



Coffee Break Training-Community Risk Reduction

Understanding Geospatial Information: Reading Imagery – Part 3: Patterns, Shapes and Textures

No. CR-2015-3 May 20, 2015

Learning Objective: The student will gain a basic understanding of pattern, shape and texture recognition when identifying details on aerial and satellite imagery.

We seek **patterns, shapes** and **textures** in the physical world to help us understand what is around us. This skill applies nicely to interpreting satellite imagery. Distinctive patterns in images can be matched to existing maps and our own knowledge to identify key geographic and man-made features.

Obvious patterns come from the way we use land. Farmland has its characteristic circles and rectangles. Wildland has random patterns. Straight lines characterize man-made features — cities, docks, street grids. Squares and rectangles will likely be buildings. Volcanoes and craters have rough circular shapes. A mountain range may have extended, wrinkled lines or appear as a series of rounded bumps. Canyons may have squiggly lines framed by darker shadows.

Earth features, such as mountains, ridgelines, canyons and coastlines, affect clouds by influencing the flow of air overhead. Mountains force air up, which cools it and produces clouds. Islands create turbulence, forming swirling vortices or wakes in the clouds. On an image, a line of clouds or vortices may provide clues about the topography below.

Mapmakers illuminate raised features on maps by depicting light coming from the top-left corner to create false shadows. The shadows can make it hard to tell the difference between mountains and canyons, an optical illusion called **relief inversion**.

This happens because map users expect an image to be lit from the top-left corner. When the sunlight in an image comes from another direction or angle, the shadows may fall in ways that confuse. This problem is resolved in most cases simply by rotating the graphic image so the light appears to come from the top of the image.

References

Pennsylvania State University Creative Commons License: <https://www.e-education.psu.edu/natureofgeoinfo/>.

NASA Earth Observatory Image License: <http://earthobservatory.nasa.gov/ImageUse/>.



Side-by-side images of the Moore Medical Center, Oklahoma, depicted before and after the tornado on May 20, 2013. In this case, the highways and roads around the facility help to orient the user of the post-tornado scene to the reality of the destruction on the ground. (Source/Environmental Systems Research Institute (<http://bit.ly/1ChRSQs>))

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