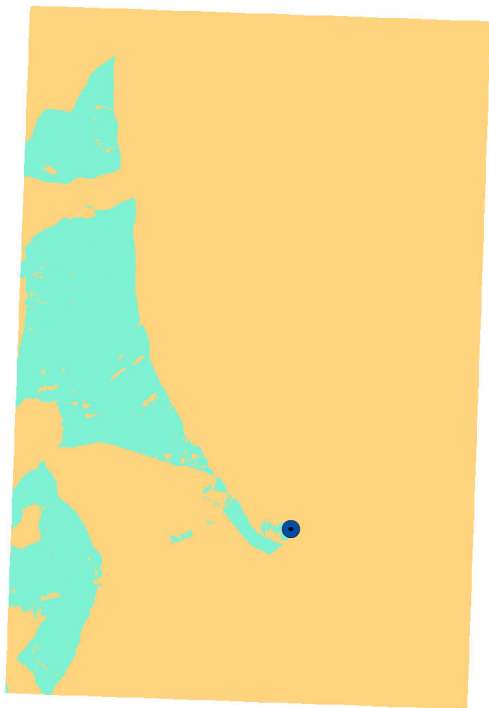


Viewpoints in Gable Mountain quadrangle in Glacier National Park, Montana

Viewpoint 1

Viewshed 1



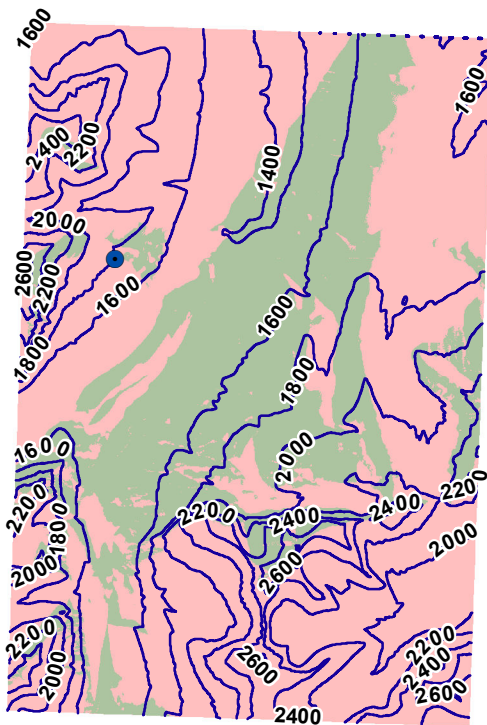
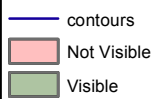
Viewpoint 2

Viewshed 2



Viewpoint 3

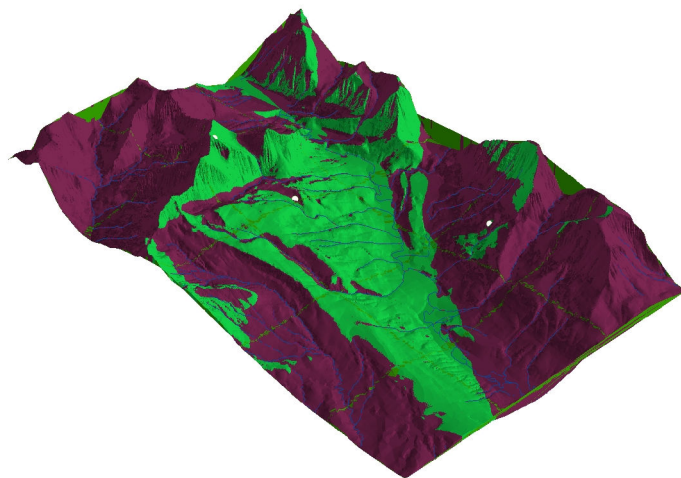
Viewshed 3



1:150,000

Note: Scale does not apply to 3-D map

3-D Projection of Viewpoint 3

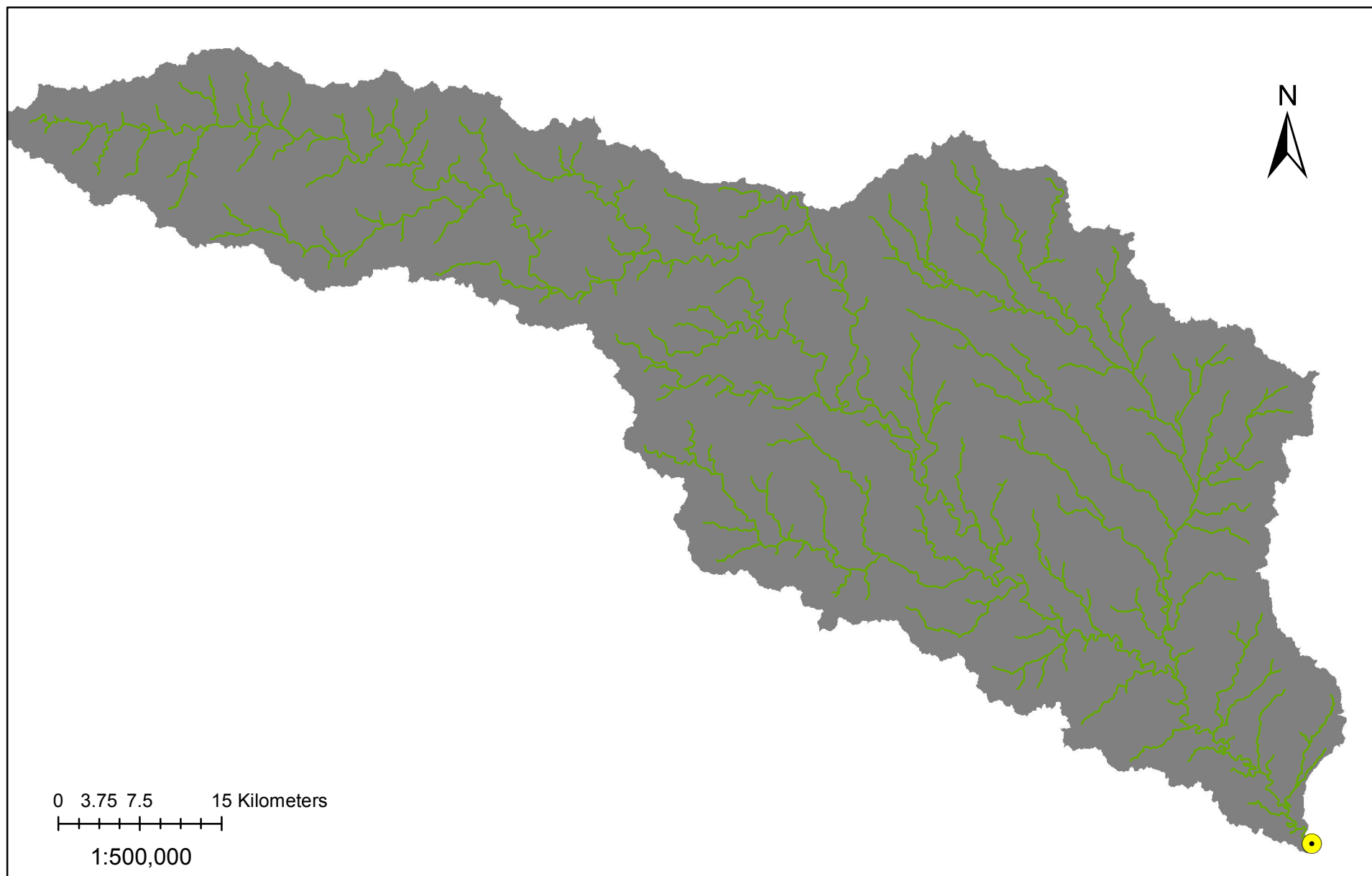


Vertical Exaggeration Factor = 1.5

Source: USGS website
Projection: NAD 1927 UTM Zone 12N

Layout By:
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CE 3995- 001
04/15/2015

Elevation and Drainage Patterns in San Marcos Basin, Texas



Source: USGS National Elevation Dataset
Projection: NAD 1983 Texas Centric Mapping System Albers

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04/15/2015

Note: Watershed Area is 352 km²

1. Mass points are based on the contours line coverage and represent point elevations which become nodes when creating a TIN. Hard breaklines are based on the streams coverage and represent discontinuities in the sloped surface. They create hard edges for the TIN network and help improve the display of the abrupt change in the surface. Two terrain features that can improve analysis with TINs through representation with breaklines are ridgelines and roadways. These features would improve a TIN by creating a defined difference between features of different elevation rather than a smooth transition. It would be easier to see the difference between naturally occurring, but small elevation differences, and larger, more well defined elevation differences within the landscape.
2. No, Viewpoint 3 is not visible from Viewpoint 2. Trees and other surface features are taken into consideration when calculating the viewshed with the help of hillshade effects and input of the height of the viewpoint in comparison to the land around it. The viewpoint is predetermined and could be from a road or observation tower.
3. A) It is easier to see the elevation changes and how all of the features fit together in a 3-D display because it is more realistic, and the Vertical Exaggeration can emphasize the difference in elevations of various features on the surface. It is especially helpful when looking at water features with regard to flow and drainage patterns to be able to better understand the elevation changes and where the water will flow from and to.
B) On the other hand, it may hinder map and data interpretation due to the expressed exaggeration causing elevation changes to seem more extreme than they truly are. It also doesn't necessarily represent the features to scale, and there is no defined true north, so it can be hard to determine direction from a 3-D display. You also cannot see edges that are defined beyond the 3-D viewing extent.
4. A) The values in a flow direction grid convey the path in which water will most likely flow based on its surrounding values. This result indicates the direction of steepest descent in the specified cell.
B) The values in a flow accumulation grid convey the highest points in the DEM and determine the amount of accumulation expected downhill in the direction of the flow. This information is used in the delineation of streams by approximating the location of said streams within the watershed.