Module 3: Introduction to QGIS and Land Cover Classification

The main goals of this Module are to become familiar with QGIS, an open source GIS software; construct a single-date land cover map by classification of a cloud-free composite generated from Landsat images; and complete an accuracy assessment of the map output. The tools for completing this work will be done using a suite of open-source tools, mostly focusing on QGIS. The land cover map will be created by training a machine learning algorithm, random forests, to predict land cover across the landscape. The random forests model is trained from a user generated reference data set – collected either in the field or manually through examination of remotely sensed data sources. The resulting model is then applied across the landscape. Finally you will assess agreement with a second reference data set generated using a stratified random sampling process and high resolution aerial imagery. The reference data set will be compared to the classified map image to determine the accuracy estimates.

Modules 3 and 4 have been adapted from Exercises and material developed by Dr. Pontus Olofsson, Christopher E. Holden, and Eric L. Bullock at the Boston Education in Earth Observation Data Analysis in the Department of Earth & Environment, Boston University. To learn more about their materials and their work, visit their github site at <https://github.com/beeoda>.