



# Generate Map Tiles from GeoTIFF Process

## Overview

This document explains the process of converting a GeoTIFF image into a set of map tile images that can be displayed with the Leaflet library.

Converting a GeoTIFF requires running GDAL2Tiles application. GDAL2Tiles is part of the GDAL library and cannot be installed standalone.

## Install GDAL

GDAL installation instructions <https://gdal.org/download.html>

This may be complicated. Most of the instructions are aimed at building from source but there are binaries available for different operating systems.

On a Mac you can install with GDAL with Homebrew or download binaries from the [KyngChaos](#) website. I was able to get it working with **homebrew**

```
brew install gdal
```

If the installation was successful you should then be able to run gdal2tiles and check if it is working.

```
gdal2tiles.py --version
```

GDAL 3.3.1, released 2021/06/28

## Running GDAL2Tiles

To run **GDAL2Tiles** you provide a source image and output directory. The command also accepts other arguments that impact the tile generation. We may need to ask the folks at Richmond what values they are passing to generate their tiles.

### GDAL2Tiles Arguments

- -r Resampling - image resampling. (I used the default)
- -p Profile - the cutting profile. The default is Mercator which works with Google
- -s srs - the spatial reference system (not sure about this)
- -xyx - generate XYZ tiles (OSM Slippy map standard) instead of default mode TMS.
  - **You need to set this parameter** for the tiles to be created in the correct format for Leaflet
- -z zoom - the zoom levels to render (how many zoom levels you want to display on the map)
  - I ran my tests with zoom levels '12-17'
  - The more zoom levels you create the more map tile images are created.

### GDAL2Tiles Test

Some of the sample images I ran did not work, something was wrong with the GeoTIFFs, but I was finally able to get all the images to generate tile sets that displayed correctly

```
gdal2tiles.py ../1951-LITRK-Central-Engineering-Plan-01.tif -z '12-17' --xyz
```



## Sample JS for displaying the Tiles as a Map Layer in Leaflet

```
<script>
  var map = L.map('id_map', {
    center: [34.7465, -92.2896],
    zoom: 12
  });

  L.tileLayer('https://server.arcgisonline.com/ArcGIS/rest/services/World_Street_Map/MapServer/tile/{z}/{y}/{x}', {
    attribution: 'Tiles &copy; Esri &mdash; Source: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Ho
  }).addTo(map);

  //let tilePath = 'http://localhost:3000/output-tiles/1951-LITRK-Central-Engineering-Plan-01/{z}/{x}/{y}.png';
  let tilePath = 'http://localhost:3000/output-tiles/map-in-xyz/{z}/{x}/{y}.png';

  L.tileLayer(tilePath).addTo(map);

</script>
```