

P4 Land classification and multiple scale image pixel aggregation

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Multi-scale land-cover maps are generated from 1 meter resolution National Agricultural Imagery Program (NAIP) data for the Phoenix Metropolitan area. The material presented herein discusses analysis of these input data. First, we employed object-based image analysis along with pixel-based spectral transformations to produce hierarchical levels for land classification maps at 1 meter and 30 meter resolution, from the NAIP aerial photography and Landsat remotely sensed imagery, respectively. Second, the classification systems of land-cover products were integrated ensuring consistency with the International Geosphere-Biosphere Programme -Modified Moderate Resolution Imaging Spectroradiometer Land Use Categories. Third, we aggregated the modified 1 meter resolution land-cover map to 30 meter scale based on the dominant pixel values in each 30 meter grid. In addition, we aggregated the land-cover products to coarser resolutions by using specified grid sieves to calculate the fraction of each land-cover type and assigned each new pixel with both percent of each land cover type and a dominant land cover type. These resultant data demonstrate that pixel aggregation will generate different land-cover fractions and patterns depending upon each data source, the target resolution, as well as the pixel aggregation approaches. Analysis of land-surface model sensitivity and bias arising from these different input data products are underway. The proposed classification methods for land cover mapping can be applied to other aerial photography and remotely sensed data with resolution less than 100 meters. However, expert knowledge for data classification training and multiple spectral information are required for accurate mapping results.