The Terrestrial Ecological Unit Inventory (TEUI):
- Terrestrial Ecological Unit Inventory (TEUI) is defined as the systematic description, classification, soil, vegetation, climate, geomorphology and geology, mapping, and interpretation of ecological types (USDA 1986).
- Ecological types are defined as a conceptual representation of the obligatory relationship existing between climate, soil, and vegetation. The triangle below implies that climate affects soil and vegetation independently, soil influences vegetation, and that vegetation reacts upon the soil (USDA 1986).

The TEUI-Geospatial Toolkit:
- Terrestrial Ecological Unit Inventory – Geospatial Toolkit (TEUI-Geospatial Toolkit) is an ArcMap extension developed by the Forest Service Remote Sensing Applications Center (RSAC).
- TEUI-Geospatial Toolkit products comply with Forest Service data dictionary standards and can be integrated with the NRIS-Terra Inventory and Mapping database (RSAC, 2006).

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Current TEUI efforts in the USDA Forest Service Southwestern Region:
- Tonto NF: 3.3 million acres
  - Elevation: 4500 ft to 10,770 ft
  - Vegetation: Chihuahuan desert to 7900 ft at Mogollon Rim
  - Visitors annually: ~3.3 million

- Gila NF: 2.4 million acres
  - Elevation: 3000 ft to 10,000 ft
  - Vegetation: Sonoran desert to 7900 ft at Magallion Rim
  - Visitors annually: ~5.8 million

Terrestrial Ecological Unit Inventory on Two Southwestern Forests: Adapting Digital Mapping Methods to Fit the Landscape

Pre-Mapping Adaptations by Forest:
- Tonto National Forest
  - Pre-Mapping: Dataset layers used in the pre-mapping process include: eDOQQ and 7 ETM+ to interpret vegetative patterns and types, a classified percent slope raster layer set as a transparency over a hill shade raster layer to identify slope breaks, geology, and landforms, Arizona Geological Survey Geology vector layer to identify parent materials, and Digital Elevation Models (DEM) and climatic layers classified using the Tonto National Forest LSM Climatic Gradient to identify life zones. A Potential Natural Vegetation Type map of the Tonto National Forest is used for initial image segmentation with slope breaks, geology, and landform being delineated using heads up digitization.

- Gila National Forest
  - Pre-Mapping: Dataset layers used include DEM, eDOQQ, percent slope, aspect, contours, imported vector geology layer, and natural segments (level 3). Natural segments “level 3” weights trisadde at 1.0, continuous slope at 0.7, and ETM DOQ at 0.7 with the color of the objects given a higher weight than shape. Heads-up digitizing is done to better fit the segments to the slope break categories.

Field Verification and Post Field Work:
- Field Verification: Field maps are printed using ArcMap 1:24,000 templates and the DSM/EDOQQ extension. Both maps and aerial photos (with an Mylar overlay of the edited polygons) are used in the field for navigation, mapping, and documentation of field verification observations.
- Post Field Editing: Once edits from the field are complete, statistics are run for the survey area. Once these have been calculated, the query tool is used to find polygons that are outside of the map unit concept. These polygons can then be compared to other map units and relabeled if necessary. Map units are also compared and contrasted to one another to see if concepts are overlapping and need to be reconsidered.

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References: