How projections affect analysis

If you set a projection on a view, then your vector feature theme data (points, lines, polygons) must be stored in decimal degrees. The data is projected on the fly and displayed in the new coordinate system. Raster data, such as grids and images, do not work in the same manner, because projecting raster data is time consuming. TINs, while vector, do not get projected either because the result may yield an invalid triangulation. Grids, images, and TINs are assumed to be in the correct projection already and are not transformed. This affects the way feature theme data and grids, images, and TINs are treated during analysis. Below are some suggestions for integrated analysis of both projected and non-projected data along with the implications of that analysis.

When your feature theme data is in decimal degrees and your grids, images, or TINs are in projected coordinates

The projection for the view must be set to the projection of the raster or TIN data. Your feature theme data is projected to the coordinates your raster or TIN data is already in. This will allow the data to align and you are able to perform integrated analysis. Any vector feature theme data created during analysis is created in decimal degrees. Any raster or TIN data created during analysis is created with coordinates in the projected space.

When both your feature theme data and raster or TIN data are in the same projected coordinates

Do not set a projection for the view in which analysis is performed. Your feature theme, raster, and TIN data will align in the view. Any data that is created during analysis is created with coordinates in the projected space.

When all your feature theme, raster, and TIN data is in decimal degrees

Do not set a projection for the view in which analysis is performed. If a projection is set then your vector feature theme data is projected, but your raster and TIN data is not. This will cause the data to appear in two separate places, not allowing you to perform integrated analysis. With the projection turned off, any feature theme, raster, or TIN data created during analysis is created in decimal degrees. Be aware that grids or TINs intended for use with many surface analysis functions should NOT be in decimal degrees. Algorithms in these functions assume a Cartesian coordinate system.