

Data Intake Processing and Verification Report

Background Information

- **Original Dataset Name:** Replication Data for: Geostationary satellite observations of extreme and transient methane emissions from oil and gas infrastructure
- **GHG Center Dataset Title:** Geostationary Satellite Observations of Extreme and Transient Methane Emissions from Oil and Gas Infrastructure
- **Dataset Provider:** NOAA, Harvard University
- **Date Obtained:** November 2024
- **Location Obtained From:** <https://doi.org/10.7910/DVN/EQWHCG>
 - Plume masks (for visualization purposes) delivered directly to the US GHG Center
- **Data Location in GHG Center:** goes-ch4plume-v1
- **Data POC(s):** Dr. Shobha Kondragunta, Dr. Daniel Varon, Dr. Tailong He
- **Dataset File Type(s):** NetCDF
- **Projection (if different from WGS84):** GOES Imager Projection

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/goes-ch4plume-v1_Data_Flow.html

Selected Dataset Statistics

Plume Locations	Minimum (mol CH ₄ /m ²)	Maximum (mol CH ₄ /m ²)	Mean (mol CH ₄ /m ²)	Standard Deviation
BV1-1	-0.4	0.43	0.02	0.04
BV1-2	-0.57	0.5	0.03	0.05
BV2-1	-0.24	0.41	0.03	0.04
BV2-2	-0.13	0.32	0.01	0.03
IN-2	-0.13	0.42	0.04	0.07
PB-1	-0.04	0.16	0.04	0.05

Note:

All the data were provided in NetCDF format using a projection defined by GOES. Each file represented a gridded product with dimensions of X by Y pixels. Files were generated at 5-minute intervals, and each file included a corresponding plume mask in binary format. This plume mask was used to clip the data to isolate the relevant pixels - an area smaller than X by Y pixels.

The clipped data were then reprojected to the WGS 84 coordinate system. Statistics and visualizations for each reprojected file were shared with the data provider and subsequently approved. It is important to note that due to the reprojection process, the data values were interpolated during regridding, and as a result, they may not exactly match the original values.

- Data transformation record in [Jupyter Notebook](#)
- All values have been visually checked and are within 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: November 22, 2024

MSFC POC for questions: [Jeanné le Roux](#), [Siddharth Chaudhary](#)