Linear Spectral Unmixing in Google Earth Engine

Imported datasets

1. Region of Interest(ROI)

Mark the ROI on the map in the Google Earth Engine window using the geometry drawing tool (eg. rectangle tool). It will automatically create the geometric layer of the ROI. Add an import of that layer into the Import section.

1. Shapefile of the study area

The shapefile of the study area can be uploaded through the Assets tab. Under the Assets tab, click ‘New’. In the drop down menu that appears, click on shapefiles under the Table upload section. Then, a dialog box will appear. Click on ‘Select’. Then select the shapefile of interest for uploading. Ensure to upload the associated files also (eg. .dbf, .cpg, .prj). Give an appropriate Asset ID and click Upload. The shapefile can be seen under the Assets tab. It can be imported into the script by hovering over it and then click on the right arrow button.

JavaScript Code for performing Linear Spectral Unmixing

//Load the desired satellite image of the ROI of the desired date

var ‘name’ = ee.ImageCollection()

.filterBounds()

.filterDate(‘start date’, ‘end date’)

.sort(‘CLOUD\_COVER’)

.first();

print(‘name’);

Map.centerObject(‘shapefile’);

Map.addLayer(‘shapefile’,{color: 'red'}, 'assign name for shapefile');

var bands = [Provide band numbers opted for the study];

var study\_area = name.select(bands).clip(‘new name of shapefile’);

Map.addLayer(study\_area,{bands: [‘True color bands’],min:, max: },

'True color image');

Map.addLayer(study\_area,{bands: [‘False color bands’], min:, max: },

'False color image’);

// Define spectral endmembers.

var ‘category1’ = [‘assign the spectral endmembers into the variable’]//Create as much variables required for the analysis and define their spectral endmembers

//Unmix the image

var fractions = study\_area.unmix([name of the categories]);

Map.addLayer(fractions,{},'Assign name for the layer’');