

Missouri Statewide Landcover Mapping

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Raytheon

 **NRCS** Natural Resources
Conservation Service

MoRAP Landcover Update

- ◆ The overarching objective to land use/land cover mapping in Missouri is the maintenance of a continuously updated digital vegetation map of the state based on the most current Landsat series satellite imagery.
- ◆ The availability of a regularly up-dated land cover database aids federal, state, and local agencies in their environmental decision-making, therefore leading to more effective natural resource management.

Landcover Classes

- ◆ Impervious
- ◆ High Intensity Urban
- ◆ Low Intensity Urban
- ◆ Barren or Sparsely Vegetated (Areas in Transition)
- ◆ Cropland
- ◆ Grassland
- ◆ Deciduous Forest
- ◆ Evergreen Forest
- ◆ Mixed Forest
- ◆ Deciduous Woody/Herbaceous
- ◆ Evergreen Woody/Herbaceous
- ◆ Mixed Woody/Herbaceous
- ◆ Woody-Dominated Wetland
- ◆ Herbaceous-Dominated Wetland
- ◆ Open Water

MoRAP Landcover Update

- ◆ Mandated by the MoRAP Landcover Committee to update the Missouri Landcover data layer
- ◆ Between 1982 and 1992, Missouri developed 209,300 acres of non-urban land for an average annual rate of increase of 20,900 acres
- ◆ From 1992 to 1997, Missouri added 224,200 acres of developed land, an average annual growth rate of 44,800 acres

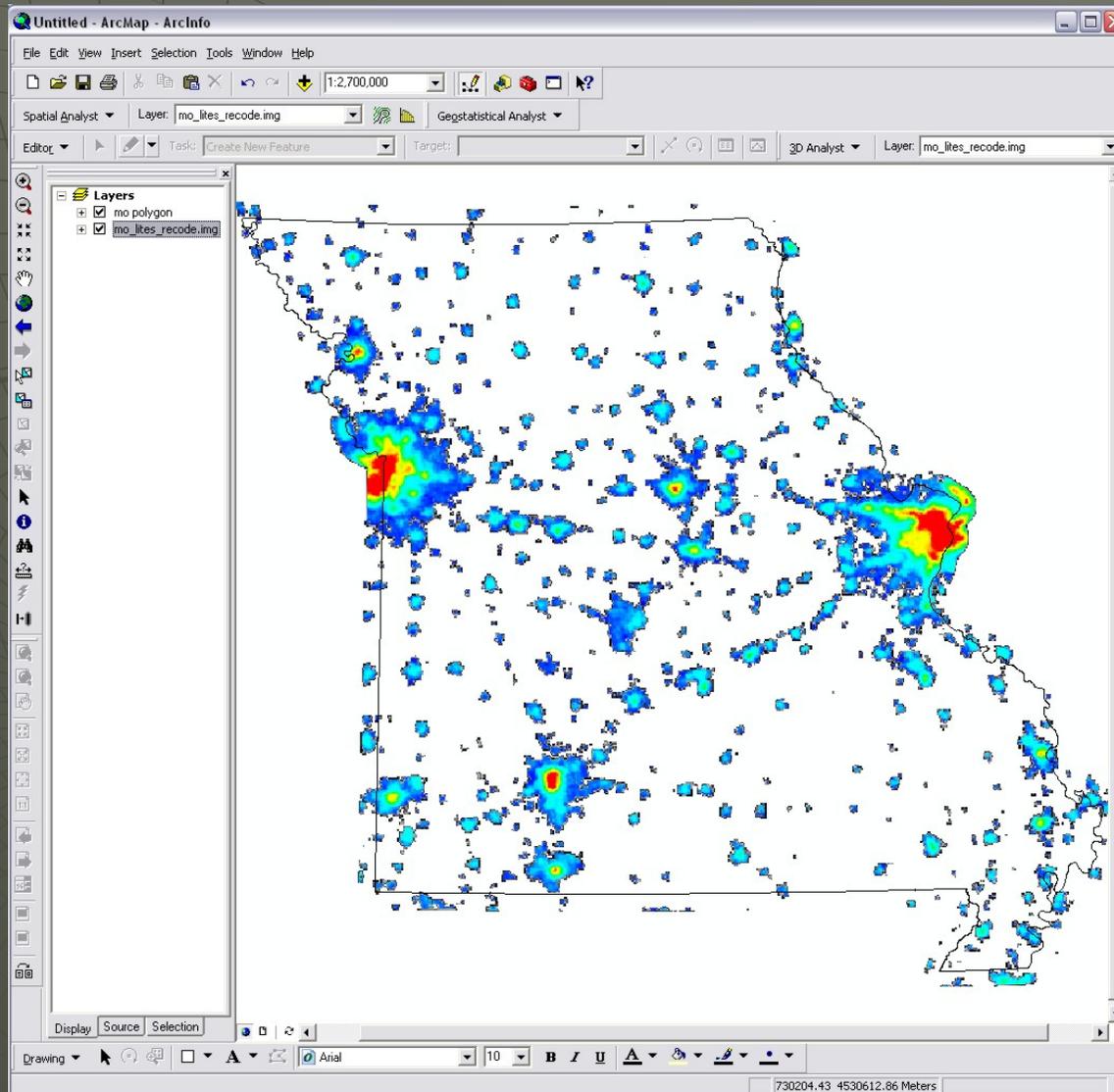
MoRAP Landcover Update

- ◆ Classification based on the most currently available Landsat 7 imagery (that is useable)
- ◆ Classification based on satellite triplicates collected during the growing season months (spring, summer, fall)

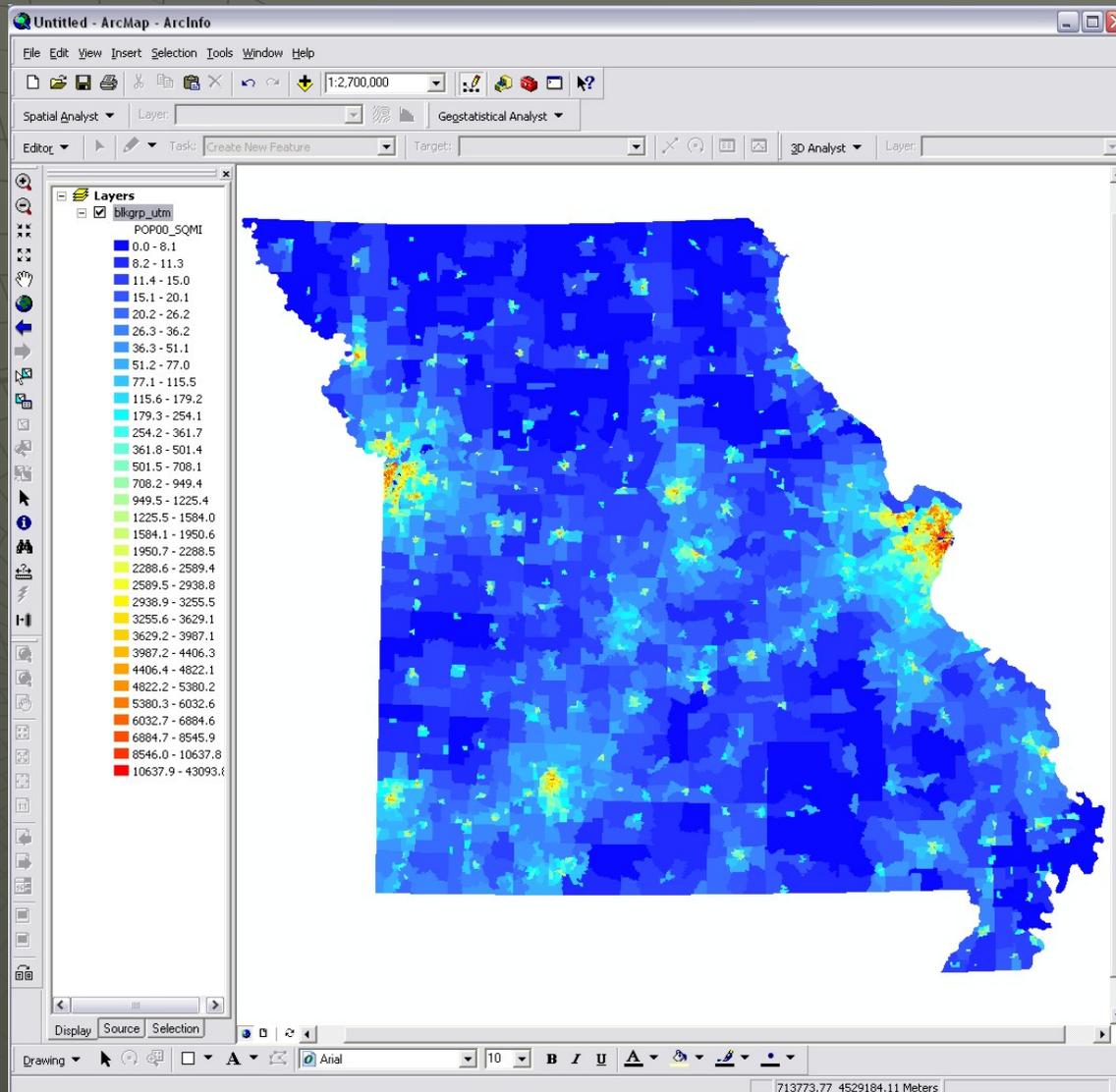
MoRAP Landcover Update

- ◆ Scene-based clustering with data reduction to reduce scene overlap
- ◆ Unsupervised classification decision rule
- ◆ 100 clusters per scene
- ◆ Image stratification used to aid information class assignment in urban areas

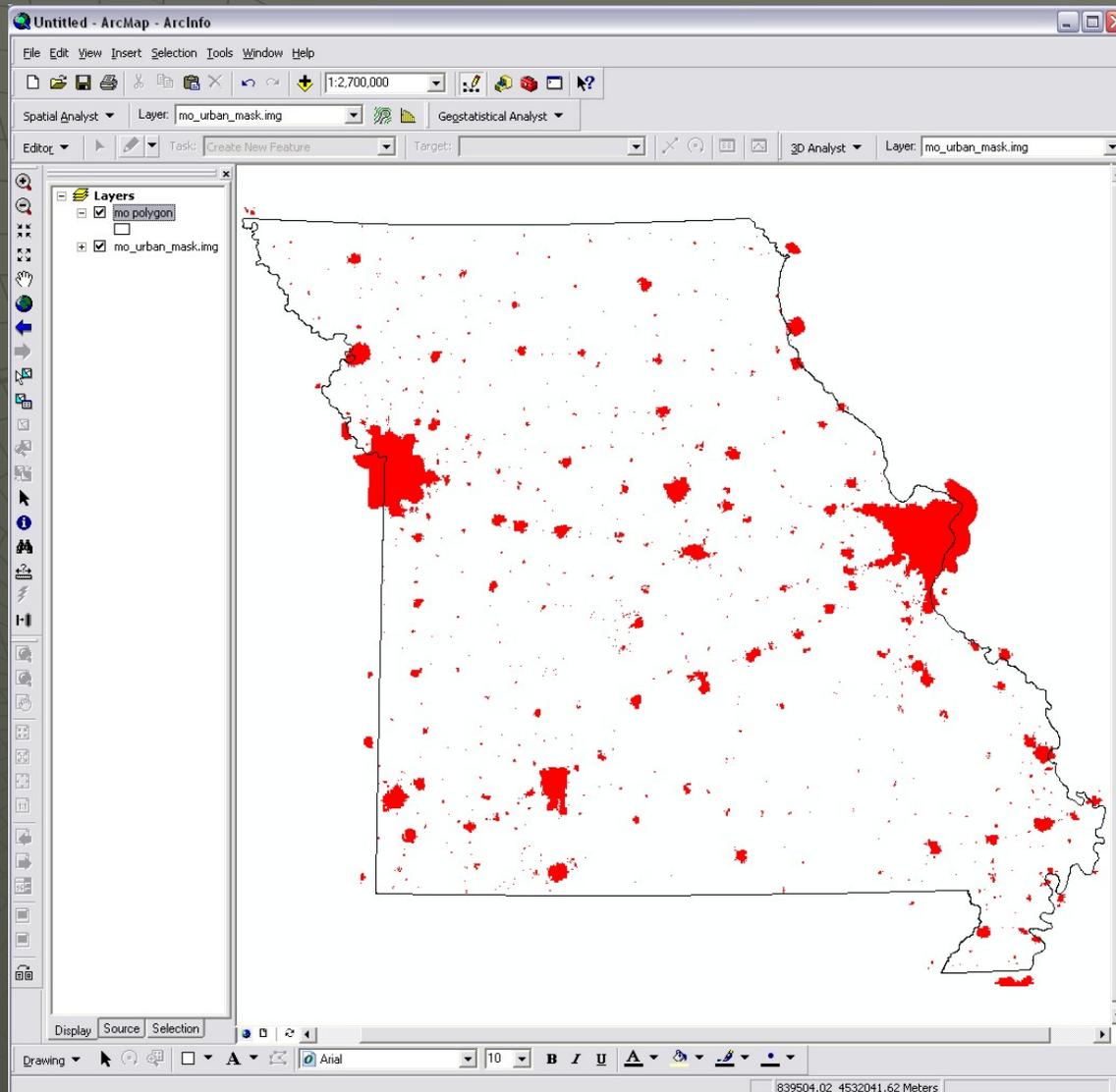
DMS Lights at Night



2000 Tiger Population Density



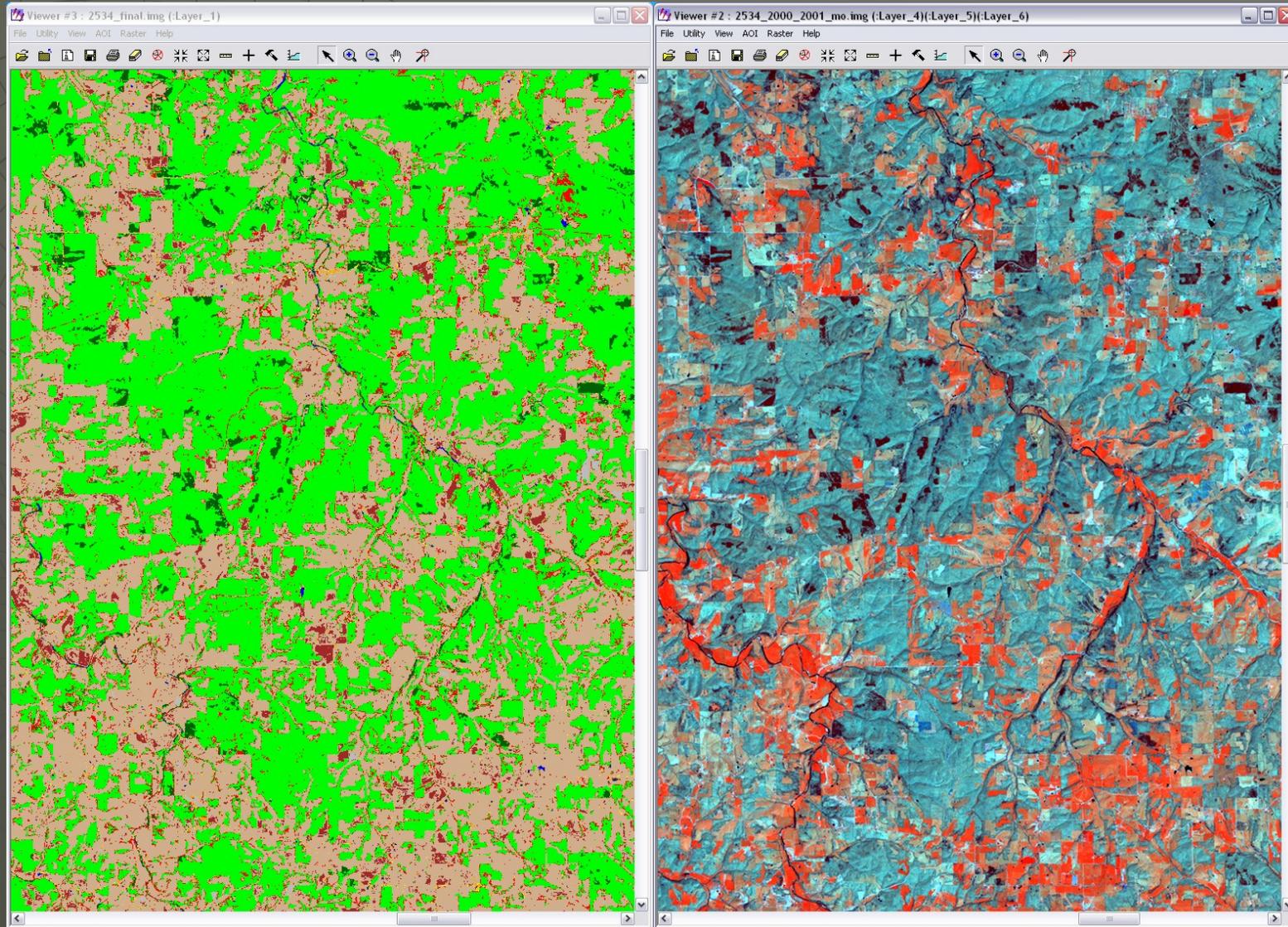
Urban Mask



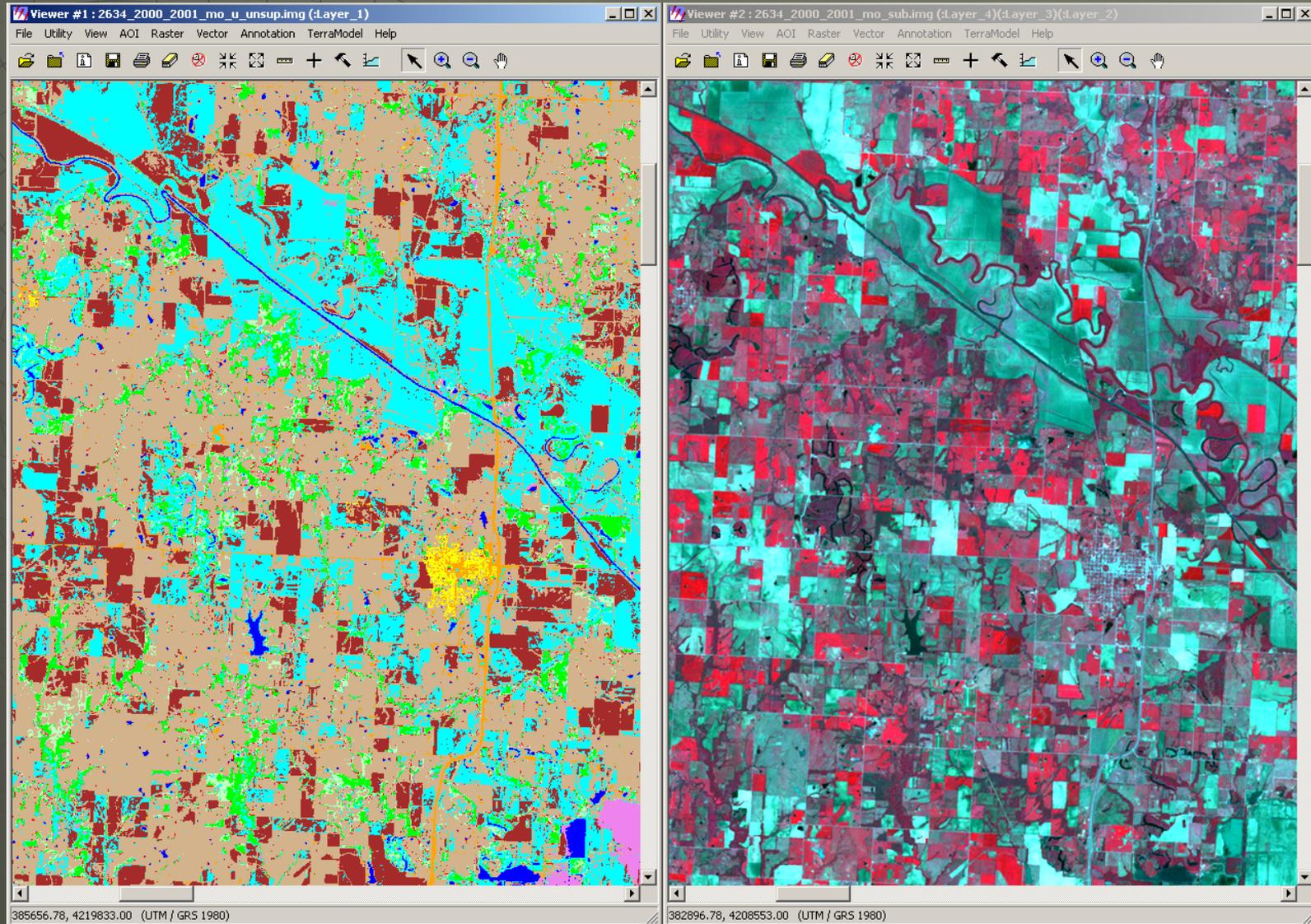
MoRAP Landcover Update

- ◆ Land cover (information) classes assigned on-screen using expert knowledge, aerial photography, and site visits
- ◆ Cluster-busting as required
- ◆ Cluster-busting did not alleviate confusion
- ◆ Areas of confusion included evergreen forest, herbaceous-dominated wetland, and woody-dominated wetland

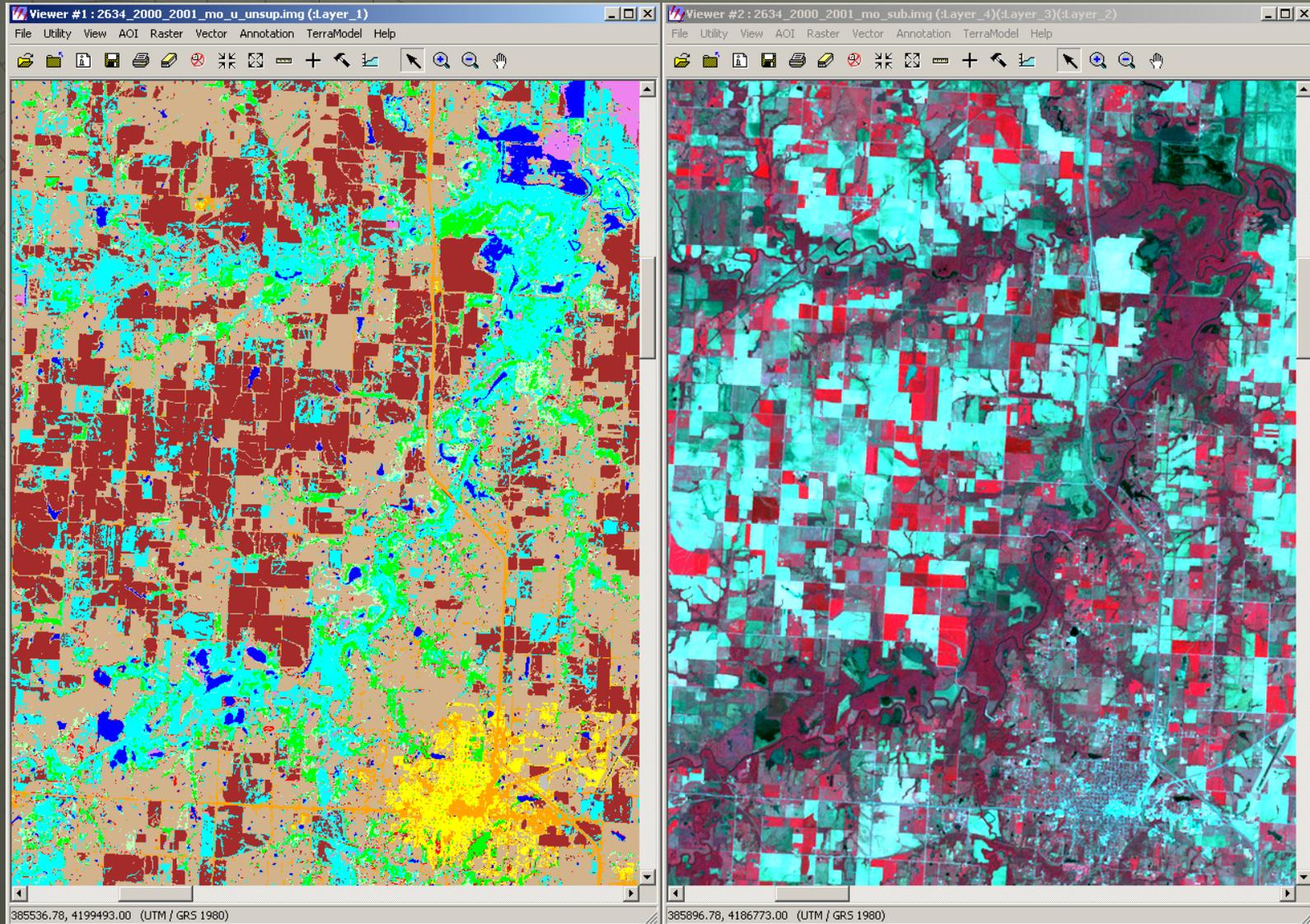
Classification Confusion



Classification Confusion



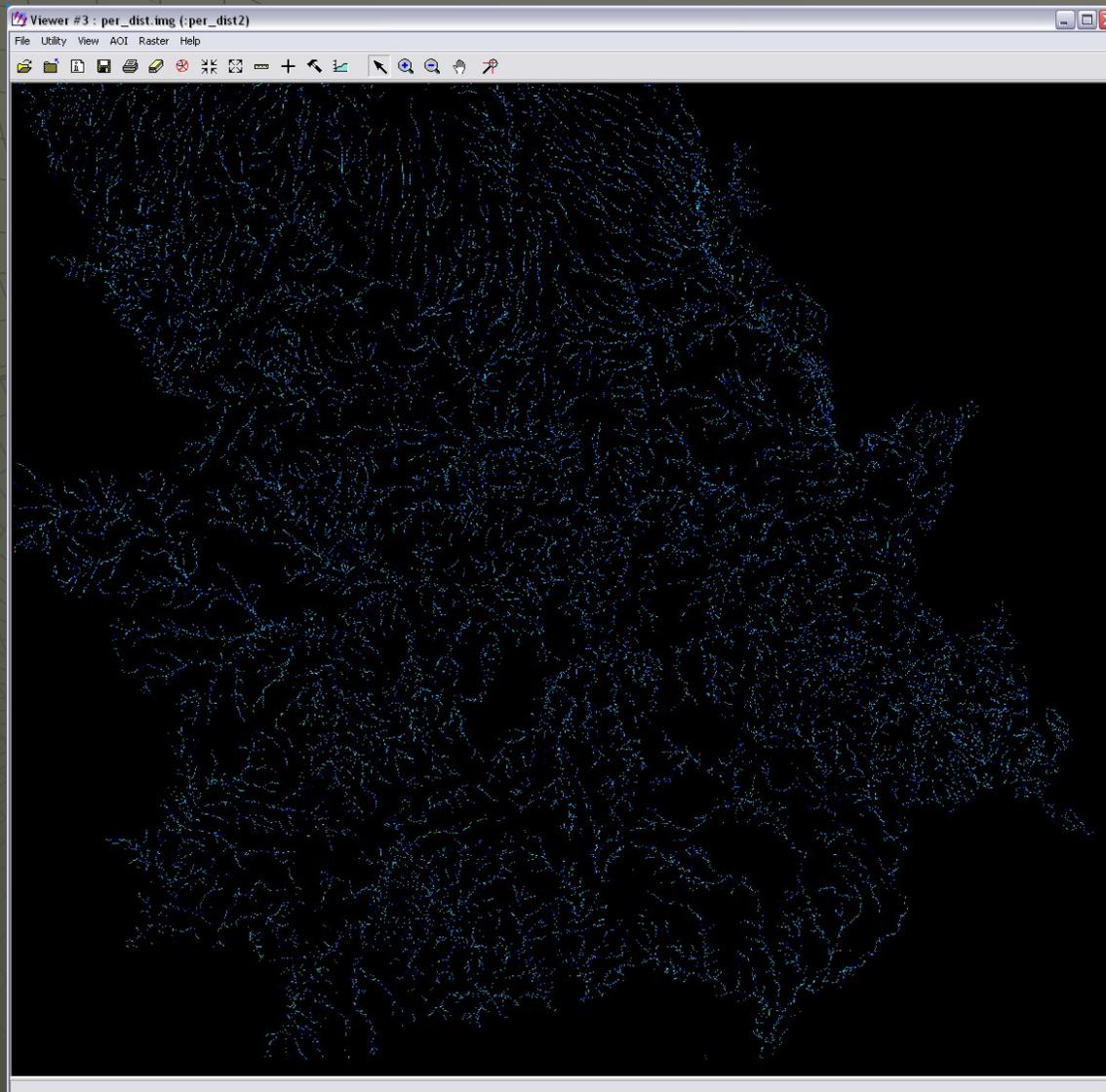
Classification Confusion



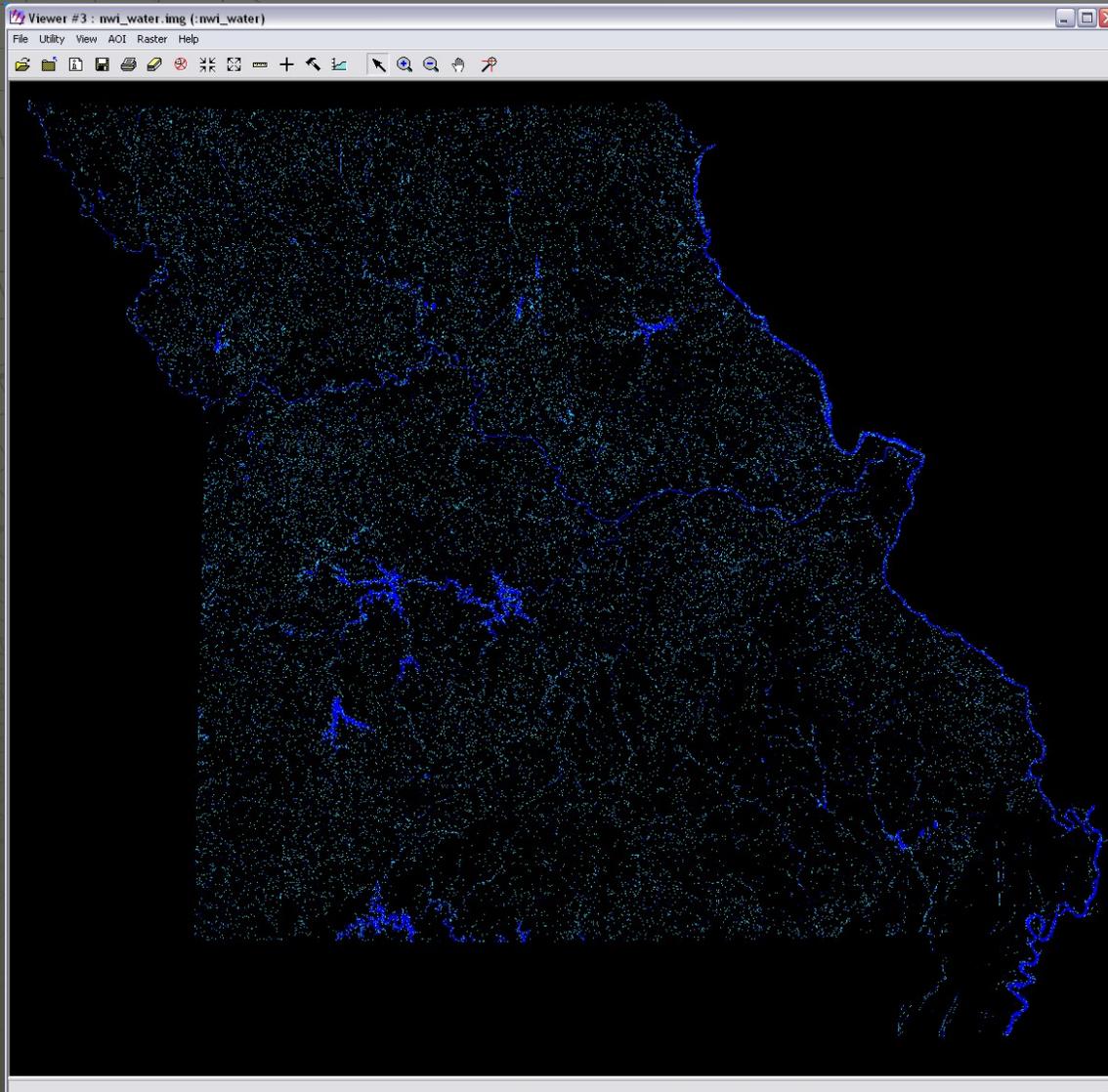
MoRAP Landcover Update

- ◆ Ancillary data layers used in an attempt to alleviate classification confusion
- ◆ 100k streams
- ◆ National Wetlands Inventory
- ◆ NRCS Wetlands Reserve Program

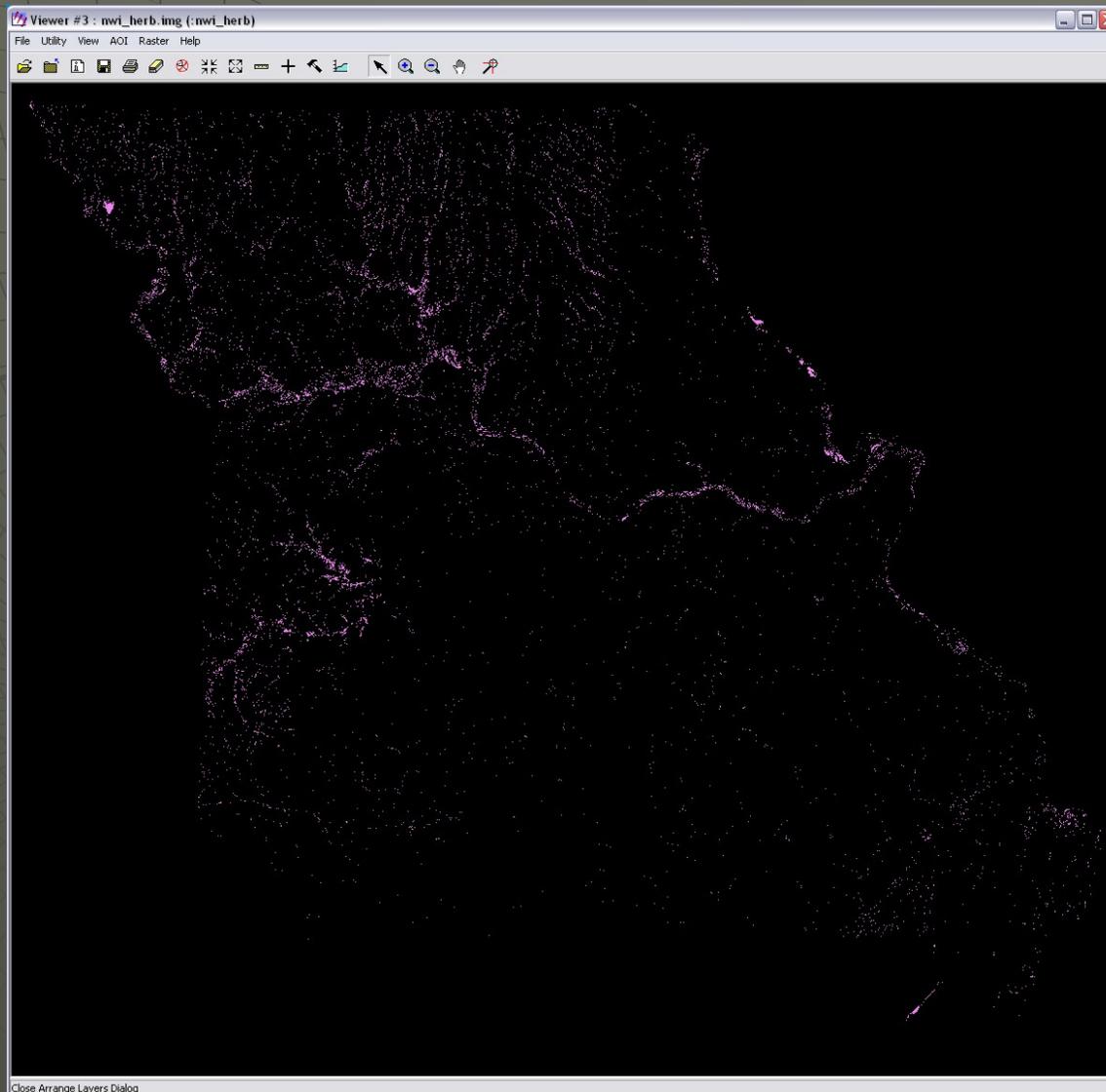
100k Streams



NWI Water

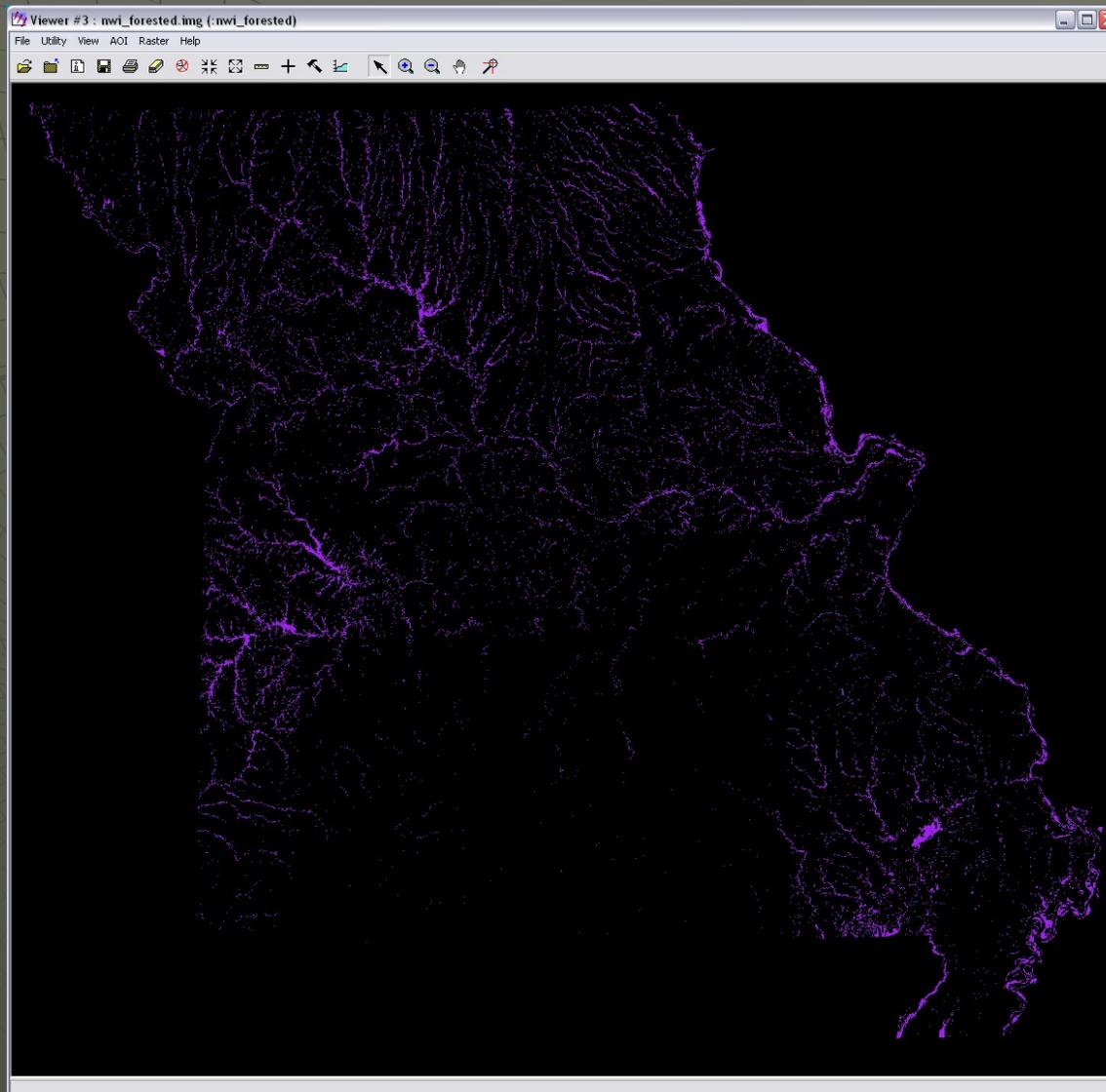


NWI Herbaceous

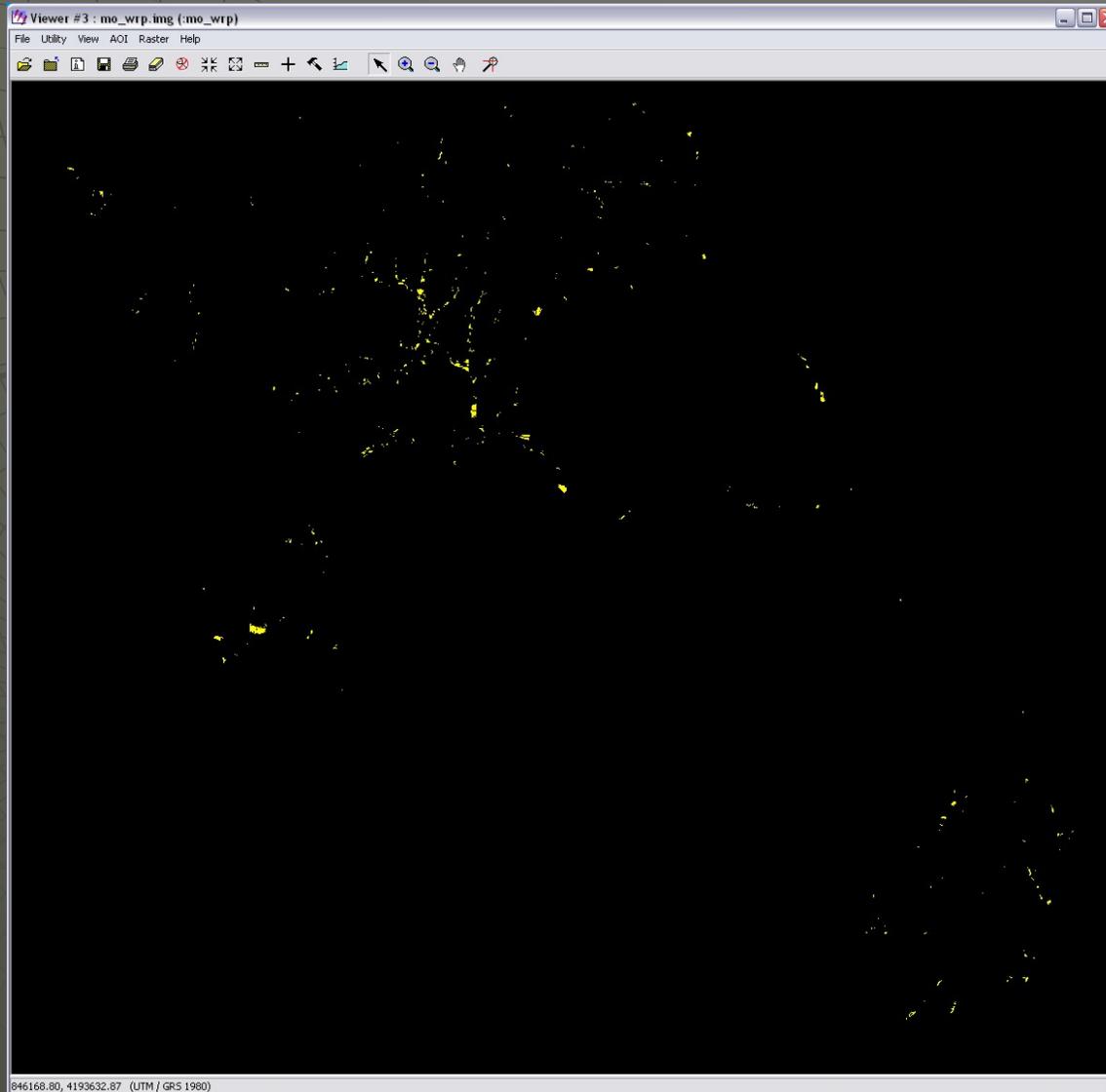


Close Arrange Layers Dialog

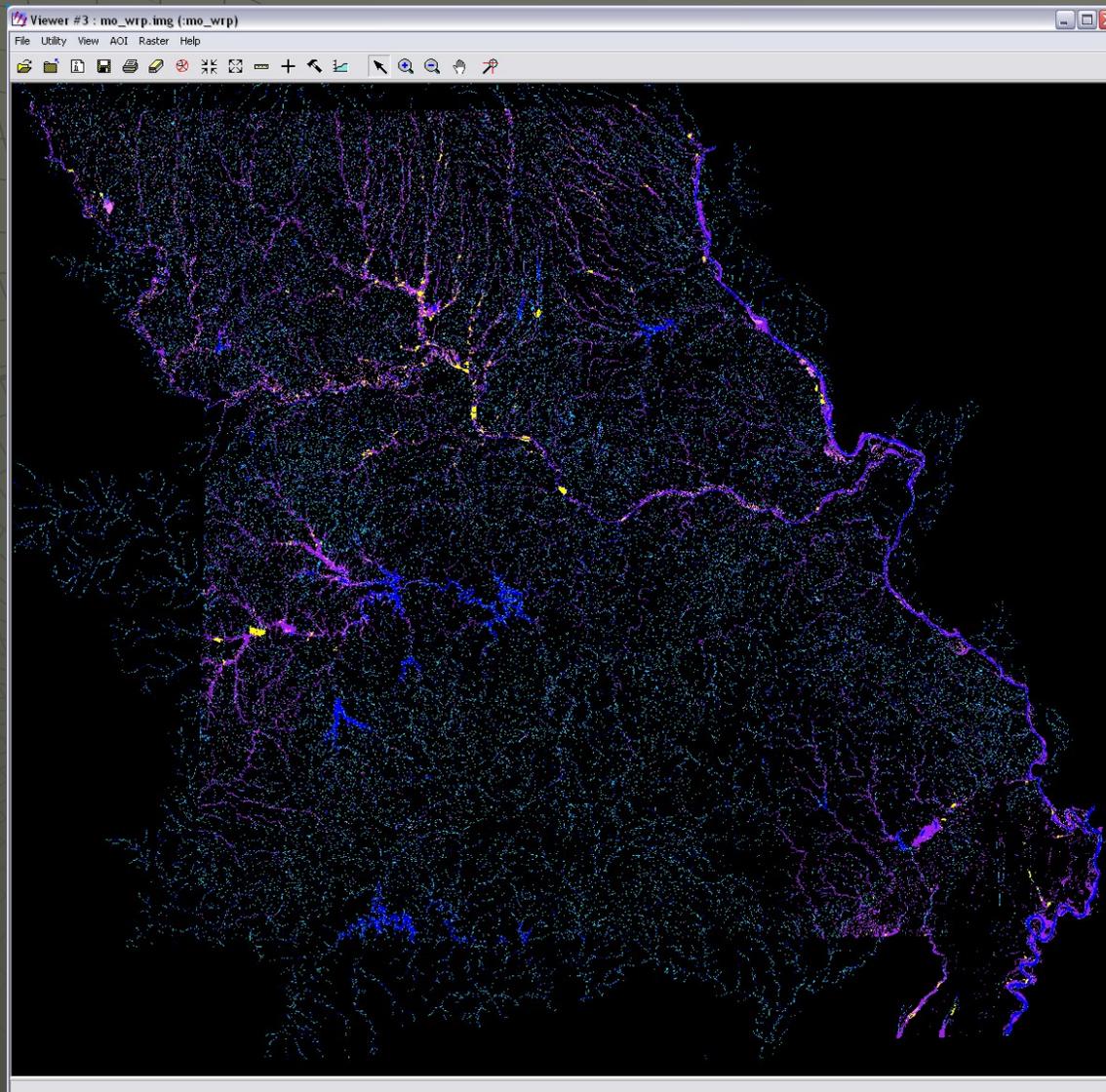
NWI Forested



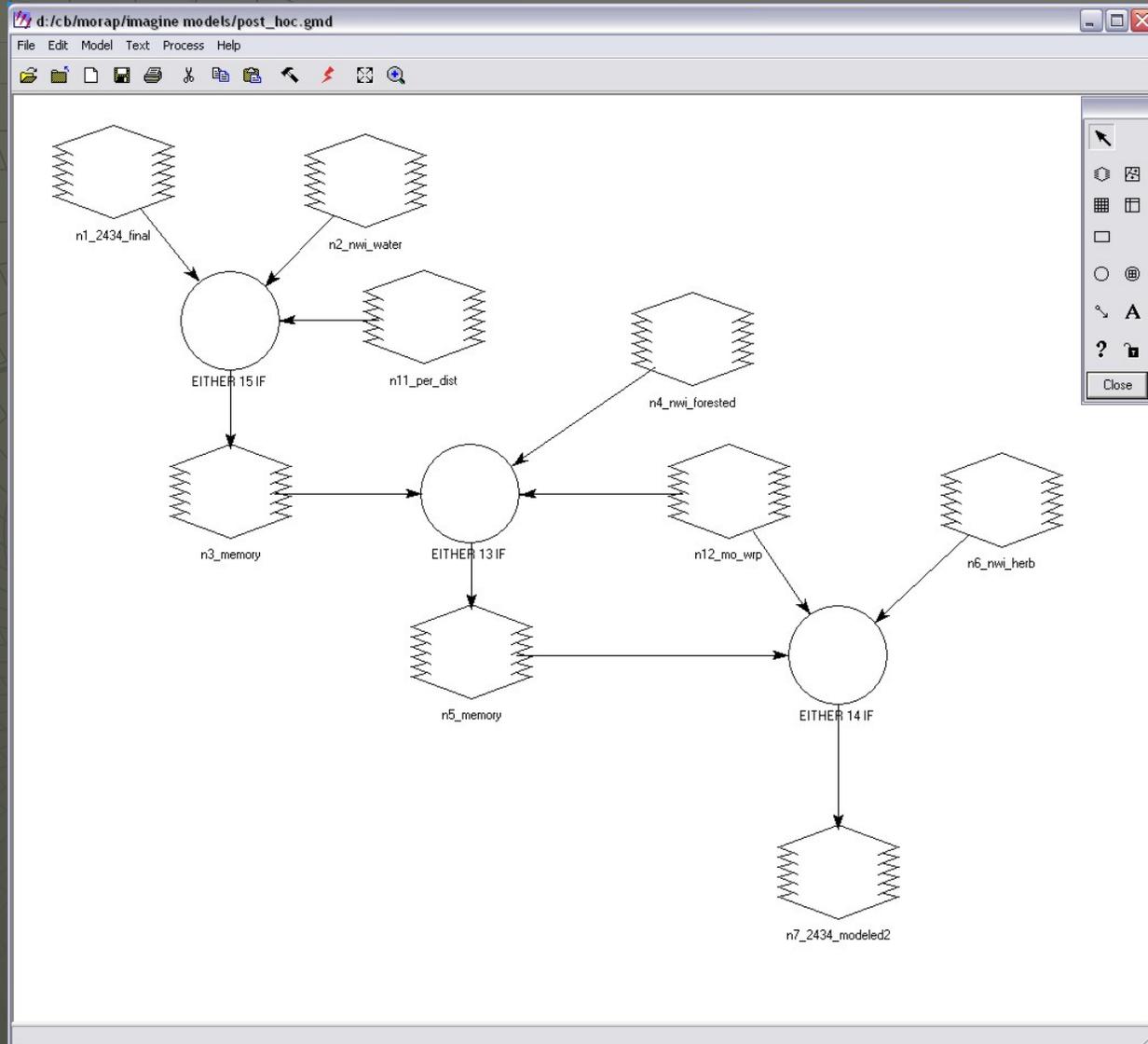
NRCS WRP

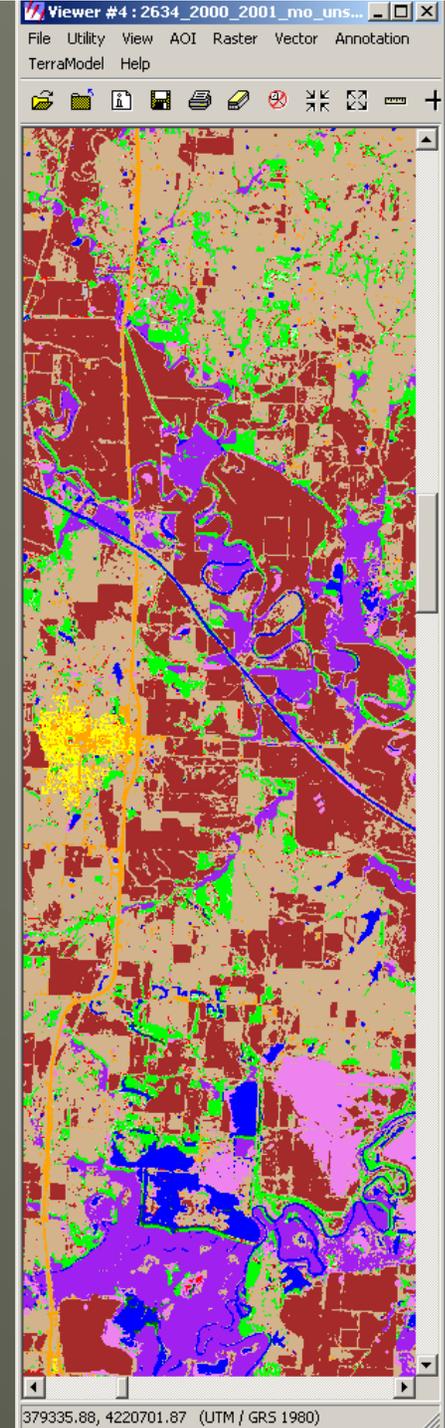
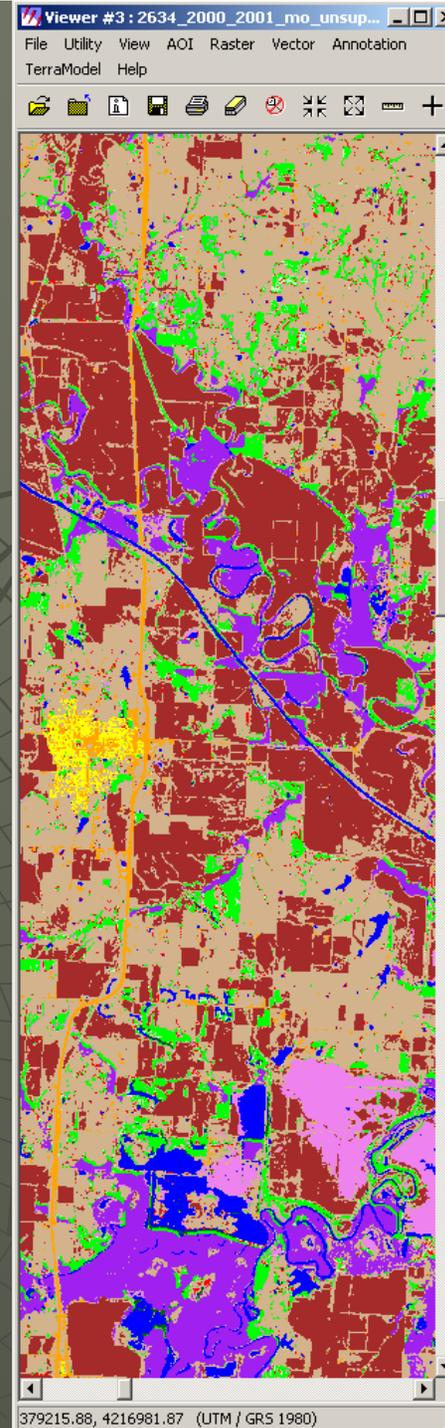
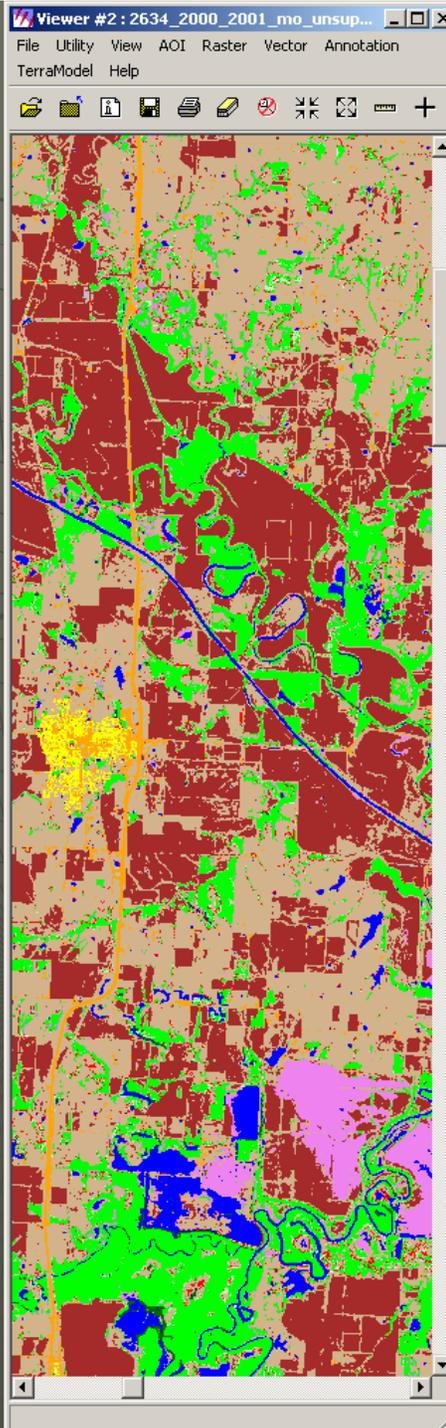
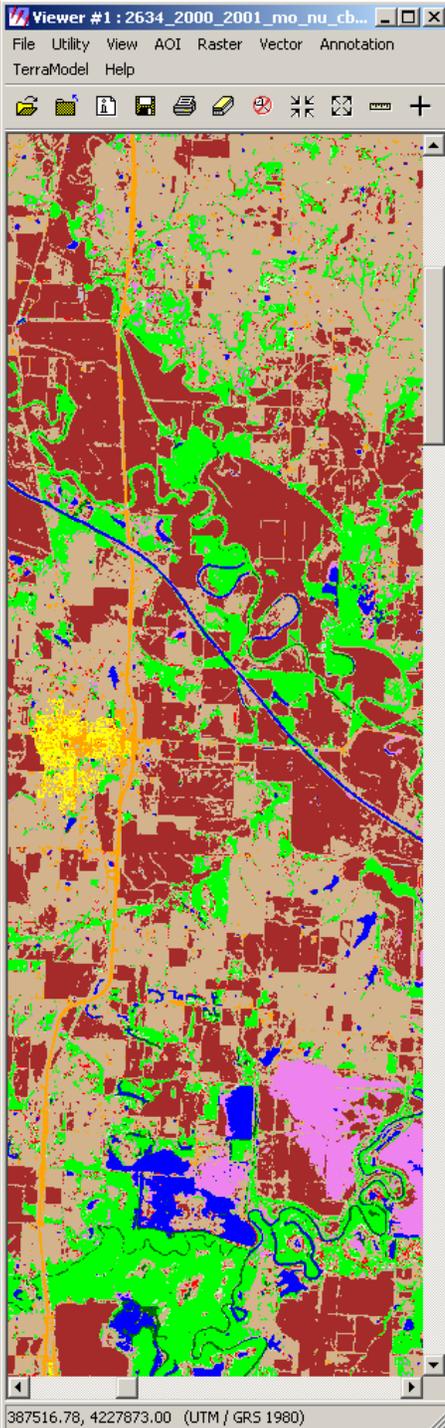


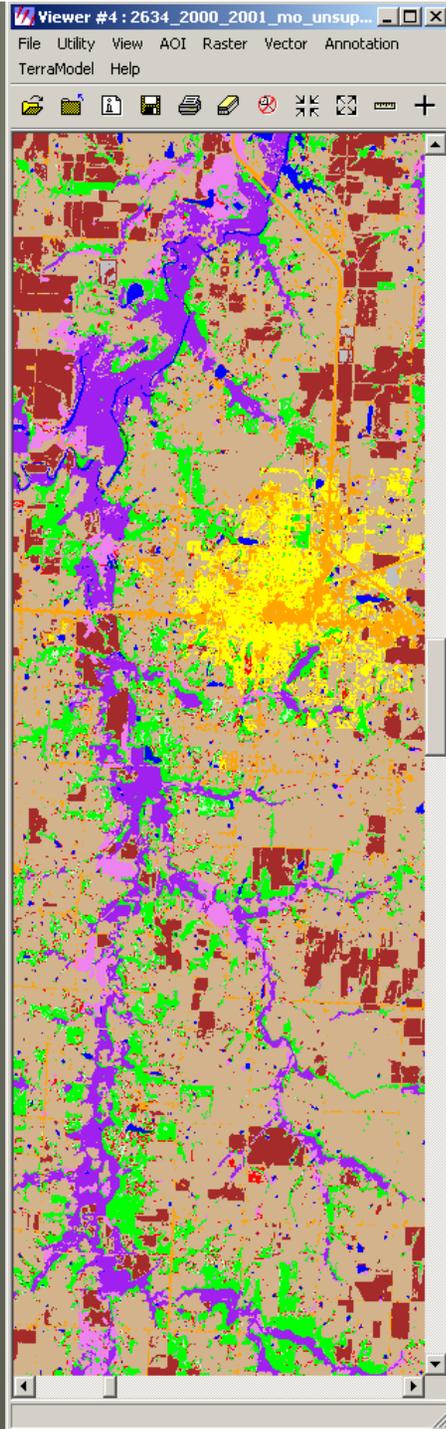
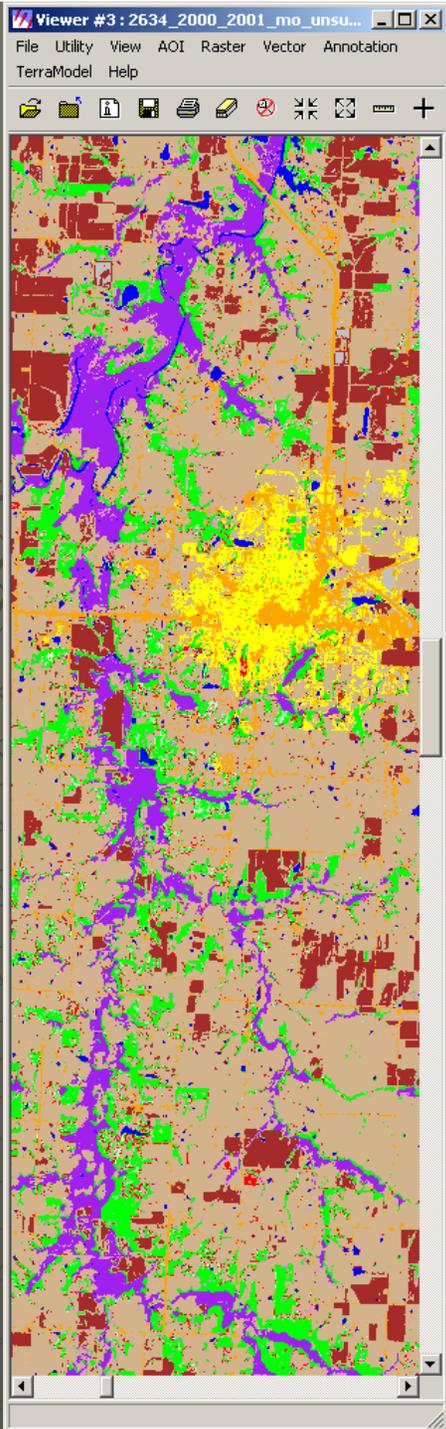
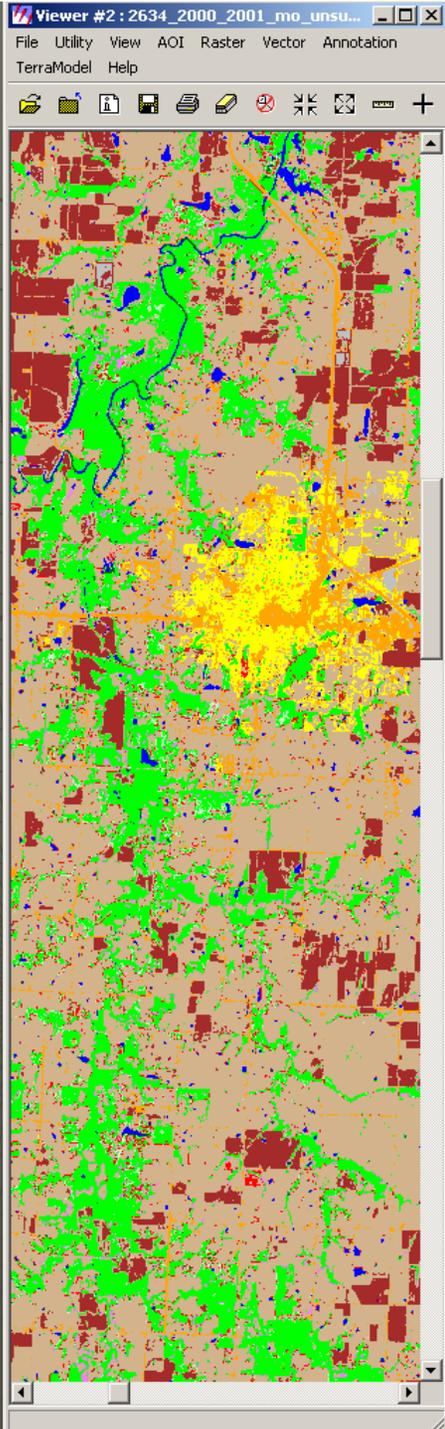
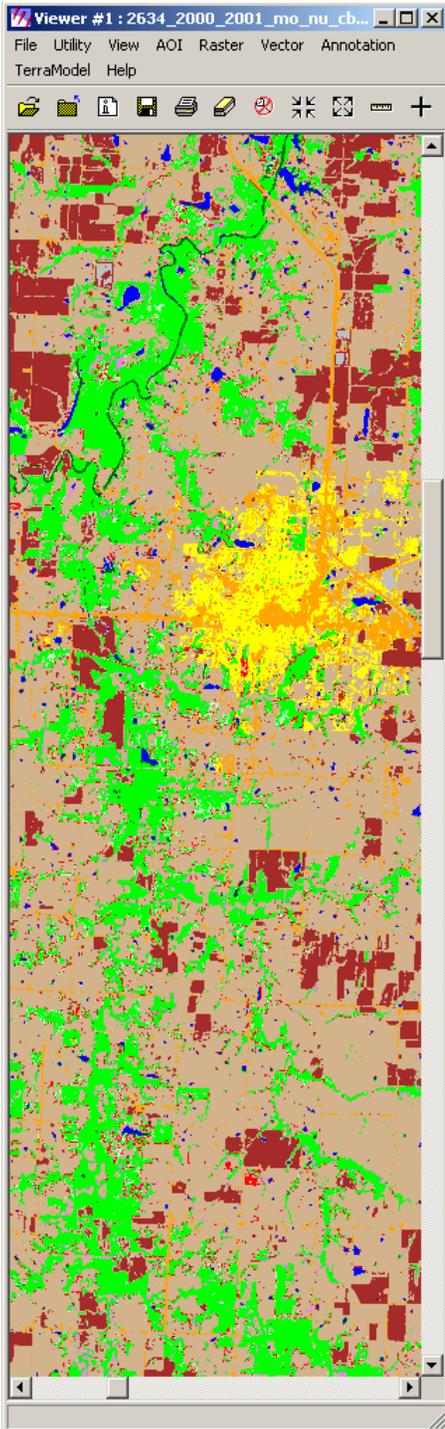
Post Hoc Data Layers

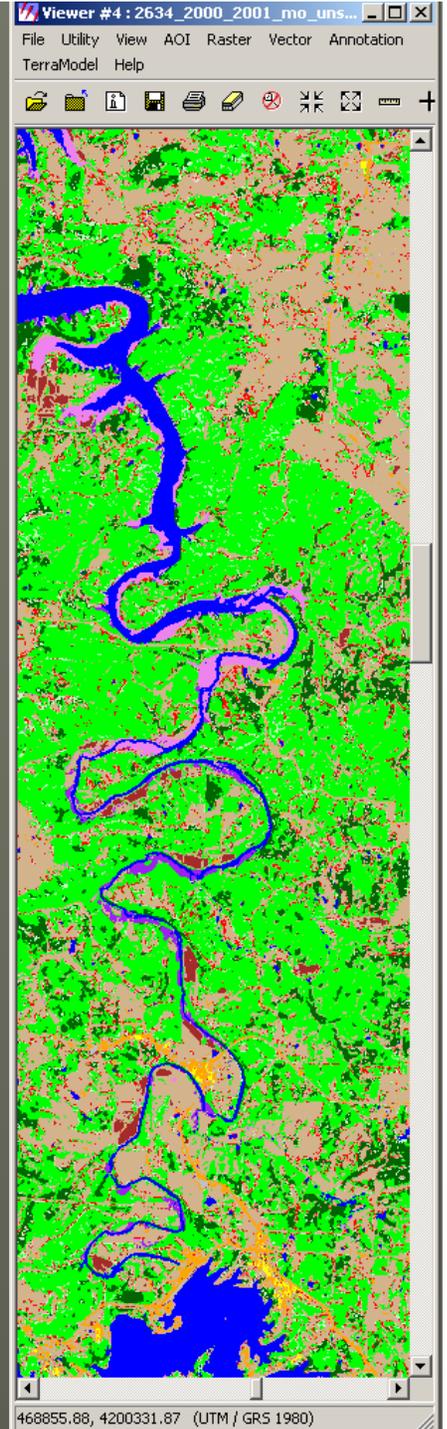
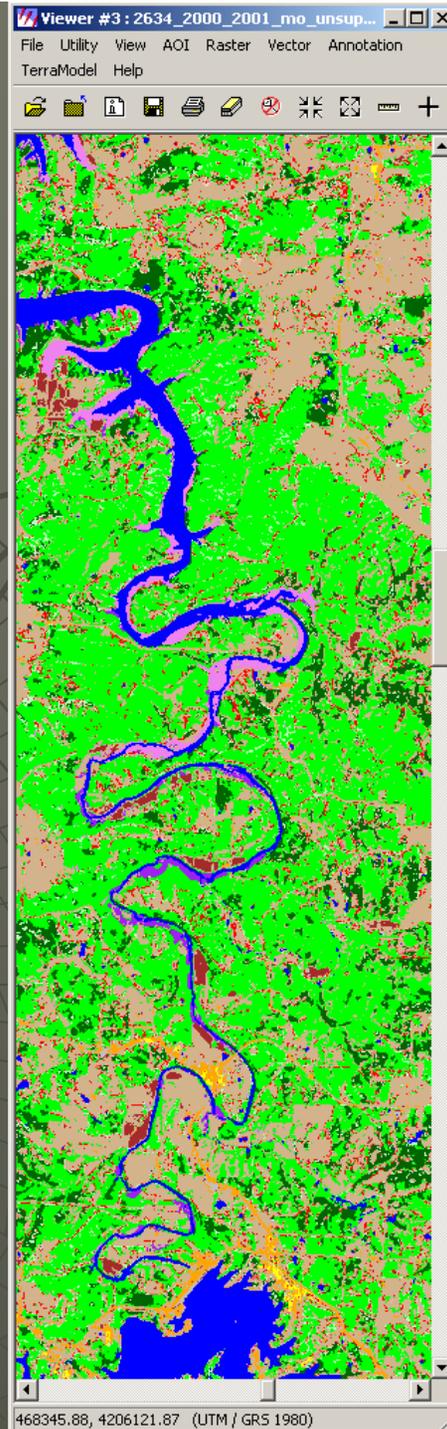
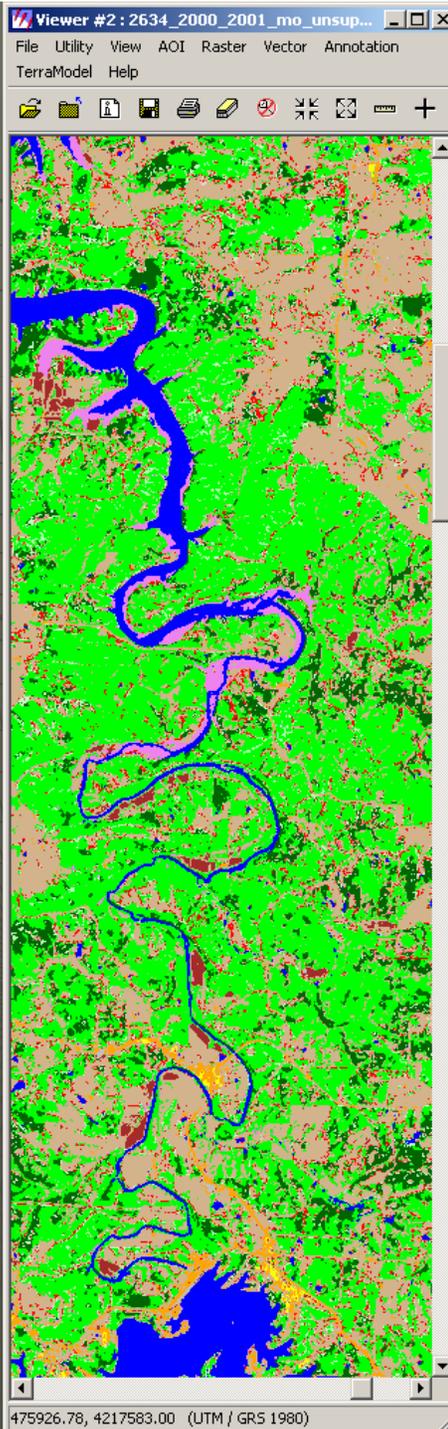
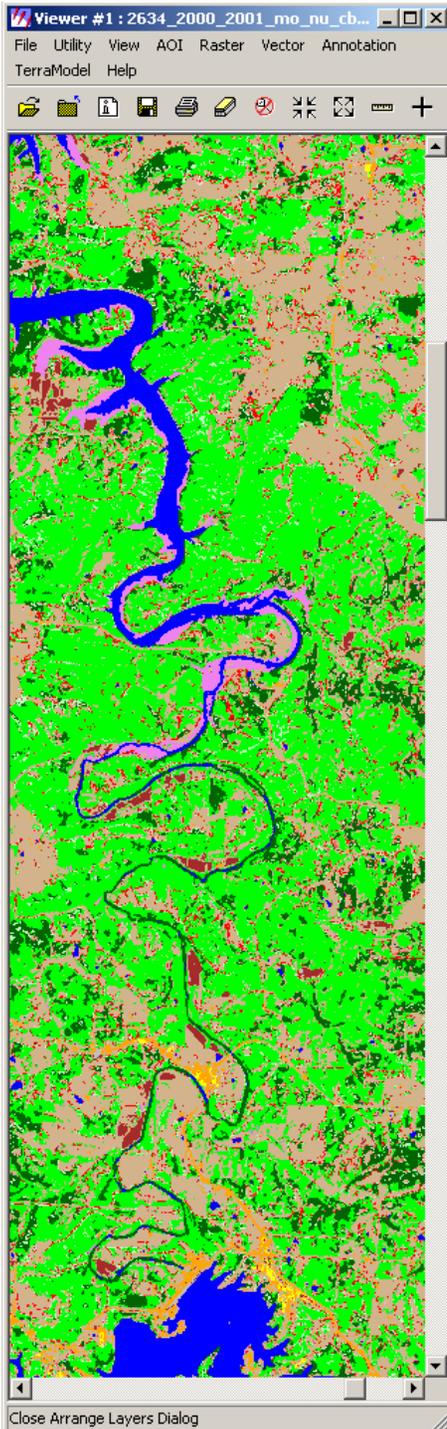


Post Hoc Spatial Model





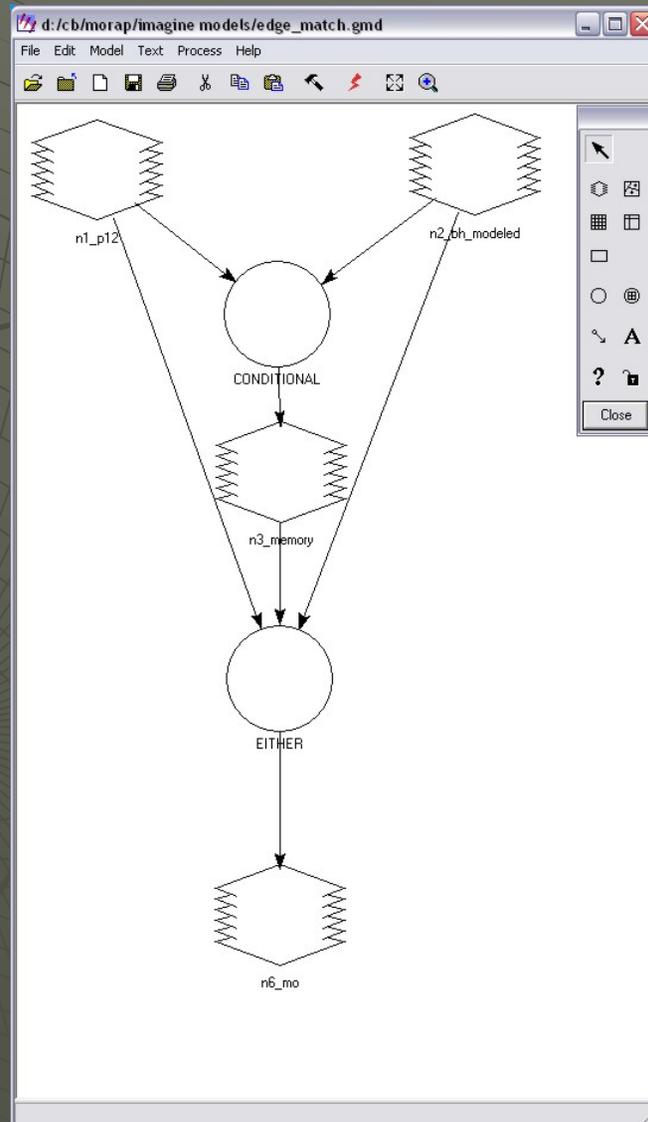




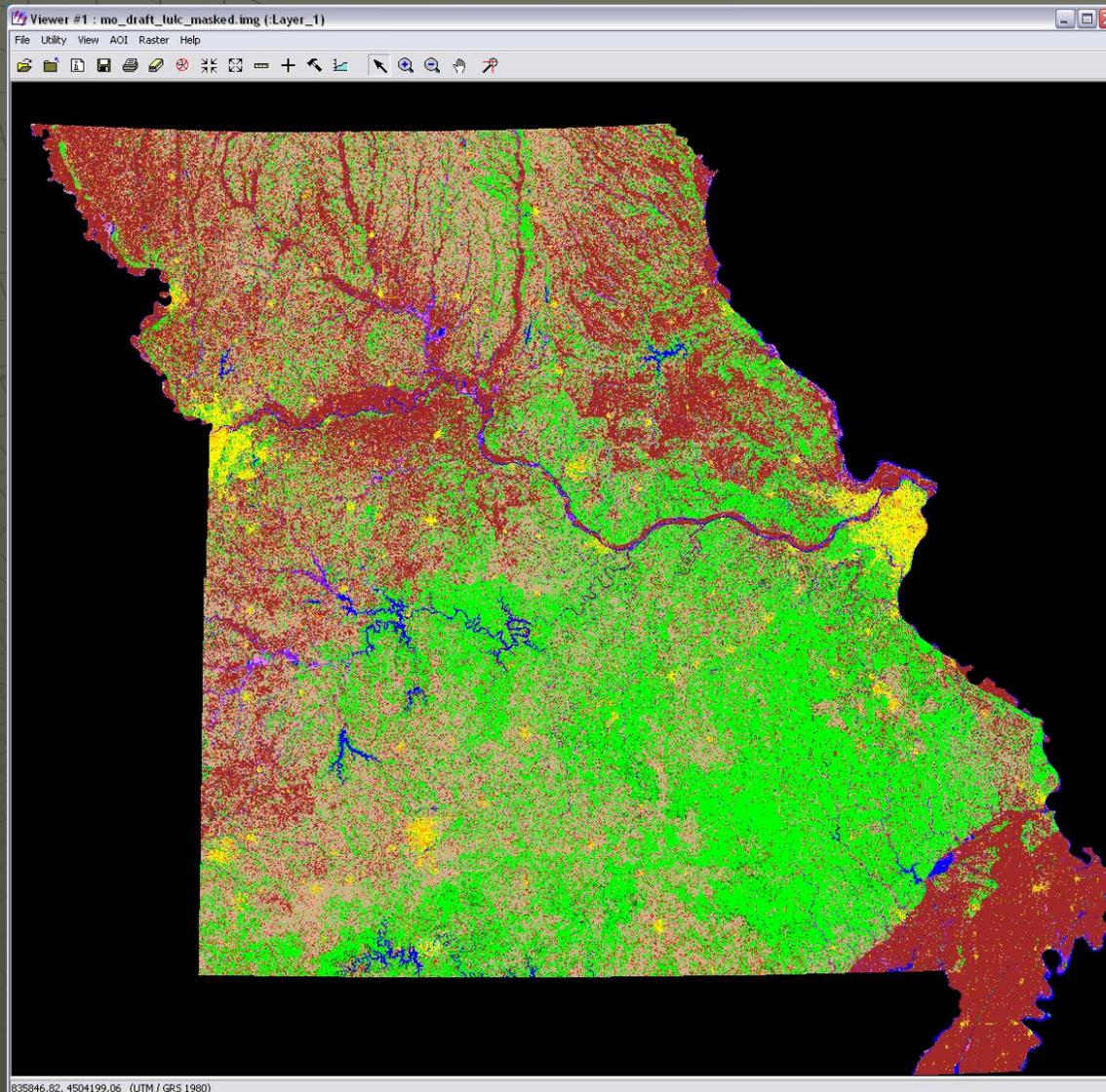
MoRAP Landcover Update

- ◆ Spatial model developed to mosaic adjacent scenes
- ◆ User defined priority given to each landcover class
- ◆ Priority used to assign class in overlap region

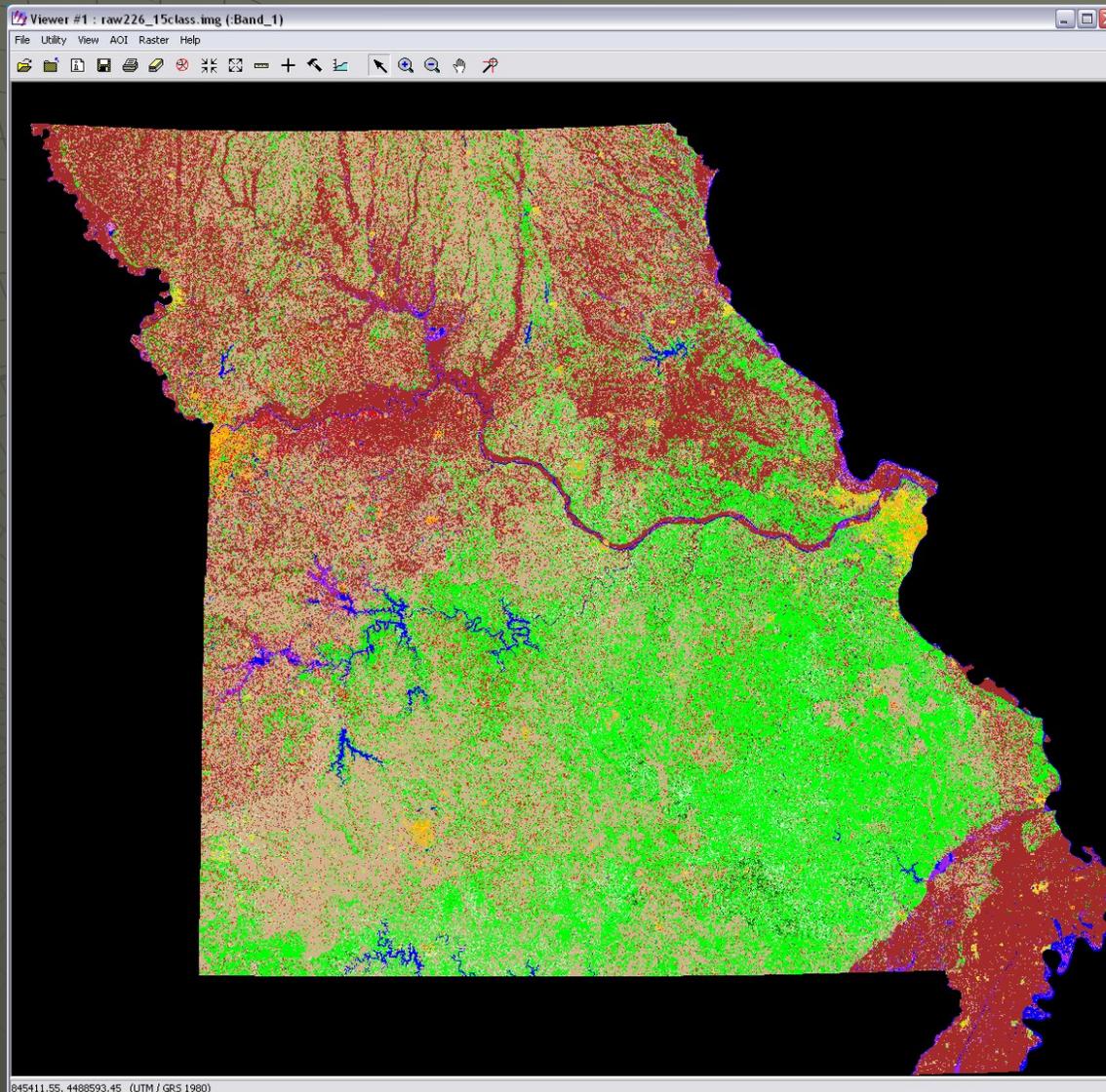
Edge Match Spatial Model



Current MoRAP Landcover



1992 MoRAP Landcover



MoRAP Landcover Update

- ◆ So, what's next on the landcover mapping front?
- ◆ Continued updates?
 - Operational Satellite
 - Funding
- ◆ Ecological Systems Modeling

MoRAP Landcover Update

- ◆ Ecological systems represent recurring groups of biological communities that are found in similar physical environments and are influenced by similar dynamic ecological processes, such as fire or flooding. They are intended to provide a classification unit that is readily mappable, often from remote imagery, and readily identifiable by conservation and resource managers in the field.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

Ecological Systems Modeling

