the changes will not be saved.

UT2012FutureSPF.gage	3/22/2024 6:51 PM	GAGE File	149 KB
UT2012FutureSPF.gage	3/22/2024 6:51 PM	GAGE File	149 KB

Open the file in notepad and use the Find and Replace tool

Replace

Find what: SPF_BASINAVG_TRBRO\dss Find Next

Replace with: SPF_BASINAVG_TRNR.dss Replace

Replace All

Cancel

☐ Match case

☐ Wrap around

The revised file should look like the example below.

Gage: SUB101WB

Last Modified Date: 10 November 2012

Last Modified Time: 18:05:25

Reference Height Units: Feet

Reference Height: 32.808

Gage Type: Precipitation

Precipitation Type: Incremental

Units: IN

Data Type: PER-CUM

Data Source Type: External DSS

Variant: Variant-1

Last Variant Modified Date: 22 March 2024

Last Variant Modified Time: 23:14:09

Default Variant: Yes

DSS File Name: SPF_BASINAVG_TRBFVM.dss

DSS Pathname: /TRINITY/SUB101/PRECIP-INC/01JAN2000/1HOUR/SPF/

Start Time: 1 January 2000, 00:00

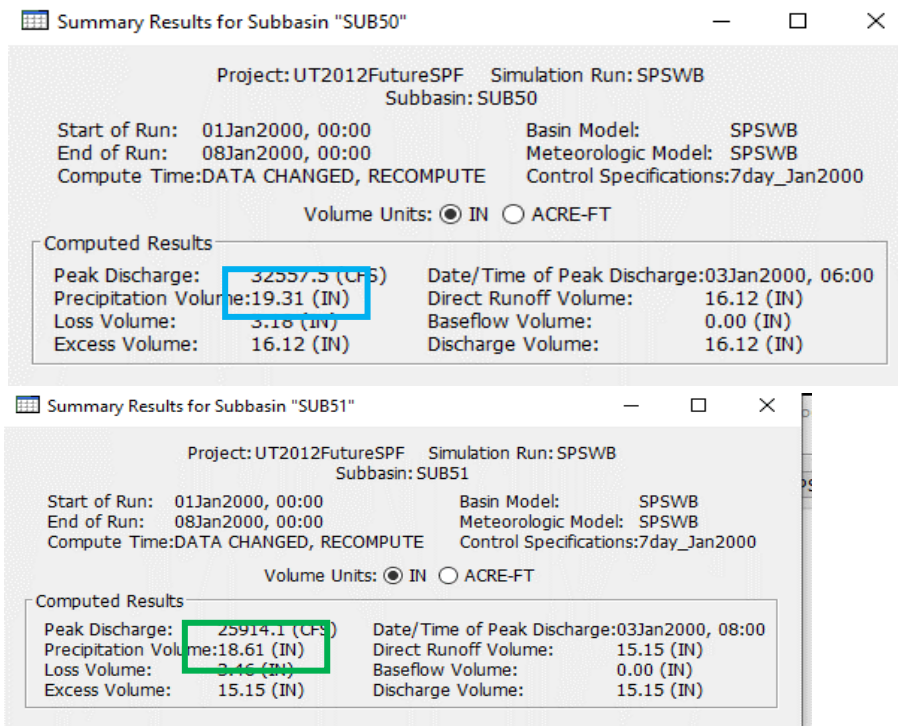
End Time: 4 January 2000, 00:00

End Variant: Variant-1

End:

Run the SPSWB Simulation Run

Verify the subbasin average precipitation volume totals match between Metvue
(see previous screenshot of SPF storm in Metvue) and HMS

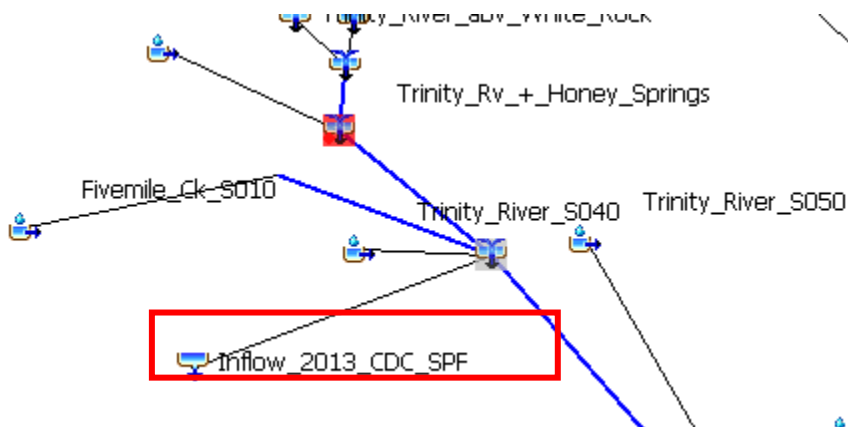


Open the Future Condition (20255) Elliptical Design Storm Model (Updated from Trinity WHA)

Copy 500yr Future Condition Basin model. This is required for each location in the Summary of Discharges table because the basin model will link to the 2013 CDC HMS model where the 2024 SPF simulation was made.

Note the HMS model elements upstream of the "Trinity_River_+_Five_Mile_Ck" junction are disconnected so that the inflow to this junction is coming from the 2013 CDC model (with 2024 SPF Storm)

Basin Name:	500yr_Fut_SPF_CDC_TRNR
Element Name:	Trinity_River_R050
Description:	ROUTE FROM TRINITY RIVER AT BELOW DALLAS GAGE(RM491.83) TO FIVE MILE CR. (RM486.55)
Downstream:	--None--
Routing Method:	Modified Puls
Loss/Gain Method:	--None--



Basin Name:	500yr_Fut_SPF_CDC_TRNR
Element Name:	Inflow_2013_CDC_SPF
Description:	
Downstream:	Trinity_River_+_Five_Mile_Ck
Area (MI2)	0.01
Flow Method:	Discharge Gage

Basin Name:	500yr_Fut_SPF_CDC_TRBFVM
Element Name:	Inflow_2013_CDC_SPF
Discharge Gage:	2013_CDC_TRBFVM

Create discharge gage for junction of interest by copying an existing discharge gage

The DSS Pathname will be the same for all the simulations but the DSS Filename will need to be updated to point to the specific folder containing the specific storm and HMS model for the junction of interest. Notice below how the Gage Name and the folder are for the same junction.

Gage Name:	2013_CDC_TRBFVM
Description:	
Data Source:	Single Record HEC-DSS
*DSS Filename:	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Addition\SPF\2024\HMS_Models\CDC_2024_Precip\TRBFVM\UT2022FutureSPF.dss
*DSS Pathname:	//TRBFVM/FLOW/31Dec1992 - 07Jan2000/1HOUR/RUN:SPSWB/
Units:	Cubic Feet Per Second
Time Interval:	1 Hour

Go back into the basin model and make sure that the "Inflow_2013_CDC_SPF" element is pointing to the new Time-Series Gage that was just created.

Basin Name:	500yr_Fut_SPF_CDC_TRBFVM
Element Name:	Inflow_2013_CDC_SPF
*Discharge Gage:	2013_CDC_TRBFVM

Create a new Precipitation Gridset that will point to the 2024 SPF Storm that was created for the location of interest. This can be done by copying an existing gridset and updating the DSS Pathname. The DSS filename does not need updating since it will be the same for all runs.

Name:	SPF_TRBFVM
Description:	
Data Source:	Single Record HEC-DSS
*DSS Filename:	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Addition\SPF\2024\PMF_SPF_Files\SPF_2024.dss
*DSS Pathname:	/SHG/TRBFVM/PRECIP/01JAN2000:0000/01JAN2000:0100/SPF/

Create a new Meteorologic Model that will point to the Precipitation Gridset just created.

Met Name:	SPF_TRBFVM
*Grid Name:	SPF_TRBFVM
Time Shift Method:	--None--
Transpose:	No

Create a Simulation Run using the Basin Model and Meteorologic Model that were recently created.

Simulation Run		Ratio	States
Name:	SPF_TRBFVM		
Description:	Basin: 500yr_Fut_SPF_CDC_TRBFVM , Meteorology: SPF_TRBFVM , Control: 7days		
Output DSS File:	C:\00_Erickson\Trinity\CDC\Updates\2020_East_Fork_Addition\SPF\2024\HMS_Models\Future\Elliptical\Trin_Run2065\SPF_TRBFVM_CDC_inflow.dss		
Output:	All		
Basin Model:	500yr_Fut_SPF_CDC_TRBFVM		
Meteorologic Model:	SPF_TRBFVM		
Control Specifications:	7days		
Spatial Results:	No		
Spatial Interval:			

Run Simulation and record results from the Global Summary Results Table