Figure 6 Steps of ALUCT

The second stage of ALUCT is image classification. The main objective is interpretation of spectral information in satellite images into land-use classes. The object-based hierarchical classification approach (Blumberg and Zhu, 2007) was applied at this stage. In this approach, image classification began with an image segmentation process. The purpose is to produce image objects, a group of pixels with a similar level of homogeneity in terms of spectral and spatial characteristics. Image objects have to be able to represent the actual landscape features in the satellite images. Several phases of segmentation were conducted to get the required levels of detail. The outputs of these phases are called multi-resolution image segments, which serve as a basis for the hierarchical classification system. The segmentation processes are illustrated in Figure 7.
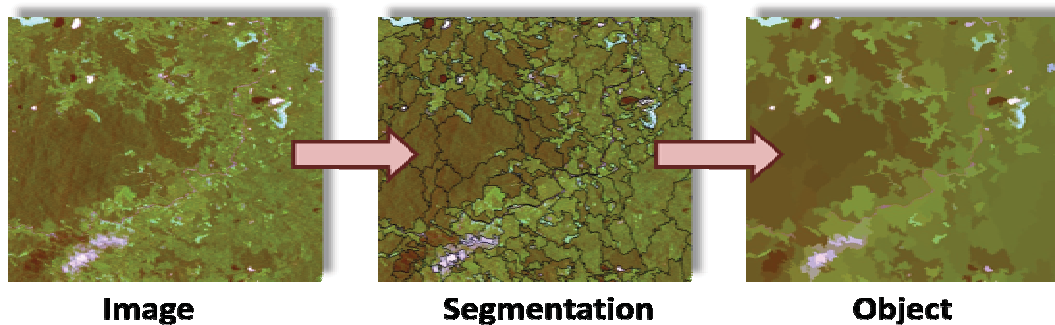

Figure 7 Segmentation process

Following the segmentation process, image classification was conducted using hierarchical structure showed in Figure 8. The hierarchy is divided into four levels, and in each level, land cover types are interpreted using spectral and spatial rules. Details and complexity of land cover types increasing in each level, therefore each of them has different set of rules applied.