Demonstration
Google Earth Engine (GEE)

Meet Earth Engine

Google Earth Engine combines a multi-petabyte catalog of satellite imagery and geospatial datasets with planetary-scale analysis capabilities. Scientists, researchers, and developers use Earth Engine to detect changes, map trends, and quantify differences on the Earth’s surface. Earth Engine is now available for commercial use, and remains free for academic and research use.

Source https://earthengine.google.com/
Google Earth Engine Datasets

Register/Sign Up (using Google account or other account)
Access to various datasets
GEE Various Datasets

Earth Engine Data Catalog

Earth Engine's public data catalog includes a variety of standard Earth science raster datasets. You can import these datasets into your script environment with a single click. You can also upload your own raster data or vector data for private use or sharing in your scripts.

Looking for another dataset not in Earth Engine yet? Let us know by suggesting a dataset.

Filter list of datasets

- Canada AAFC Annual Crop Inventory
- Allen Coral Atlas (ACA) - Geomorphic Zonation and Benthic Habitat
- AHN Netherlands 0.5m DEM, Interpolated
- AHN Netherlands 0.5m DEM, Non-Interpolated
- AHN Netherlands 0.5m DEM, Raw Samples

ASTER LIT Radiance
- Australian 5M DEM
- DEM-H: Australian SRTM Hydrologically Enforced Digital Elevation Model
- DEM-S: Australian Smoothed Digital Elevation Model
- Global Map of Oil Palm Plantations

Starting in 2009, the Earth Observation Team of the Science and Technology Branch (STB) at Agriculture and Agri-Food Canada (AAFC) began the process of generating critical crop type digital maps. Focusing on the Prairie Provinces in 2009 and 2010, a Decision Tree (DT)-based methodology...

The Allen Coral Atlas dataset maps the geophysical zonation and benthic habitat for the world's shallow coral reefs at 5m-pixel resolution. The underlying satellite image data are temporal composites of PlanetScope satellite imagery spanning 2011-2020. The habitat maps are created via a machine learning...

The AHN DEM is a 0.5m DEM covering the Netherlands. It was generated from LiDAR data taken in the spring between 2007 and 2012. It contains ground level samples with all other items above ground (such as buildings, bridges, trees etc.) removed. This version is...

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- aac
- canada
- crop
- decision
- ocean
- planet
- plane
- sea
- grass
- geophysical
- elevation
Nighttime Light Data

VIIRS Nighttime Day/Night Band Composites Version 1

Dataset Availability
2012-04-01T00:00:00Z-2022-06-01T00:00:00

Dataset Provider
Earth Observation Group, Payne Institute for Public Policy, Colorado School of Mines

Earth Engine Snippet
```
var dataset = ee.ImageCollection('NOAA/VIIRS/DNB/MONTHLY_VI/YCMEFG');
var nighttime = dataset.select('avg_red');
var nighttimevis = (nighttime.gt(0).lt(600));
Map.setCenter(-77.1656, 39.8064, 8);
Map.addLayer(nighttime, nighttimevis, 'Nighttime');
```

Explore in Earth Engine

Monthly average radiance composite images using nighttime data from the Visible Infrared Imaging Radiometer Suite (VIIRS) Day/Night Band (DNB).

As these data are composited monthly, there are many areas of the globe where it is impossible to get good quality data coverage for that month. This can be due to cloud cover, especially in the tropical regions, or due to solar illumination, as happens toward the poles in their respective summer months. Therefore it is recommended that users of these data utilize the 'avg_red' band and not assume a value of zero in the average radiance image means that no lights were observed.

Cloud cover is determined using the VIIRS Cloud Mask product (VCM). In addition, data near the edges of the swath are not included in the composites (aggregation zones 2F-32). Version 1 has NOT been filtered to screen out lights from aurora, fires, boats, and other transient lights. This separation is under development and will be included in a later version of this time series. Also in development is a method to separate lights from background (non-light) values.

Prior to averaging, the DNB data is filtered to exclude data impacted by stray light, lightning, lunar illumination, and cloud-cover.
FAO GAUL: Global Administrative Unit Layers 2015, First-Level Administrative Units

Dataset Availability
2014-12-19T16:45:00Z–2014-12-19T16:45:00

Dataset Provider
FAO UN

Earth Engine Snippet

Tags
borders  departments  fao  gaul  provinces  status  un

Description  Table Schema  Terms of Use

The Global Administrative Unit Layers (GAUL) compiles and disseminates the best available information on administrative units for all the countries in the world, providing a contribution to the standardization of the spatial dataset representing administrative units. The GAUL always maintains global layers with a unified coding system at country, first (e.g., departments), and second administrative levels (e.g., districts). Where data is available, it provides layers on a country by country basis down to third, fourth, and lower levels. The overall methodology consists in a) collecting the best available data from most reliable sources; b) establishing validation periods of the geographic features (when possible); c) adding selected data to the global layer based on the last country boundaries map provided by the UN Cartographic Unit (UNCS); d) generating codes using GAUL Coding System, and e) distribute data to the users (see Technical Aspects of the GAUL Distribution Set. Note that some administrative units are multipolygon features.

https://developers.google.com/earth-engine/datasets/catalog/FAO_GAUL_SIMPLIFIED_500m_2015_level1
Import/Add Map to GEE
Combine NTL and LAU

//retrieve NTL data January
var nld_jan =
ee.ImageCollection("NOAA/VIIRS/DNB/MONTHLY_V1/VCMSLCFG").filterDate("2020-01-01","2020-01-31").select('avg_rad').first()

//retrieve geometri by LAU1
var lau1 =
ee.Feature(ee.FeatureCollection("FAO/GAUL/2015/level1").filter(ee.Filter.eq('ADM1_C ODE', 1516))).first()).geometry()

//map clip
var nld_lau1 = nld_jan.clip(lau1)
var mu = nld_lau1.reduceRegion({reducer:ee.Reducer.mean()})
var mu = ee.Number(mu.get('avg_rad'))
print(mu)
var dataset = ee.ImageCollection('NOAA/VIIRS/DNB/MONTHLY_V1/VC MSLCFG').filter(ee.Filter.date('2020-03-01', '2020-03-31'));
var nighttime = dataset.select('avg_rad');
var nighttimeVis = {min: 0.0, max: 60.0};
Map.setCenter(106.8186111, -6.2, 9);
Map.addLayer(nighttime, nighttimeVis, 'Nighttime');
Result (NTL Image of Jakarta)
Run multiple states

var myArray = [2853, 2885, 2886];
var i;
for(i = 0; i < myArray.length; i++){
  //retrieve NTL data January
  var nld_jan = ee.ImageCollection("NOAA/VIIRS/DNB/MONTHLY_V1/VCMSLCFG").filterDate("2020-01-01","2020-01-31").select('cf_cvg').first()

  //retrieve geometry by LAU
  var prov = ee.Feature(ee.FeatureCollection("FAO/GAUL/2015/level1").filter(ee.Filter.eq('ADM1_CODE', myArray[i])).first()).geometry()

  //clip
  var nld_prov = nld_jan.clip(prov)

  var mu = nld_prov.reduceRegion({'reducer':ee.Reducer.mean()})
  var mu = ee.Number(mu.get('cf_cvg'))
  print(mu)
}
Result (Radiance Thailand)