

```

# [4.4.0] - 2025-06-23

## agriculture,crop-residues

### Added

- [Added] These data represent our first submission of emissions data
capturing the impact of the decomposition of crop residues (direct and
indirect) for 25 crop groups (including a total of 136 crops) for 126
countries. These data include both annual and monthly time-scales from 2015
to 2024.

### Changed

### Deprecated

### Removed

## agriculture,cropland-fires

### Added

### Changed

### Deprecated

### Removed

### Known Issues

## agriculture,enteric-fermentation-cattle-operation

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,enteric-fermentation-cattle-pasture

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,enteric-fermentation-other

```

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,manure-applied-to-soils

### Added

- [Added] Added Manure emission (direct and indirect) data for 25 crop groups (including a total of 136 crops) for 126 countries. This data includes all gridded and country-scale, both annual and monthly time-scales from 2015 to 2024

### Changed

- [Changed] Found a bug in the activity data. Fixed it for all crops.

### Deprecated

### Removed

## agriculture,manure-left-on-pasture-cattle

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,manure-management-cattle-operation

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,manure-management-other

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,other-agricultural-soil-emissions

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## agriculture,rice-cultivation

### Added

- [Added] 2024 asset level emissions data were submitted for Bhutan and the Islamic Republic of Iran.

### Changed

- [Changed] 2024 blank values to zeros for countries with no rice production reported to FAO.

### Deprecated

### Removed

## agriculture,synthetic-fertilizer-application

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## buildings,non-residential-onsite-fuel-usage

### Added

### Changed

### Deprecated

```

### Fixed

### Known Issues

## buildings,other-onsite-fuel-usage

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## buildings,residential-onsite-fuel-usage

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## fluorinated-gases,fluorinated-gases

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## forestry-and-land-use,forest-land-clearing

### Added

- [Added] Data period extended for existing sources. Start_date 2025-01-01 to
end_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

```

- [Known Issues] The 2025 Q1 GADM level 0-2 emissions dataset utilizes LUCA datasets as the basis for estimating disturbance-related emissions.

## forestry-and-land-use,forest-land-degradation

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-01-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] The 2025 Q1 GADM level 0-2 emissions dataset utilizes LUCA datasets as the basis for estimating disturbance-related emissions.

## forestry-and-land-use,forest-land-fires

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-01-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] The 2025 Q1 GADM level 0-2 emissions dataset utilizes LUCA datasets as the basis for estimating disturbance-related emissions.

## forestry-and-land-use,net-forest-land

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## forestry-and-land-use,net-shrubgrass

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## forestry-and-land-use,net-wetland

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## forestry-and-land-use,removals

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## forestry-and-land-use,shrubgrass-fires

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-01-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] The 2025 Q1 GADM level 0-2 emissions dataset utilizes LUCA datasets as the basis for estimating disturbance-related emissions.

## forestry-and-land-use,water-reservoirs

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-01-01 to end\_date 2025-04-30.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] For certain reservoirs, especially during months where a lack of quality satellite imagery (due to clouds) inhibits accurate surface area estimates. Emissions estimates are either anomalously small or zero, relative to previous months. This is technically incorrect and will be mitigated in the future.

## forestry-and-land-use,wetland-fires

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-01-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] The 2025 Q1 GADM level 0-2 emissions dataset utilizes LUCA datasets as the basis for estimating disturbance-related emissions.

## fossil-fuel-operations,coal-mining

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## fossil-fuel-operations,oil-and-gas-production

### Added

### Changed

### Deprecated

### Known Issues

## fossil-fuel-operations,oil-and-gas-refining

### Added

- [Added] Data period extended for existing assets in the Middle East and APAC. Start\_date 2024-07-01 to end\_date 2024-09-30.

### Changed

- [Changed] Updated #822 capacity as this greenfield new refinery inaugurated operation on 9/20/2024.

### Deprecated

### Fixed

### Known Issues

- [Known Issues] for #841 and #842, two refineries in ALB. Will model historical results before Q2 2024 by August.

- [Known Issues] tweaking all Chinese refineries' capacity factors, will be applying new data sources and cross-checking.

## fossil-fuel-operations,oil-and-gas-transport

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## fossil-fuel-operations,other-fossil-fuel-operations

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## fossil-fuel-operations,other-solid-fuels

### Added

### Changed



### Deprecated

### Fixed

### Known Issues

## manufacturing,aluminum

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-03-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,cement

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-03-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] duplicates to be resolved in a future release when SFI asset data source has been substituted for new GEM tracker.

## manufacturing,chemicals

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,other-manufacturing

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,petrochemical-steam-cracking

### Added

- [Added] Data period extended for existing sources in Asia Pacific and Middle East. Start\_date 2024-07-01 to end\_date 2024-09-30.

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,pulp-and-paper

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,iron-and-steel

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-03-01 to end\_date 2025-03-31.

### Changed

### Deprecated

### Fixed

### Known Issues

- [Known Issues] Asset aggregates for some countries exceeds reported country-level emissions.

## manufacturing,other-chemicals

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,glass

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,lime

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,food-beverage-tobacco

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,wood-and-wood-products

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,textiles-leather-apparel

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## manufacturing,other-metals

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## mineral-extraction,other-mining-quarrying

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## mineral-extraction,bauxite-mining

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## mineral-extraction,copper-mining

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## mineral-extraction,iron-mining

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## mineral-extraction,rock-quarrying

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## mineral-extraction,sand-quarrying

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## power,electricity-generation

### Added

- [Added] Data period extended for existing sources. Start\_date 2019-01-01 to end\_date 2025-04-30.

### Changed

- [Changed] We now report zeros for non-operational plants (i.e., before the start of operations or after retirement).

- [Changed] Bug fix that minimally affects the reported uncertainty.

### Fixed

### Known Issues

- [Known Issues] For non-operational plants the data is reported as zero values for capacity, capacity factor, activity, emissions intensity, and emissions. The related uncertainties are also reported as zero. This is not strictly correct since there can be uncertainty in the operating status in a given month. Future work will better quantify the uncertainty when the plant is reported as non-operational.

## power,other-energy-use

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## power,heat-plants

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## transportation,domestic-aviation

### Added

- [Added] Data period extended for existing sources. Start\_date 2015-01-01 to end\_date 2025-04-30.

### Changed

### Fixed

## transportation,non-broadcasting-shipping

### Added

### Changed

### Deprecated

### Fixed

### ### Known Issues

#### ## transportation,domestic-shipping

### ### Added

- [Added] Data period extended for existing sources. Start\_date 2025-04-01 to end\_date 2025-04-30.

### ### Changed

- [Changed] - Rounding to 7 decimal places has been removed from all pollutant emissions columns and emissions factor columns.

### ### Deprecated

### ### Fixed

### ### Known Issues

- [Known Issues] Invalid transmissions can cause interpolation of trips over extended data gaps which may result in large erroneous emissions spikes at a port at the time when the data gap ends.

- [Known Issues] Duplicated ports identified : Furna vs Fuma

#### ## transportation,international-aviation

### ### Added

- [Added] Data period extended for existing sources. Start\_date 2015-01-01 to end\_date 2025-03-31.

### ### Changed

### ### Fixed

#### ## transportation,international-shipping

### ### Added

- [Added] Data period extended for existing sources. Start\_date 2025-04-01 to end\_date 2025-04-30.

### ### Changed

- [Changed] - Rounding to 7 decimal places has been removed from all pollutant emissions columns and emissions factor columns.

### ### Deprecated

### ### Fixed

### ### Known Issues

- [Known Issues] Invalid transmissions can cause interpolation of trips over extended data gaps which may result in large erroneous emissions spikes at a port at the time when the data gap ends.

- [Known Issues] Duplicated ports identified : Furna vs Fuma.

## transportation,other-transport

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## transportation,railways

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## transportation,road-transportation

### Added

- [Added] Data period extended for existing sources. New end\_date 2025-04-30.

- [Added] Relative to v4.0, full uncertainty calculations for GADM 1 and GADM 2 assets.

### Changed

- [Changed] Updated data due to interpolation from 2024-07-01 onwards.

- [Changed] Relative to v4.0, uncertainty calculations have changed from partial to full data set.

- [Changed] Relative to v4.0, updated emissions and activity data based on bug fixes for data from 2021-2024.

### Deprecated

### Fixed

- [Fixed] Relative to v4.0, fixed bug preventing all road indices from being included when combining multiple models; this updated data from 2021 to



January 2025. This can cause a noticeable difference in regions with significant clouds, e.g. the tropics.

- [Fixed] Relative to v4.0, fixed a bug preventing the use of full quarterly training data in rural models; this significantly improved the inference of activity on rural roads.
- [Fixed] Fixed 'string\_type' error for city-level emissions factors location column.
- [Fixed] Added missing ATA data to country-level emissions factors table - entries set to NaN.
- [Fixed] Changed XKO to XKX in city-level emissions factors table to match World Bank codes. XNC is changed to CYP.
- [Fixed] Removed missing asset\_identifier values in the confidence table.
- [Fixed] Removed null asset rows for GBR, with GADM id of 'NA'.
- [Fixed] Removed columns 'Unnamed: 0', 'iso3\_country', 'location', 'type', 'other1-3' from the uncertainty table.

### ### Known Issues

- [Known Issues] Have not updated to the latest ClimateTRACE patch of GADM data (v1.1.2).

### ## waste,biological-treatment-of-solid-waste-and-biogenic

#### ### Added

#### ### Changed

#### ### Deprecated

#### ### Fixed

#### ### Known Issues

### ## waste,domestic-wastewater-treatment-and-discharge

#### ### Added

- [Added] Data period extended for existing sources. Start\_date 2025-04-01 to end\_date 2025-04-30. Now all data runs from 2015-01-01 to 2025-04-30.

#### ### Fixed

- [Fixed] Global warming potential weights

#### ### Known potential issues

- [Known Issues] Potentially incorrect ISO3 values for a handful of assets at borders.

## waste,incineration-and-open-burning-of-waste

### Added

### Changed

### Deprecated

### Fixed

### Known Issues

## waste,industrial-wastewater-treatment-and-discharge

### Added

- [Added] Data period extended for existing sources. Start\_date 2025-04-01 to end\_date 2025-04-30. Now all data runs from 2015-01-01 to 2025-04-30.

### Fixed

- [Fixed] Global warming potential weights

### Known Issues

- [Known Issues] Asset in China (3199430\_INDWW) significantly larger emissions.

- [Known Issues] Potentially duplicate assets.

## waste,solid-waste-disposal

### Added

### Changed

### Deprecated

### Fixed

### Known Issues