

# GIS: How are We Enlightened by Metadata?

## Summary

This is an overview of three other lessons that will be loaded separately. The other lessons are:  
Metadata for street files from different sources,  
Metadata for map projections,  
Metadata for grid interpolation.

## Materials

ArcView 3.x  
- [Metadata.zip](#)  
data files

## Background for Teachers

The "map projection" and "streets" tutorials are intended for introductory cartography or GIS classes at college level. They may be used with advanced high school students.

The "wetgrid" or precipitation grid tutorial is intended for more advanced work in an introductory GIS course at college level.

Purpose or Learning Objective:

Cg\_streets archive: The main goal of this project is to show differences between street files from different sources. The TIGER street file comes from the U.S. Census and the contrasting street file comes from the Minnesota DOT and DNR. Metadata is helpful for understanding why the two sources differ. A secondary goal is to experience metadata for a U.S.G.S. "county" DOQ.

Cg\_projection archive: The main goal of the first tutorial is to show how equal area and conformal projections differ. The main goals of the second tutorial are to draw attention to the importance of choice of "center" for a projection and to understand the logic of having many UTM zones.

Wetgrid archive: This project requires Spatial Analyst.

Main learning goals are:

- Understand how vector and raster data differ

- Appreciate the need to provide metadata about the sample points that are the basis for interpolation of a grid using Spatial Analyst

How these three projects were used in my classes:

Each project was used as a tutorial during lab periods. Each tutorial had a metadata emphasis: students could experience the desire or need for metadata as a way to explain differences (in accuracy of street files, in distortion for different projection choices, in seeing datasets as a basis for grid interpolation).

Brief project summary: Please see the readme.txt file in each folder for guidance about files within the folder. Each folder should be put under the c: drive. Also please see the .rtf files that are detailed tutorials. Other .rtf files serve as metadata.

Cg\_streets folder and the project called street\_metadata.apr provide experience with street files that clearly have different accuracy. The main contrast is between TIGER files that have the accuracy of 1:100,000 scale topographic maps and street files produced by MN DOT and DNR using 1:24,000 scale topographic maps.

CG\_projection folder and the projects called projection1.apr and projection2.apr provide experience with equal area and conformal projections and illustrate how the areas close to the chosen center of a projection (especially Transverse Mercator) are more accurate. Therefore, students may appreciate the importance of metadata about center of a projection.

Wetgrid folder and the project called precip\_grid.apr provide experience with interpolation decisions

using Spatial Analyst. Students experience the contrast between a detailed dataset of weather stations and a less detailed set. They must consider how interpolation essentially "invents" data for cells and should appreciate that metadata about the interpolation process is therefore helpful.

### Bibliography

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### Authors

[Utah LessonPlans](#)