Determining Flood Risk in Iowa

Topic: Natural disasters, flood boundaries

Problem Statement: How accurate are flood boundaries calculated with ENVI when impervious surfaces are under the water?

Level: Intermediate GIS, Beginning ENVI

Software: ArcGIS, ENVI

Description: This project compare s flood boundaries created with ENVI and flood boundaries digitized from aerial photography. The purpose is to determine ENVI's accuracy in calculating flooded areas where impervious surfaces are under the water.

Students document the extent of the 2008 flood in Cedar Rapids, Iowa by using ENVI 4.5 to classify pixels in Landsat imagery as water or not water. In ArcGIS, this layer is the backdrop for the flood boundaries digitized by the city using aerial imagery. By examining differences in boundaries in the Landsat imagery, the 0.5m aerial, and also the city street files, students are able to delineate areas for which Landsat imagery was incorrectly classified.

Key words: Flood, flood boundaries, wet/not-wet, NDWI, ENVI, ArcGIS

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