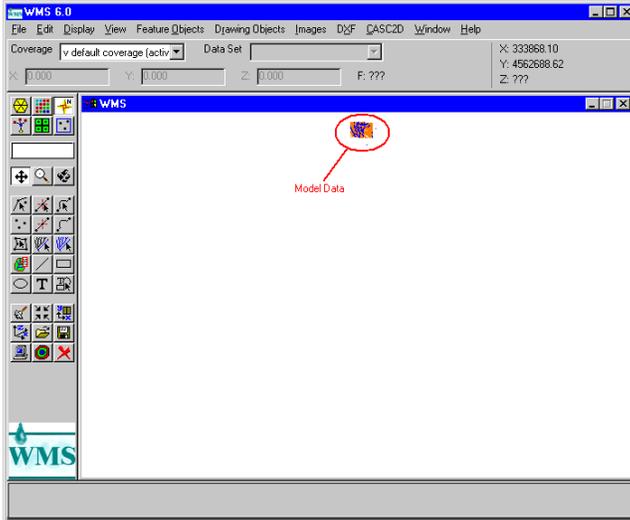
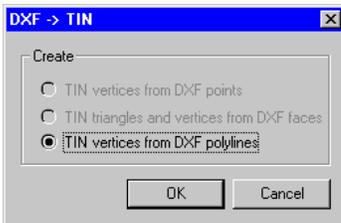


Creating and Delineating a Watershed from DXF Terrain Data

1. Start up WMS.
2. Switch to the Map Module.
3. Select **DXF | Import**. Select the DXF file to import.
4. Notice that the DXF file imports fine into WMS, but there may be some stray data sitting outside of the model area. If you want, you can zoom into the model data area using the zoom tool.

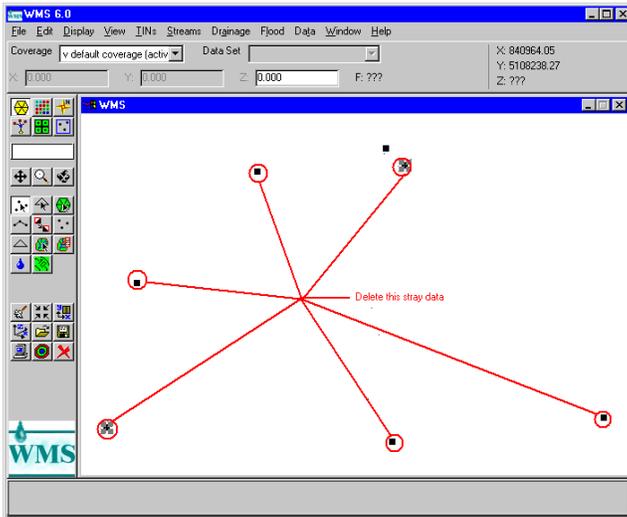


5. Convert the DXF data to WMS TIN data by selecting **DXF | DXF->TIN**. Choose the following option:

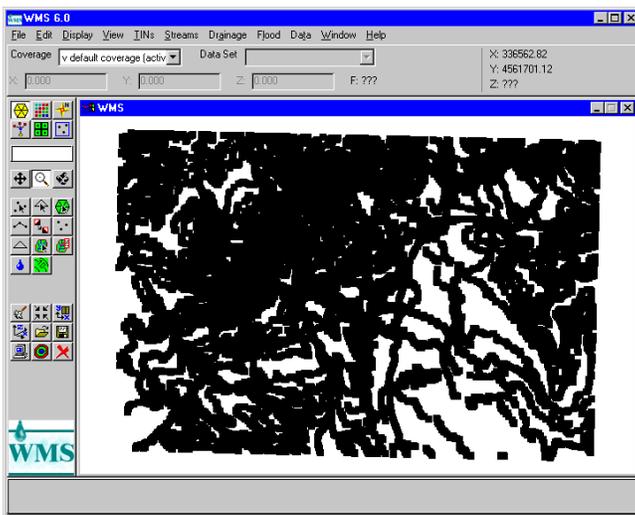


6. Delete the existing DXF data by selecting **DXF | Delete**.
7. Switch to the TIN Module.

8. Select the Select TIN Vertices tool. Select any stray TIN vertices and delete them.

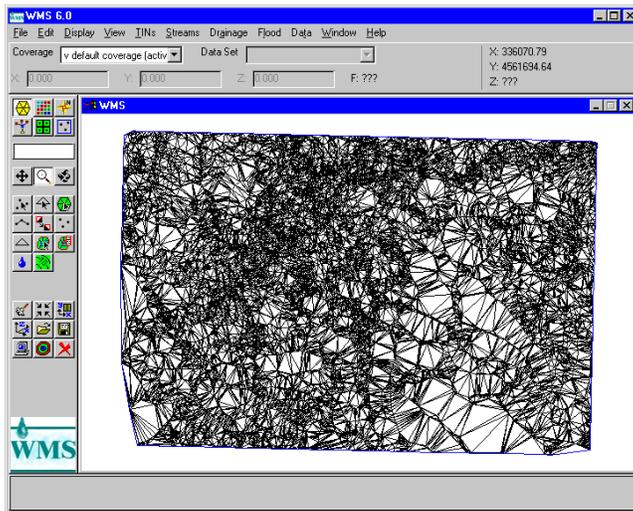


9. Save the remaining TIN data by selecting **File | Save As**. This will save out a TIN, INI, and a SUP file.
10. Select **File | New** to remove everything from WMS' memory.
11. Select **File | Open** and open the previously saved SUP file.
12. WMS will now recognize the correct drawing limits.

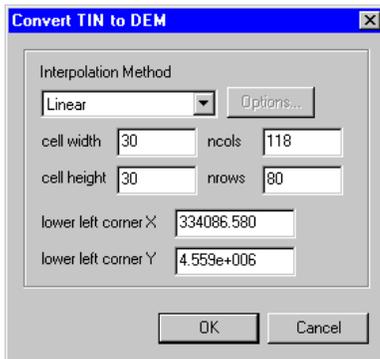


13. Triangulate these vertices by selecting **TINs | Triangulate**. WMS will warn that it is removing some duplicate vertices. This is all right.

14. Turn off the vertices by selecting **Display | Display Options**. From the Display Options dialog box, turn off vertices. Your model should now look like this.

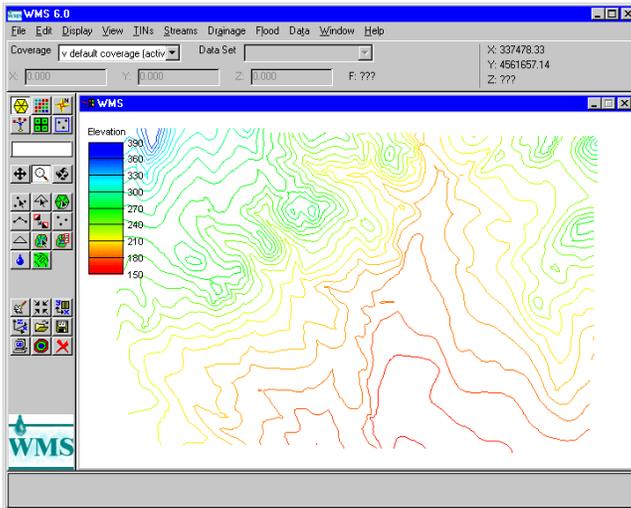


15. Next, we are going to convert the TIN data to DEM data. This is important since it is much easier to process DEM data (also called gridded data) in developing a watershed model. Select **TINs | TINs->DEM**. The following dialog box will be displayed. Set the cell width to so that there are no more than 100 columns or rows. More columns and rows can be used, but it takes longer for WMS to process the TIN data.

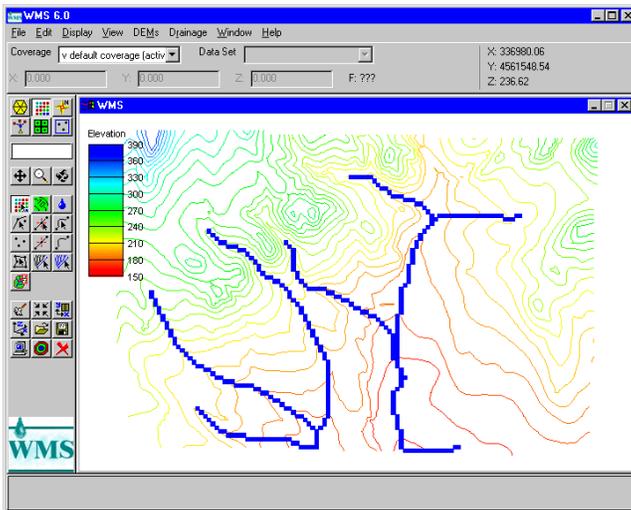


16. After creating the DEM data, delete all of the TIN data. Select **Edit | Delete All**. Since you are in the TIN Module, none of the DEM data will be deleted.

17. You will then be left with the DEM data.

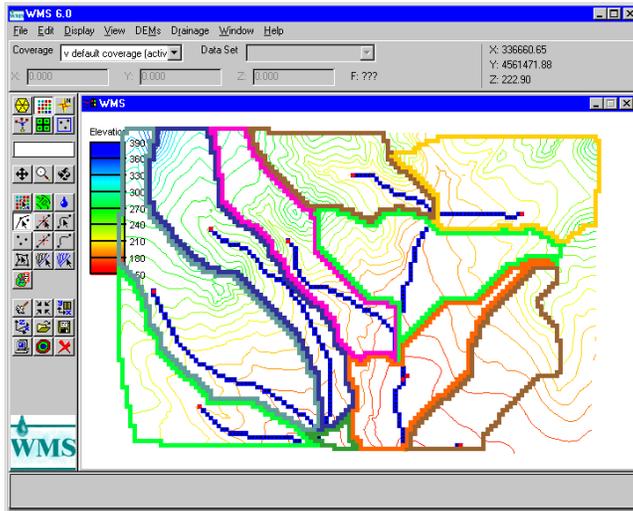


18. We are ready to process this DEM data. Switch to the DEM Module. Then, select **Drainage | Compute TOPAZ Flow Data**. Topaz will run for a short period of time.
19. After Topaz has completed its work, Select **Drainage | Flow Directions**. Select the file FLOVEC.DAT.
20. You can now use your raindrop tool to experiment with the drainage characteristics of the watershed.
21. Select **Drainage | Flow Accumulations**. Select the file UPAREA.DAT.
22. Select **Display | Display Options**. Increase the Min Accumulated For Display value to a value that limits the number of streams displayed. Your model should now look like the following:



23. Make certain that WMS is set as creating a Drainage Coverage. Switch to the Map Module. Select **Feature Objects | Coverages**. From the Coverages dialog box, make certain that the default Attribute Set has been set to Drainage. Then, select OK and return to the DEM Module.
24. Select **Drainage | DEM->Stream Arcs**. This will convert the accumulated cells to stream arcs.
25. Additional confluences can be changed into outlets so that the watershed can be further delineated. Select the Select Feature Point Node tool. Then, select the confluence points and then select **Drainage | Node->Outlet**.
26. Note that vertices (on a stream arc), if desired, can also be converted to outlets. Use the Select Vertice tool and again use the **Drainage | Node->Outlet** command.

27. Delineate the watershed by selecting **Drainage | Define Basins**. Your watershed should look something similar to the following:



28. Convert the delineated watershed subbasins to polygons by selecting **Drainage | Basins->Polygons**.
29. Note that adjoining watershed subbasins that share the same outlet can be merged into a single watershed subbasin. Use the Select Basin tool, hold down the Shift key, and select the 2 basins. Then, select **Drainage | Merge Selected Basins**.
30. The inactive watershed area can be removed. Select **Drainage | Inactivate Null Basin**.
31. The subbasin geometric and drainage characteristics can be computed. Select **Drainage | Compute Basin Data**.
32. Next, the watershed can be analyzed using a hydrology model, such as HEC-1. This is saved for the reader to try.