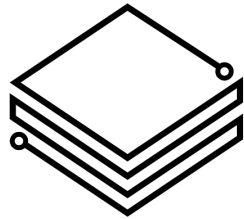


# CLOUD OPTIMIZED GEOTIFFS



**RESEARCH  
COMPUTING +  
DATA SERVICES**

JENNIFER HINDS



# WHAT ARE TIFFS & GEOTIFFS?

- **TIFF**: Tag Image File Format
  - stores raster graphics + metadata “tags”
- **GeoTIFF**: TIFF + georeferencing info
  - satellite, aerial imagery



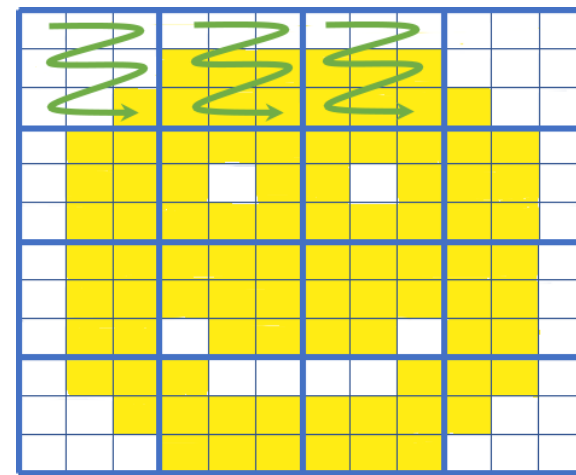
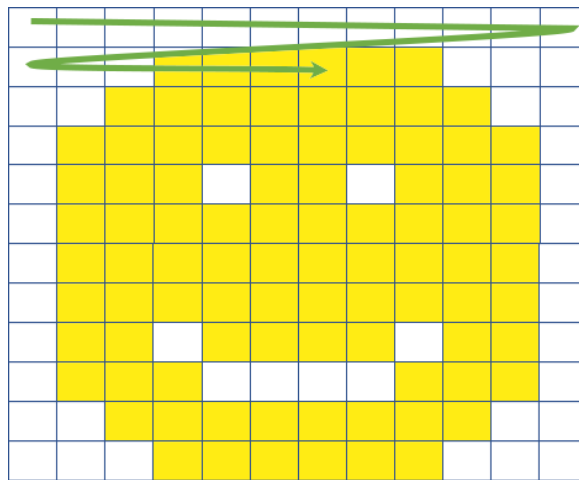
# WHAT ARE COGS?

- COGs are GeoTIFFs with an **internal organization** that supports efficient access via **HTTP GET range requests**.

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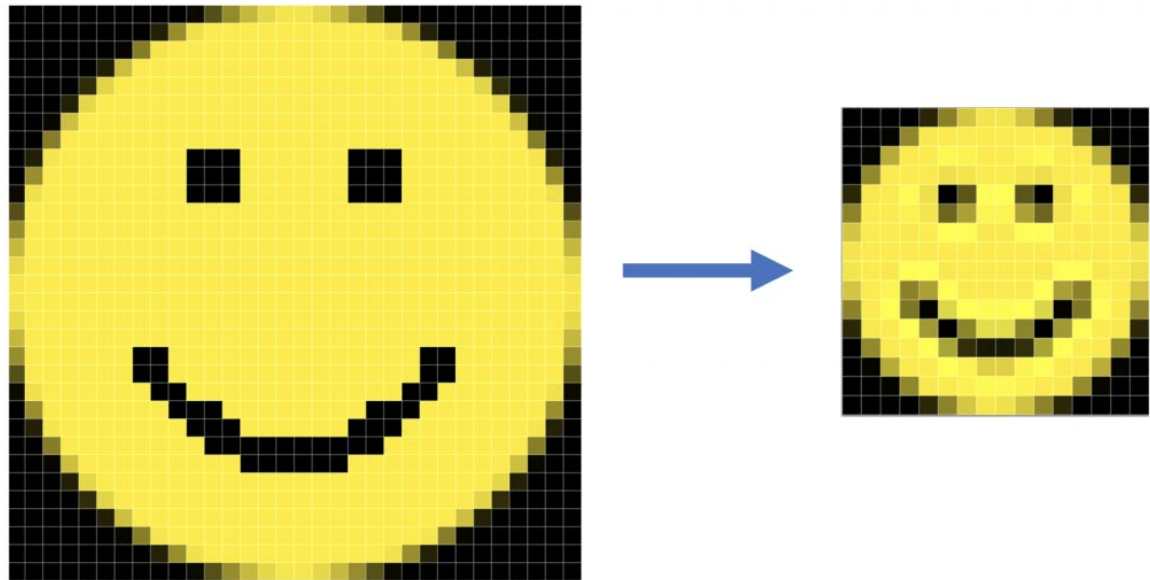
**Internal Organization:**  
Tiling



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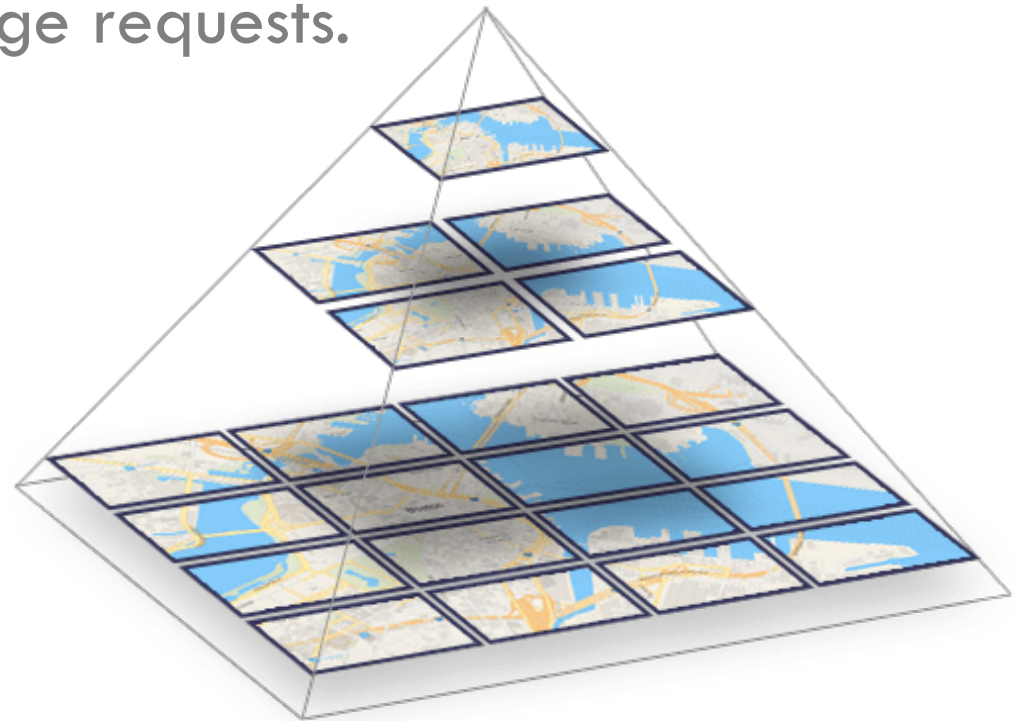
**Internal Organization:**  
Overviews



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**Internal Organization:**  
Overviews  
(a.k.a. Pyramids)



# WHAT ARE COGS?

- COGs are GeoTIFFs with an **internal organization** that supports efficient access via **HTTP GET range requests.**

Allows the client to request only the parts of the file they need

NO NEED TO DOWNLOAD ENTIRE FILE!



# DRONE MAPPING (ORTHOIMAGERY)





# COG CREATION



- BUILD OVERVIEWS

```
gdaladdo -r average file.tif 2 4 8 16 32
```

- CREATE COGs

```
gdal_translate file.tif cog.tif  
-co COMPRESS=LZW -co TILED=YES  
-co INTERLEAVE=BAND -co COPY_SRC_OVERVIEWS=YES;
```

- VALIDATE COGs

```
python3 validate_cog.py cog.tif
```

[https://github.com/rouault/cog\\_validator/blob/master/validate\\_cloud\\_optimized\\_geotiff.py](https://github.com/rouault/cog_validator/blob/master/validate_cloud_optimized_geotiff.py)

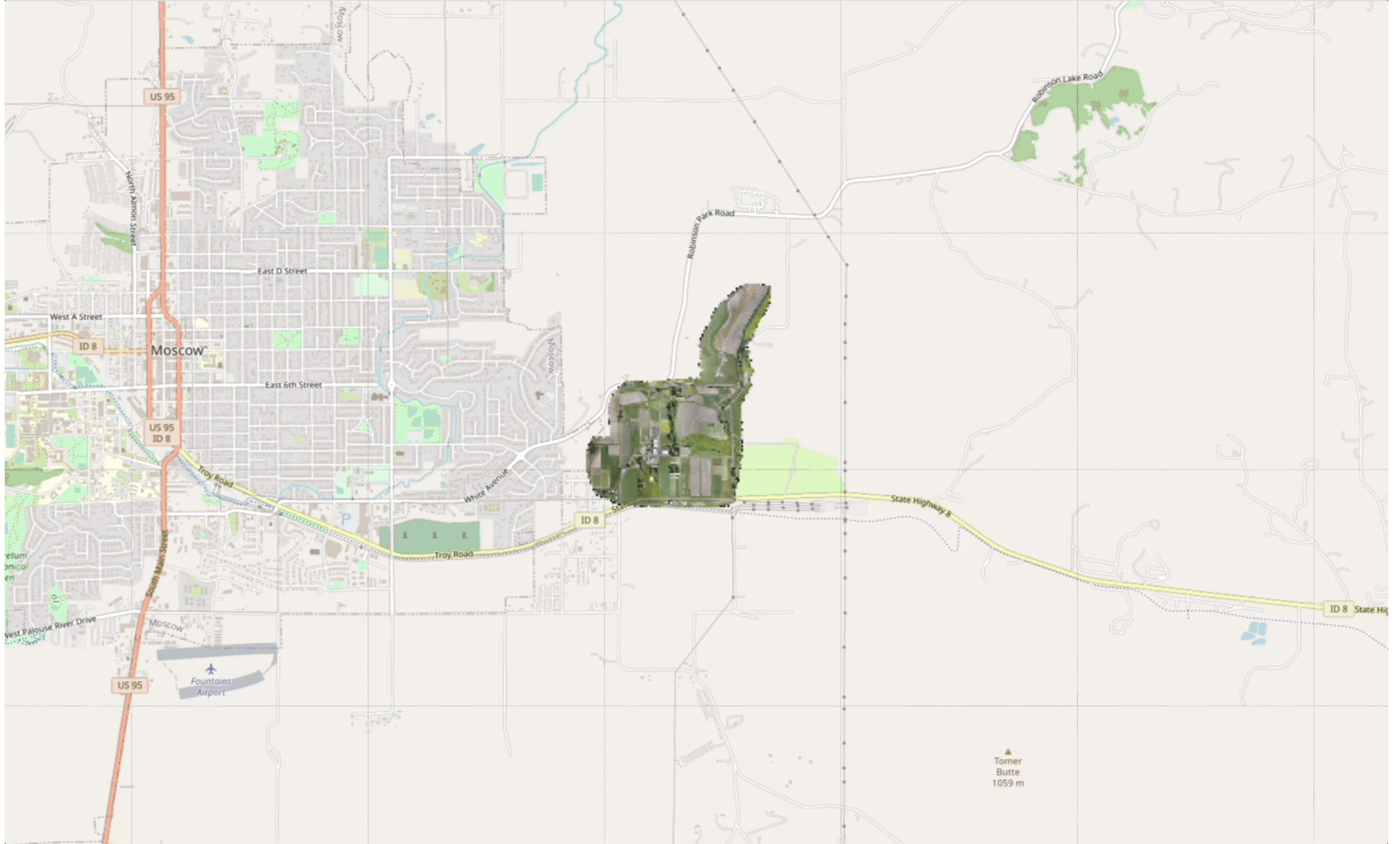
# DISPLAYING A COG ON THE WEB



- GeoRasterLayer (LeafletJS plugin)

[github.com/geotiff/georaster-layer-for-leaflet](https://github.com/geotiff/georaster-layer-for-leaflet)

```
var layer = new GeoRasterLayer({ georaster }).addTo(map);
```



# SUMMARY

- COGs make rendering large rasters efficient!
- Leaflet makes COG display on the web easy!

# RESOURCES



[cogeo.org](https://cogeo.org)



[gdal.org/drivers/raster/cog.html](https://gdal.org/drivers/raster/cog.html)