

Demonstration



Google Earth Engine (GEE)

Google Earth Engine

Platform Datasets Noncommercial Commercial

Earth Engine for commercial use: now generally available with Google Cloud. [Get more details here](#)

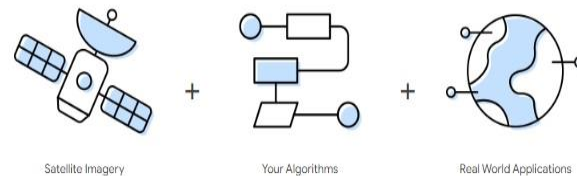
A planetary-scale platform for Earth
science data & analysis

Powered by Google's cloud infrastructure

▶ Watch Video

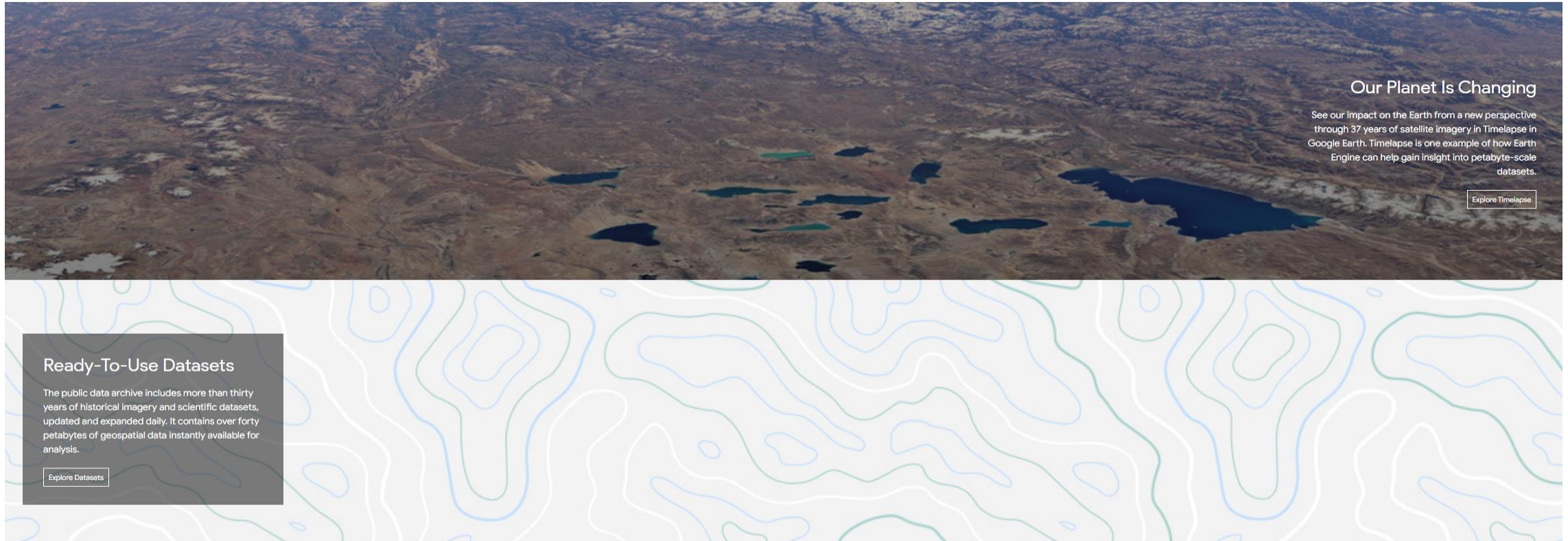
Meet Earth Engine

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

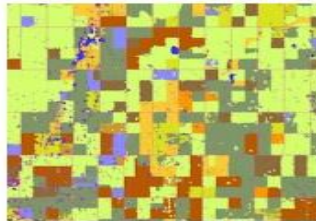
Earth Engine Data Catalog

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



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 annual crop type digital maps. Focusing on the Prairie Provinces in 2009 and 2010, a Decision Tree (DT) based methodology ...

aafc canada crop landcover

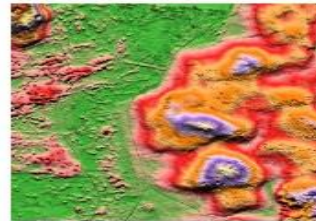
Allen Coral Atlas (ACA) - Geomorphic Zonation and Benthic Habitat - v1.0



The Allen Coral Atlas dataset maps the geomorphic 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 2018-2020. The habitat maps are created via a machine learning ...

coral ocean planet
planet-derived reef seagrass

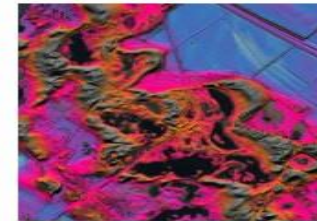
AHN Netherlands 0.5m DEM, Interpolated



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 ...

ahn dem elevation
geophysical lidar netherlands

AHN Netherlands 0.5m DEM, Non-Interpolated



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 ...

ahn dem elevation
geophysical lidar netherlands

AHN Netherlands 0.5m DEM, Raw Samples



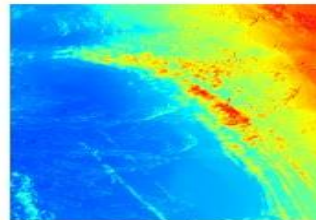
The AHN DEM is a 0.5m DEM covering the Netherlands. It was generated from LIDAR data taken in the spring between 2007 and 2012. This version contains both ground level samples and items above ground level (such as buildings, bridges, trees etc.). The point cloud ...

ahn dem elevation
geophysical lidar netherlands

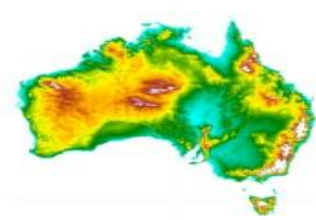
ASTER L1T Radiance



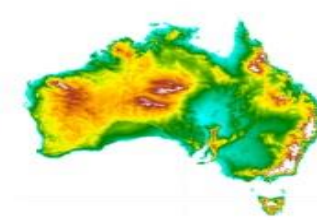
Australian 5M DEM



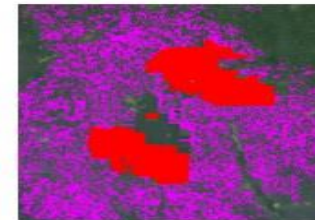
DEM-H: Australian SRTM Hydrologically Enforced Digital Elevation Model



DEM-S: Australian Smoothed Digital Elevation Model



Global Map of Oil Palm Plantations



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

```
ee.ImageCollection("NOAA/VIIRS/DNB/MONTHLY_V1/VCMSFG") 
```

Tags

[dnb](#) [eog](#) [lights](#) [monthly](#) [nighttime](#) [noaa](#) [viirs](#) [visible](#)

Description

Bands

Terms of Use

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 'cf_cvg' 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 29-32). Version 1 has NOT been filtered to screen out lights from aurora, fires, boats, and other temporal 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.

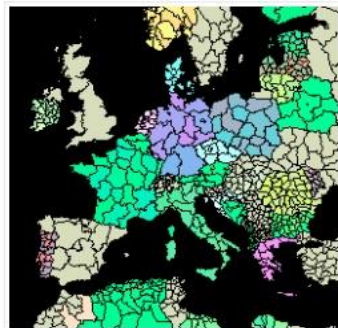
Explore in Earth Engine

```
var dataset = ee.ImageCollection('NOAA/VIIRS/DNB/MONTHLY_V1/VCMSFG')
    .filter(ee.Filter.date('2017-05-01', '2017-05-31'));
var nighttime = dataset.select('avg_rad');
var nighttimeVis = {min: 0.0, max: 60.0};
Map.setCenter(-77.1056, 38.8904, 8);
Map.addLayer(nighttime, nighttimeVis, 'Nighttime');
```

[Open in Code Editor](#)

FAO GAUL

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

FeatureCollection

```
ee.FeatureCollection("FAO/GAUL/2015/level1") 
```

FeatureView 

```
ui.Map.FeatureViewLayer("FAO/GAUL/2015/level1_FeatureView") 
```

Tags

[borders](#) [departments](#) [fao](#) [gaul](#) [provinces](#) [states](#) [un](#)

Description

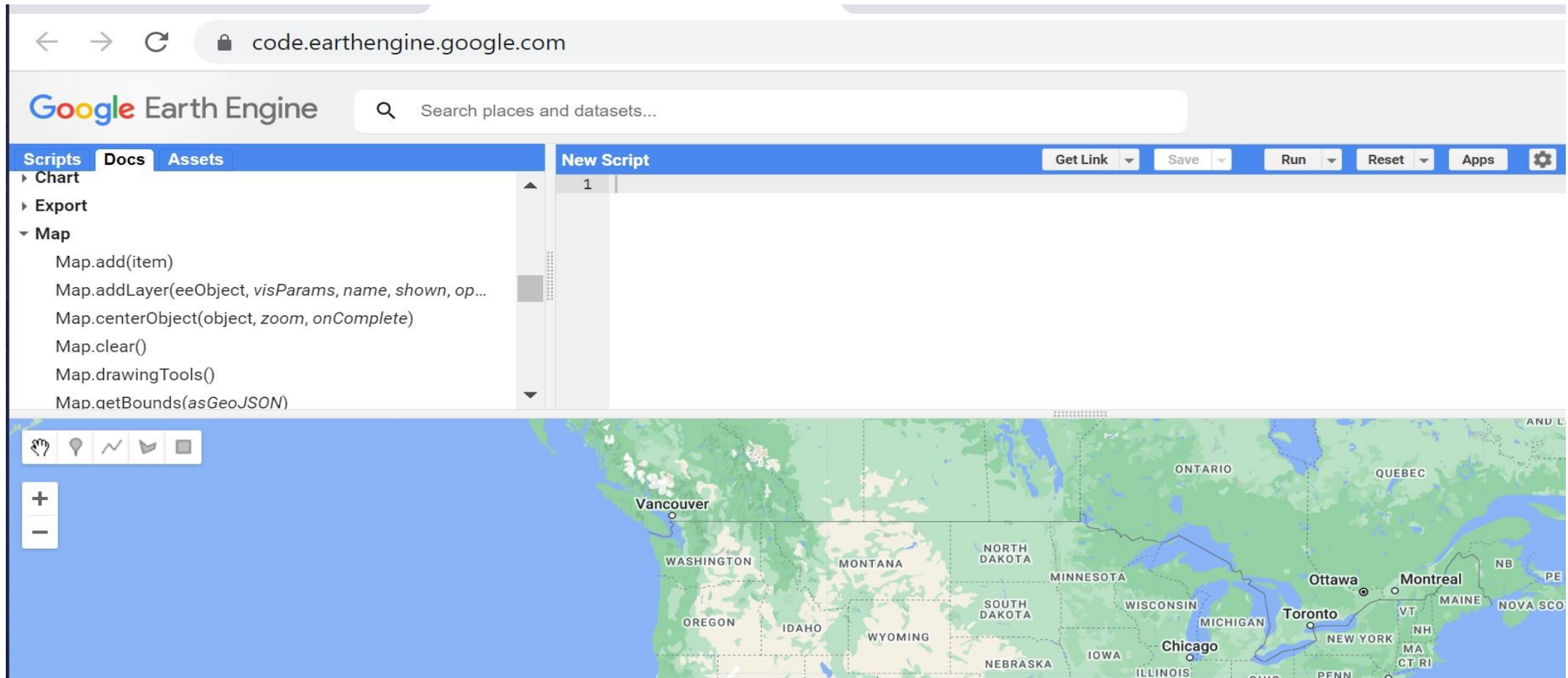
Table Schema

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_CODE', 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)
```


Result

Scripts Docs Assets

Filter scripts... NEW ↺

▼ Owner

No accessible repositories. Click Refresh to check again.

▼ Writer

No accessible repositories. Click Refresh to check again.

▼ Reader

No accessible repositories. Click Refresh to check again.

▼ Archive

No accessible repositories. Click Refresh to check again.

New Script *

Get Link Save Run Reset Apps ⚙

```
1 //retrieve NTL data January
2 var nld_jan = ee.ImageCollection("NOAA/VIIRS/DNB/MONTHLY_V1/VCMSLCFG").filterDate("2020-01-01", "2020-01-31").select(0)
3 //retrieve geometri by LAU1
4 var lau1 = ee.FeatureCollection("FAO/GAUL/2015/level1").filter(ee.Filter.eq('ADM1_CODE', 1516)).first()
5 //map clip
6 var nld_lau1 = nld_jan.clip(lau1)
7 var mu = nld_lau1.reduceRegion({reducer: ee.Reducer.mean()})
8 var mu = ee.Number(mu.get('avg_rad'))
9 print(mu)
10
```

Inspector Console Tasks

Use print(...) to write to this console.

31.02774312166076

A map of Jakarta and its surrounding regions, including Tangerang, West Jakarta, South Jakarta, Bekasi Regency, and Karawang. The map shows the Citarum River flowing through the area, with various districts and landmarks labeled. The map is displayed in a web browser interface with a toolbar on the left and a legend on the right.

NTL Image

```
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)

The screenshot displays the Google Earth Engine web interface. On the left, the 'Scripts' tab is active, showing a list of scripts with filters for Owner, Writer, Reader, and Archive. The main area shows a 'New Script' editor with the following code:

```
1 var dataset = ee.ImageCollection('NOAA/VIIRS/DNB/MONTHLY_V1/VCMSLCFG')
2   .filter(ee.Filter.date('2020-03-01', '2020-03-31'));
3 var nighttime = dataset.select('avg_rad');
4 var nighttimeVis = {min: 0.0, max: 60.0};
5 Map.setCenter(106.8186111, -6.2, 9);
6 Map.addLayer(nighttime, nighttimeVis, 'Nighttime');
7
8
```

On the right, the 'Inspector' tab is active, showing a message: 'Use print(...) to write to this console.' Below the script editor, a map view shows a satellite image of Jakarta, Indonesia, with a grid overlay. The map is dark, indicating nighttime, with bright white and yellow areas representing city lights. The map is centered on Jakarta, with a bounding box of approximately [106.8186111, -6.2, 9].

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)

The screenshot displays the Google Earth Engine web interface. The top navigation bar includes 'Scripts', 'Docs', and 'Assets'. The 'Scripts' panel on the left shows a list of scripts with columns for Owner, Writer, Reader, and Archive. The 'New Script' editor in the center contains the following code:

```
1 var myArray =  
2 [2853, 2885, 2886];  
3 var i;  
4 for(i = 0; i < myArray.length; i++){  
5   //retrieve NTL data January  
6   var nld_jan = ee.ImageCollection("NOAA/VIIRS/DNB/MONTHLY_V1/CMSSLCFG").filterDate("2020-01-01", "2020-01-31")  
7  
8   //retrieve geometry by LAU  
9   var prov = ee.Feature(ee.FeatureCollection("FAO/GAUL/2015/level1").filter(ee.Filter.eq('ADM1_CODE', myArray[i])))  
10  
11   //clip  
12
```

The 'Inspector' panel on the right shows the console output with three values: 13.72987987909874, 13.458035593820078, and 12.823008328577341. The main map area shows a satellite view of Southeast Asia, with labels for Thailand, Vietnam, Cambodia, and parts of Laos and Myanmar. Major cities like Bangkok, Siem Reap, and Phnom Penh are visible. The map includes a scale bar and a legend.