SUPERVISED CLASSIFICATION OF SATELLITE IMAGERY OF THE YOLO BYPASS

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Summary

The Yolo Bypass is a 59,000-acre engineered flood bypass that is part of the Sacramento River Flood Control Project. It is a diversion channel for the Sacramento River via the Fremont and Sacramento Weirs (the latter involving manual operation of 48 steel gates during pouring rain) and is also fed by the Colusa Basin Drain, Willow Slough, and Cache and Putah Creeks. It incorporates seasonal and permanent wetlands, as well as seasonal agricultural areas (mostly rice fields). The overlap of agriculture, wildlife habitat, and flood protection—and the variation in these through the seasons—made it a potentially rich area of interest for image classification.

Four Landsat TM images, representing seasonal changes in the Yolo Bypass, were obtained and prepared for supervised classification using ArcGIS's Spatial Analysis. In the interest of timely project completion, only one image was classified at this time. Training sites were selected and categorized, with agriculture and wetlands grouped together in one category to simplify the mixed land use in the small, wet fields of the Yolo Bypass. Running a Dendrogram routine and a Maximum Likelihood Classification yielded an unsatisfactory result, with confusion between residential and agriculture/wetlands. The residential category, not a significant one in environment of the flood bypass, was removed, and the processes were rerun. This time a satisfactory classification was achieved, with results that correlated with the imagery.