

# Data Intake Processing and Verification Report

## Background Information

- **Original Dataset Name:** Vulcan Fossil Fuel CO<sub>2</sub> Emissions
- **GHG Center Dataset Title:** Vulcan Fossil Fuel CO<sub>2</sub> Emissions
- **Dataset Provider:** NAU, NASA, NOAA, NSF
- **Date Obtained:** August 2024
- **Location Obtained From:** N/A - direct delivery to US GHG Center S3 bucket
- **Data Location in GHG Center:** vulcan-ffco2-yeargrid-v4
- **Data POC(s):** Dr. Kevin Gurney
- **Dataset File Type(s):** GeoTIFF
- **Projection (if different from WGS84):** Lambert Conformal Conic

## Data Transfer Confirmation

An SHA-256 checksum is used to detect high-level errors within data transmissions. Results from individual checksum file comparisons of pre-transfer and post-transfer shows all files were transferred successfully and no individual files had any transfer issues.

## Data Intake Process

- [https://us-ghg-center.github.io/ghgc-docs/data\\_workflow/vulcan-ffco2-yeargrid-v4\\_Data\\_Flow.html](https://us-ghg-center.github.io/ghgc-docs/data_workflow/vulcan-ffco2-yeargrid-v4_Data_Flow.html)

## Overall Dataset Statistics

- Statistics across all files:

	Minimum (tC/km <sup>2</sup> /year)	Maximum (tC/km <sup>2</sup> /year)	Mean (tC/km <sup>2</sup> /year)	Standard Deviation
Original Data	0.0	6222153.0	19.218	3572.617
Reprojected Data	0.0	6222153.0	19.188	3555.795
Reprojected Data (non zero pixels)	1.105706e-14	6222153.0	81.499	7327.585
Transformed Data (Unscaled)	1.105706e-14	6222153.0	81.499	7327.585

Transformed Data (Scaled)	4.054256e-14	22814562.0	298.829376	26868.384766
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## Yearly Dataset Statistics for Total Fossil Fuel emissions

- Statistics for Total Fossil Fuel CO<sub>2</sub> Emissions in 2010:

	Minimum (tC/km <sup>2</sup> /year)	Maximum (tC/km <sup>2</sup> /year)	Mean (tC/km <sup>2</sup> /year)	Standard Deviation
Original Data	0.0	6222153.0	114.446	10073.695
Reprojected Data	0.0	6222153.0	114.996	10048.226
Reprojected Data (non zero pixels)	1.468547e-08	6222153.0	187.312	12823.672
Transformed Data (Unscaled)	1.468547e-08	6222153.0	187.312	12823.672
Transformed Data (Scaled)	5.384671e-08	22814562.0	686.810852	47020.128906

- Statistics for Total Fossil Fuel CO<sub>2</sub> Emissions in 2015:

	Minimum (tC/km <sup>2</sup> /year)	Maximum (tC/km <sup>2</sup> /year)	Mean (tC/km <sup>2</sup> /year)	Standard Deviation
Original Data	0.0	5211198.0	107.54	8397.161
Reprojected Data	0.0	5211198.0	107.749	8409.642
Reprojected Data (non zero pixels)	7.584400e-09	5211198.0	175.50	10732.37
Transformed Data	7.584400e-09	5211198.0	175.50	10732.37

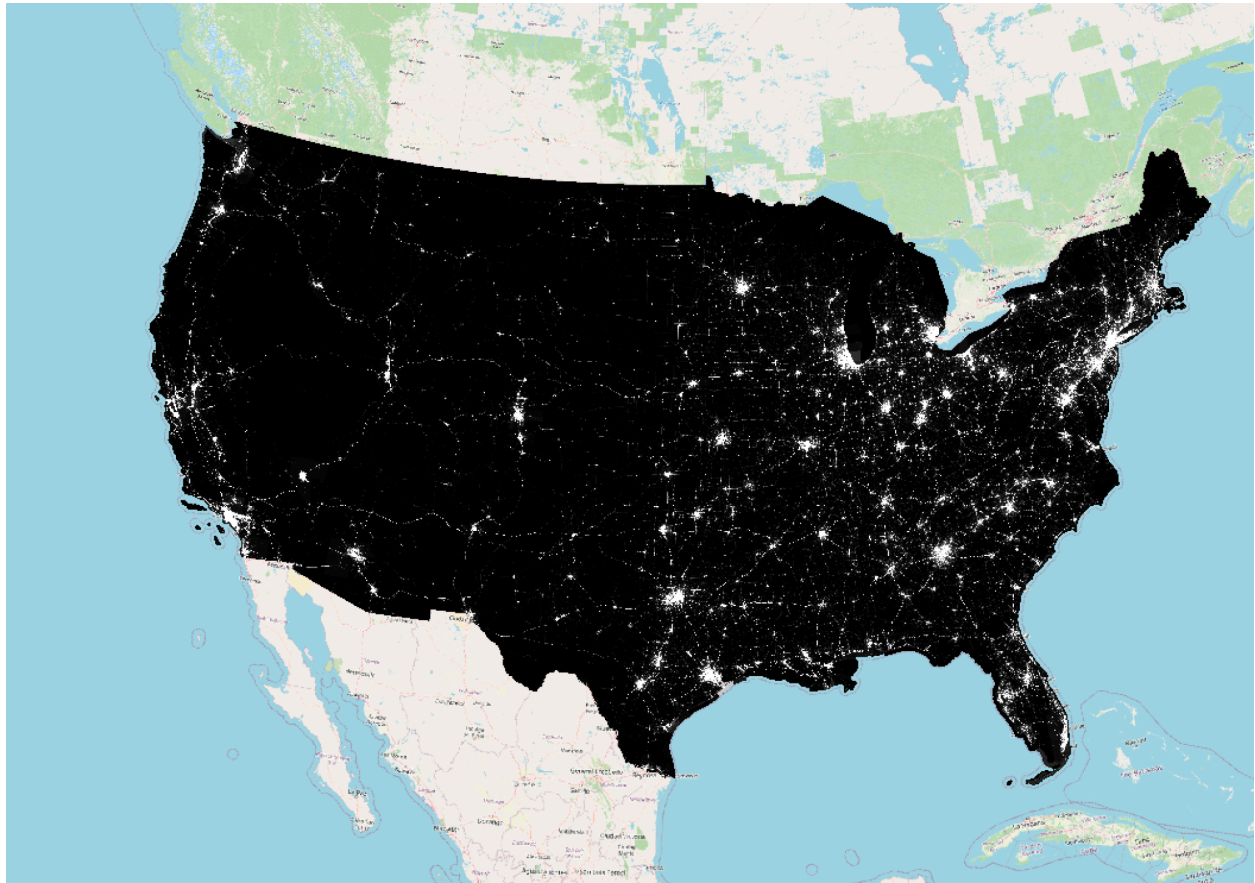
(Unscaled)				
Transformed Data (Scaled)	2.780947e-08	19107726.0	643.529907	39352.035156

- Statistics for Total Fossil Fuel CO<sub>2</sub> Emissions In 2020:

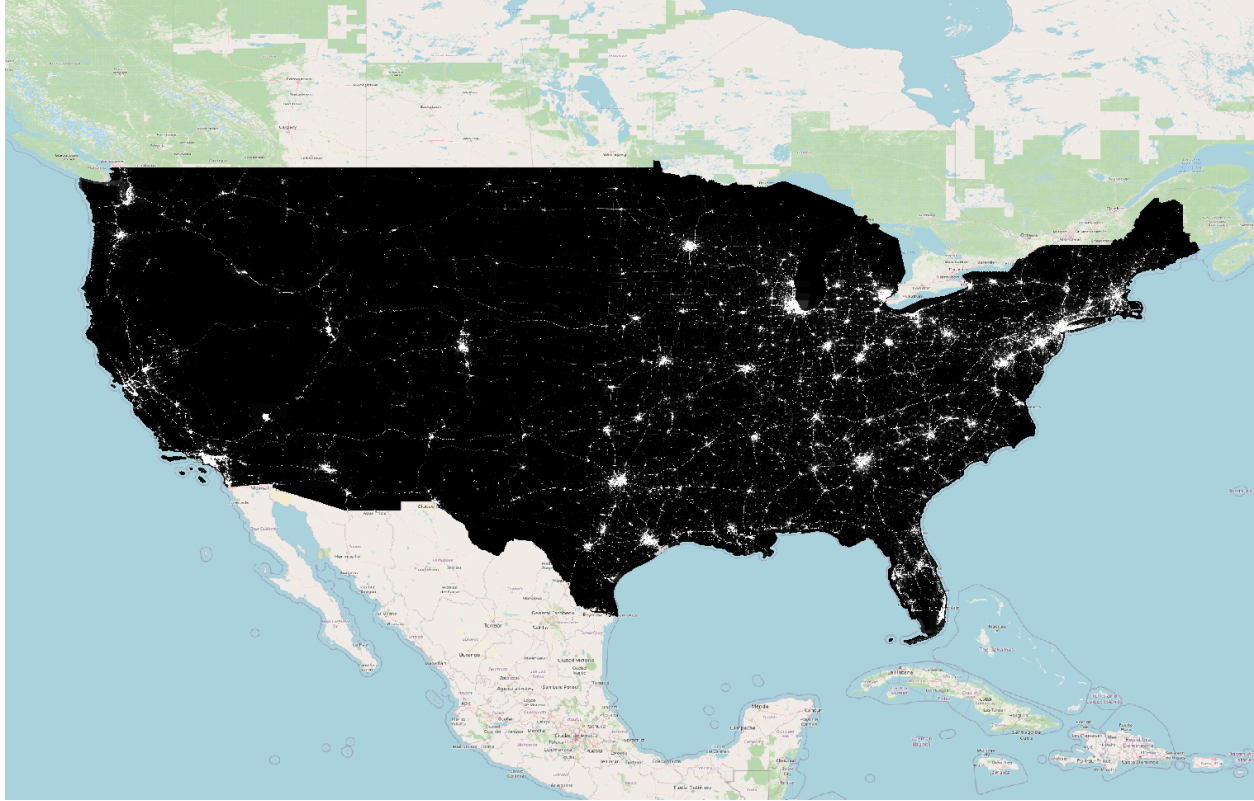
	Minimum (tC/km <sup>2</sup> /year)	Maximum (tC/km <sup>2</sup> /year)	Mean (tC/km <sup>2</sup> /year)	Standard Deviation
Original Data	0.0	4665875.5	92.866	6380.595
Reprojected Data	0.0	4665875.5	92.248	6321.569
Reprojected Data (non zero pixels)	1.259104e-08	4665875.5	150.258	8067.452
Transformed Data (Unscaled)	1.259104e-08	4665875.5	150.258	8067.452
Transformed Data (Scaled)	4.616717e-08	17108210.0	550.949341	29580.628906

## Visual Comparison:

Original Data for Total Fossil Fuel CO<sub>2</sub> Emissions 2015 visualized on QGIS



Transformed Data Total Fossil Fuel CO<sub>2</sub> Emissions 2015 visualized on QGIS



- Link to transformation record in [Jupyter Notebook](#)
- All values are in expected range

## Summary

- We are confident that the transformation and display of data in the GHG Center is correct
- There were no problems identified in the data
- Link to [Data Usage Notebook](#)
- Link to [US GHG Center Data Catalog overview page](#)

**Report Completed on:** 8/20/2024

**MSFC POC for questions:** [Deborah Smith](#), [Siddharth Chaudhary](#)