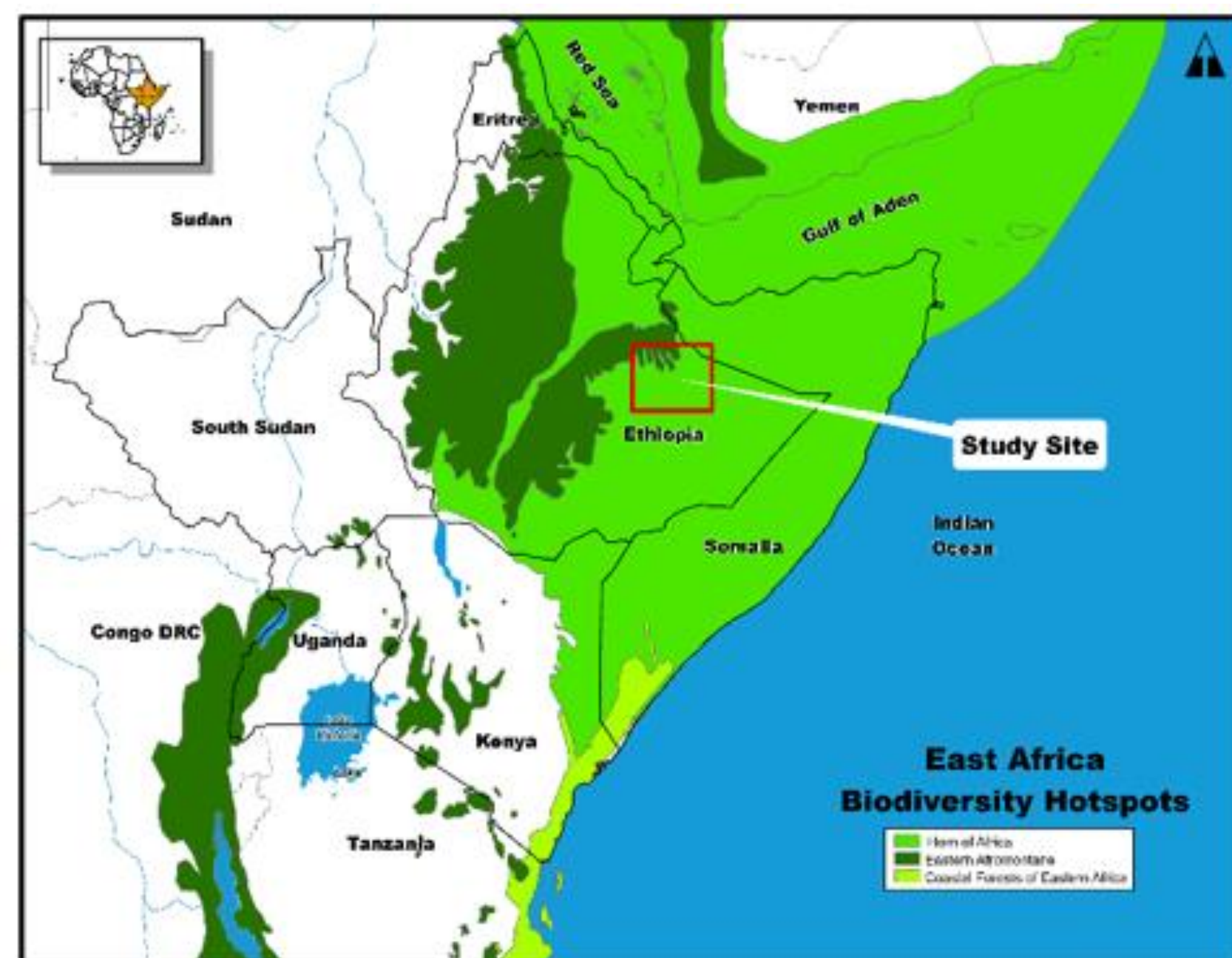


Image Classification in Google Earth Engine (GEE) for Biodiversity Hotspot Mapping

Motivation

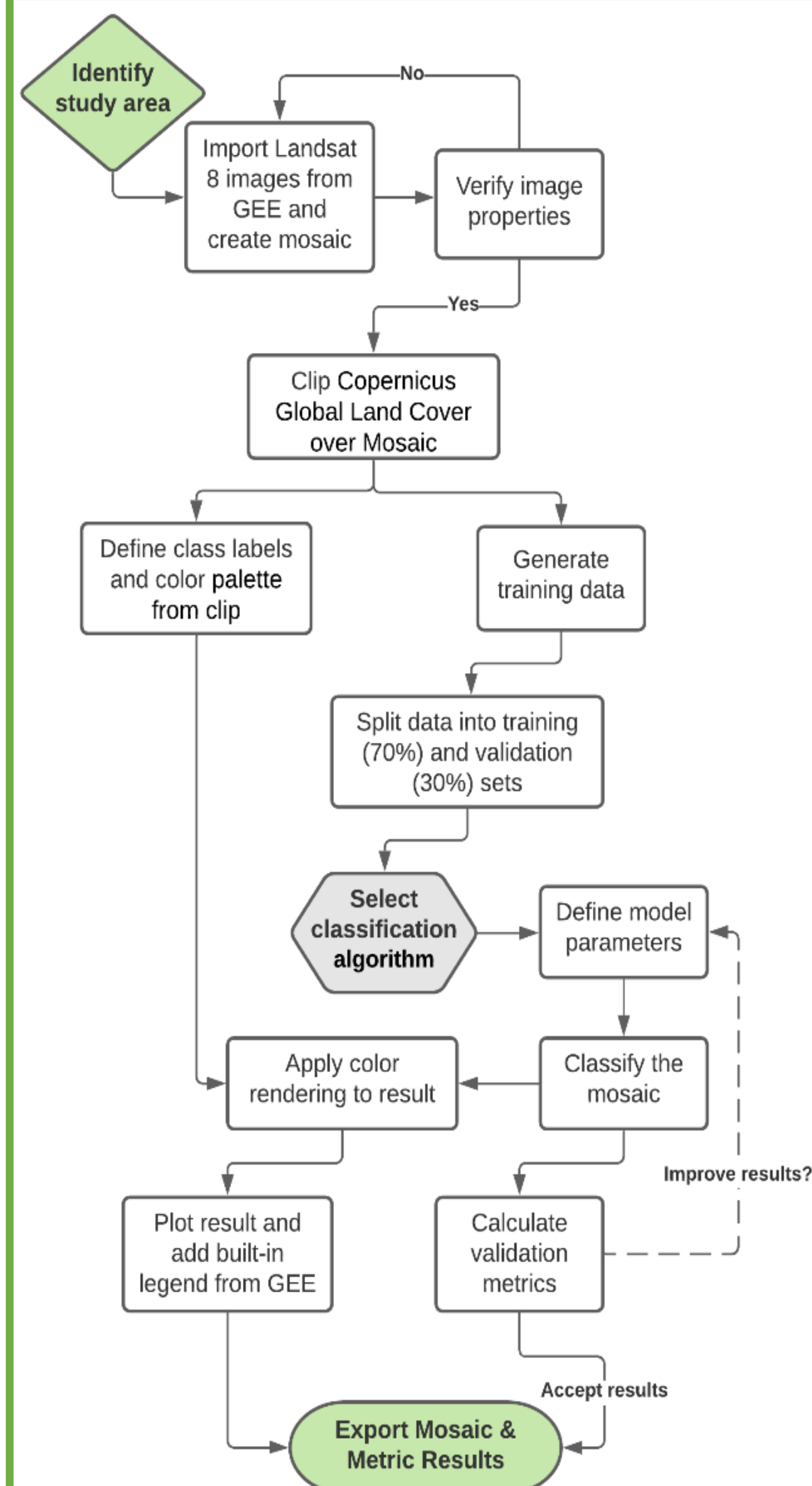
Many of the world's remaining biodiversity hotspots coincide with areas of rapid population growth and agricultural expansion. Understanding the geographic distribution of various land cover types within these hotspots is limited by a lack of current, detailed maps and the rapid land use changes underway in these areas. This is particularly true in the project study site of East Africa.



Datasets

USGS Landsat 8 Surface Reflectance Tier 1
Copernicus Global Land Cover Layers:
CGLS-LC100 collection 3

Methodology



Land Cover Classes

- Shrubs
- Herbaceous Vegetation
- Cultivated & Managed Vegetation
- Urban Areas
- Bare / Sparsely Vegetated
- Water
- Herbaceous Wetland
- Closed Forest, Evergreen Broad Leaf
- Closed Forest, Deciduous Broad Leaf
- Closed Forest, Unclassed
- Open Forest, Deciduous Broad Leaf
- Open Forest, Unclassed

Remaining Challenges

GEE has computational constraints that limit model optimization.

None of the models were very successful at classifying open and closed forest habitat types.

Moderate level of commission and omission errors in agricultural areas could lead to over or under estimation levels of the encroachment in other habitat types.

Results

Model	Accuracy	Kappa
Random Forest	0.75	0.40
Gradient Boosted Trees	0.74	0.39
Support Vector Classification	0.70	0.31
Classification & Regression Tree	0.64	0.26

