Final Project (GEE Script)

```
var Landsat8 = ee.ImageCollection("LANDSAT/LC08/C01/T1_RT"),
    NTL = ee.ImageCollection("NOAA/DMSP-OLS/NIGHTTIME_LIGHTS"),
    USstate = ee.FeatureCollection("ft:1nEYqvsp5Rz-Bcb65ciRK7oFJ8SHbghh3HxueptKv"),
    counties = ee.FeatureCollection("TIGER/2016/Counties"),
    Census_2016_Counties = ee.FeatureCollection("TIGER/2016/Counties");

//Final Project -- GEE component: Data is accessed and cleaned for Bakersfield and Miami Metro Areas which will be used as test subjects in Final Project


//credit goes to Li Meiqing for providing much of the code off of which this script is based

var CAstate = USstate.filterMetadata('NAME','equals','California');
var FLstate = USstate.filterMetadata('NAME','equals','Florida');
var BakersfieldMetro =
ee.Feature(Census_2016_Counties.filterMetadata('NAME','equals','Kern').first());
var FLcounties = Census_2016_Counties.filterBounds(FLstate);
print('FLcounties',FLcounties);
var CAcounties = Census_2016_Counties.filterBounds(CAstate);
print('FLcounties',CAcounties);

var miami_dade =
ee.Feature(Census_2016_Counties.filterMetadata('NAME','equals','Miami-Dade').first());
var broward =
ee.Feature(Census_2016_Counties.filterMetadata('NAME','equals','Broward').first());
var palm_beach = ee.Feature(Census_2016_Counties.filterMetadata('NAME','equals','Palm
Beach').first());
print('miami_dade',miami_dade);
print('broward',broward);
print('palm_beach',palm_beach);
var MiamiMetro = ee.FeatureCollection( [miami_dade, broward, palm_beach] );
print('MiamiMetro',MiamiMetro);
var MiamiMetro = MiamiMetro.union();
print('MiamiMetro',MiamiMetro);
Map.addLayer(MiamiMetro, {color:'violet'},'MiamiMetro');

 //all night Lighting
print('Night Lighting Images', NTL);
//extract NTL image from 2013 (latest)
var NTL = ee.Image('NOAA/DMSP-OLS/NIGHTTIME_LIGHTS/F182013'); //night Lighting in
2013
```

```
print('Night Lighting Image 2013', NTL);
//extract stable light band
var NTL_stable =
ee.Image('NOAA/DMSP-OLS/NIGHTTIME_LIGHTS/F182013').expression('b(1)'); //select stable
lights
print('Stable Light Band 2013', NTL);
//extract average light band
var NTL_average =
ee.Image('NOAA/DMSP-OLS/NIGHTTIME_LIGHTS/F182013').expression('b(0)'); //select
average lights
print('Average Light Band 2013', NTL);

var NTL_stable_CA = NTL_stable.clip(CAstate);
var NTL_average_CA = NTL_average.clip(CAstate);

var NTL_stable_BAK = NTL_stable.clip(BakersfieldMetro);
var NTL_average_BAK = NTL_average.clip(BakersfieldMetro);
print('NTL_stable_BAK',NTL_stable_BAK);
print('NTL_average_BAK',NTL_average_BAK);

var NTL_stable_MIA = NTL_stable.clip(MiamiMetro);
var NTL_average_MIA = NTL_average.clip(MiamiMetro);
print('NTL_stable_MIA',NTL_stable_MIA);
print('NTL_average_MIA',NTL_average_MIA);

Map.addLayer(NTL_average, {min: 0, max: 64, palette: ['FFFFFF', 'CE7E45', 'DF923D',
'F1B555', 'FCD163', '99B718',
'74A901', '66A000', '529400', '3E8601', '207401', '056201',
'004C00', '023B01', '012E01', '011D01', '011301'], opacity:
1},'Average Light');

Map.addLayer(NTL_stable, {min: 0, max: 64, palette: ['FFFFFF', 'CE7E45', 'DF923D', 'F1B555',
'FCD163', '99B718',
'74A901', '66A000', '529400', '3E8601', '207401', '056201',
'004C00', '023B01', '012E01', '011D01', '011301'], opacity:
1},'Stable Light');

Map.addLayer(NTL_average_BAK, {min: 0, max: 64, palette: ['FFFFFF', 'CE7E45', 'DF923D',
'F1B555', 'FCD163', '99B718',
'74A901', '66A000', '529400', '3E8601', '207401', '056201',
'004C00', '023B01', '012E01', '011D01', '011301'], opacity:
1},'Average Light BAK');
```

```
Map.addLayer(NTL_stable_BAK, {min: 0, max: 64, palette: ['FFFFFF', 'CE7E45', 'DF923D',
'F1B555', 'FCD163', '99B718',
'74A901', '66A000', '529400', '3E8601', '207401', '056201',
'004C00', '023B01', '012E01', '011D01', '011301'], opacity:
1},'Stable Light BAK');

Map.addLayer(NTL_average_MIA, {min: 0, max: 64, palette: ['FFFFFF', 'CE7E45', 'DF923D',
'F1B555', 'FCD163', '99B718',
'74A901', '66A000', '529400', '3E8601', '207401', '056201',
'004C00', '023B01', '012E01', '011D01', '011301'], opacity:
1},'Average Light MIA');

Map.addLayer(NTL_stable_MIA, {min: 0, max: 64, palette: ['FFFFFF', 'CE7E45', 'DF923D',
'F1B555', 'FCD163', '99B718',
'74A901', '66A000', '529400', '3E8601', '207401', '056201',
'004C00', '023B01', '012E01', '011D01', '011301'], opacity:
1},'Stable Light MIA');

Export.image.toDrive({
  image: NTL_stable_BAK,
  description: 'NTL_stable_BAK_1K',
  scale: 1000,
  region: BakersfieldMetro,
  maxPixels: 725820002
});

Export.image.toDrive({
  image: NTL_stable_MIA,
  description: 'NTL_stable_MIA_1K',
  scale: 1000,
  region: MiamiMetro,
  maxPixels: 725820002
});


Export.table.toDrive({
collection: BakersfieldMetro,
description:'BakersfieldMetro',
fileFormat: 'SHP'
});
```