

The Emissions of atmospheric Compounds and Compilation of Ancillary Data (ECCAD) database

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**ECCAD is the official database of the GEIA
(Global Emissions Initiative) international project
website: geiacenter.org**



**Co-chairs: Brian McDonald (NOAA CSL)
and Cathy Liousse (CNRS, France)**

**GEIA is a project of the IGAC
International Global Atmospheric
Chemistry project**



website: igacproject.org



Global Emissions Initiative



<http://www.geiacenter.org/>

Mission: GEIA is a global community initiative that builds bridges between environmental science and policy, by bringing together people, data, and tools to *create* and *communicate* the highest quality information about **emissions** to stakeholders and decision-makers.

Overview



GEIA Mission

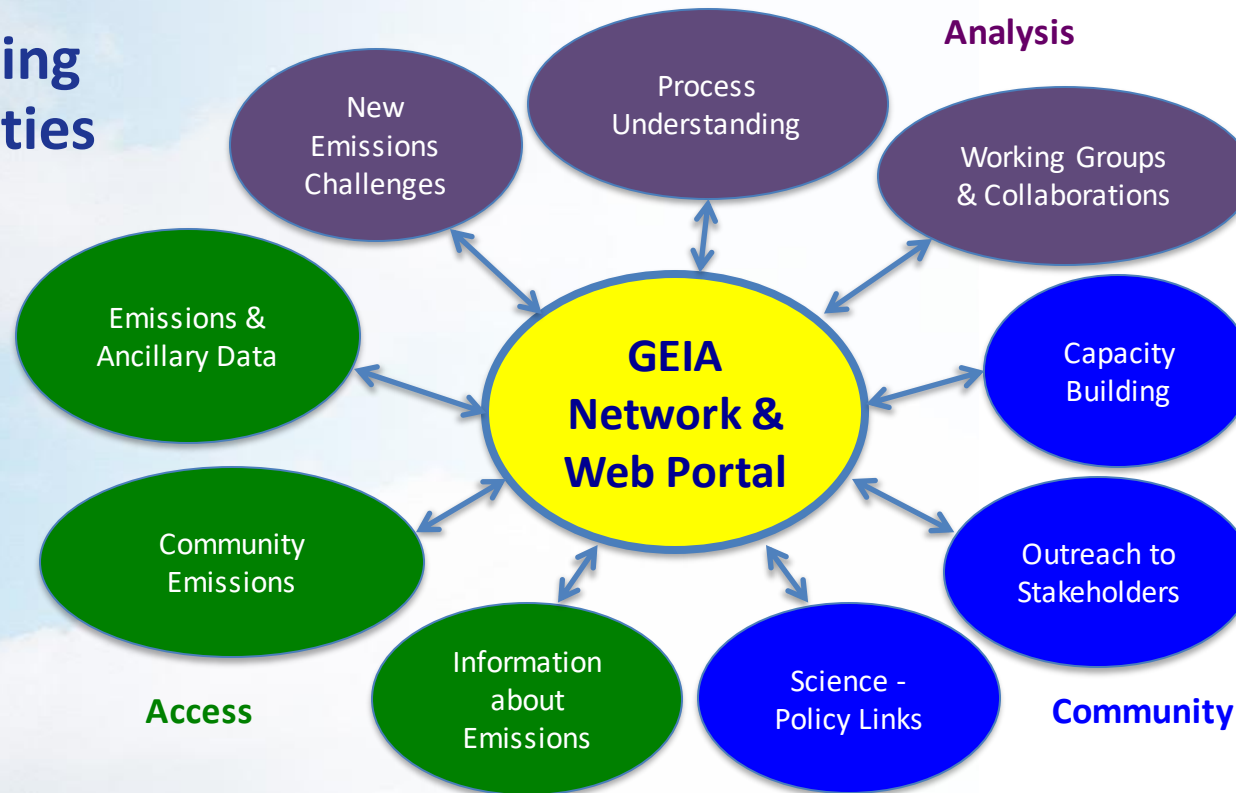
Founded in 1990, **GEIA** is a community initiative that builds bridges between environmental science and policy, by bringing together people, data, and tools to *create* and *communicate* the highest quality information about **emissions**.

GEIA Goals

GEIA aims to be a key forum for emissions knowledge serving stakeholders and decision-makers in a rapidly evolving global society.

GEIA Ongoing Core Activities

Promoting broad and consistent access to emissions information



Access

Analysis

Community

Building the scientific basis for emissions data by enhancing analysis of emissions processes

*Strengthening the **community** of emissions stakeholder groups*

GEIA working groups

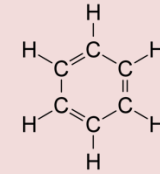
China Emissions WG (Contacts: K. He, Q. Zhang, Y. Wang)

- Improving scientific basis for Chinese emissions
- Sharing results between Chinese research groups
- 36 papers in ACP's East Asian Emissions Assessment



VOC Emissions WG (Contacts: E. von Schneidemesser, H. Denier van der Gon)

- Improving global understanding of VOC emissions
- Leveraging on-going inventory development, measurements, modelling
- Evaluating megacity VOC emissions speciation and sources



Latin America/Caribbean Emissions WG (Contacts: N. Huneus, L. Dawidowski, N. Rojas)

- Developing and evaluating LAC-specific emissions information
- Creating LAC regional emissions database and inventory
- Building LAC emissions expert community linked to global efforts



Urban Emissions WG (Contacts: L. Tarrasón)

- Leveraging techniques for urban emissions characterization
- Building capacity in megacities around the world



Africa Emissions WG (Contacts: C. Leal-Liousse, S. Keita, M. Naidoo)

- Creating a network of experts on African emissions
- Evaluating African-specific emission inventories
- Creating a regional database (fuel consumption, emission factors and inventories) and a continental wide African emission inventory

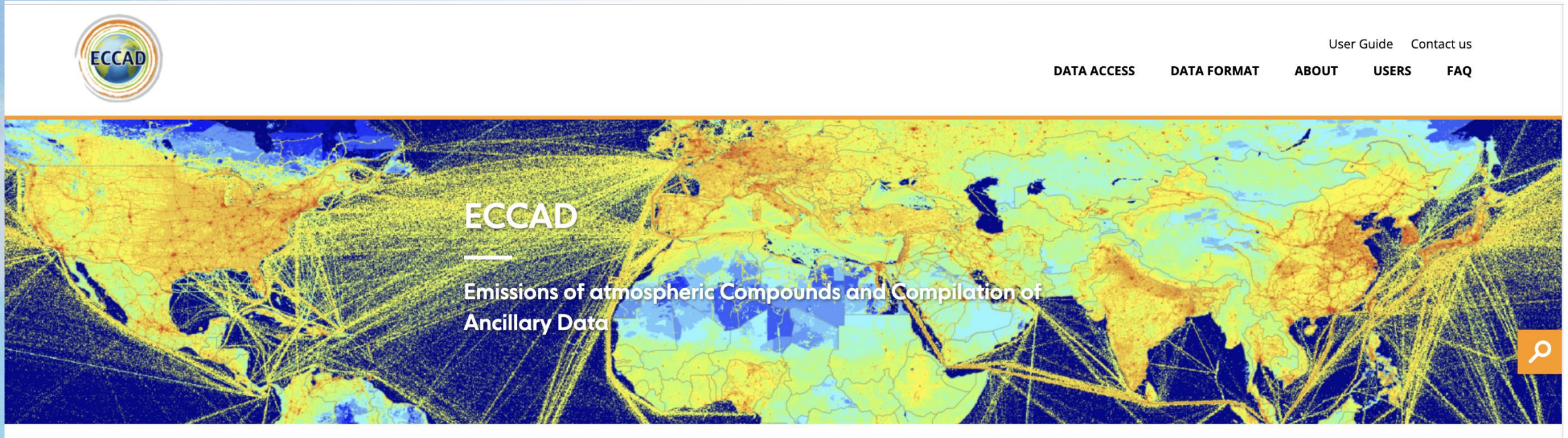


COVID19 WG (Contacts: M. Guevara, B. McDonald)

- Creating a network of experts on the quantification of COVID-19 emissions
- Providing guidance for the compilation of COVID-19 emission inventories.
- Developing and evaluating a mosaic of global and regional COVID-19 emission adjustment factors to quantify emission changes and perform modelling studies



ECCAD database website - <https://eccad.aeris-data.fr/>



The access to the data and to the tools requires a login (very simple process)

The ECCAD catalogue



Catalogue Data & Tools Metadata

English

Sign in

- Inventories
- Species
- Sectors
- Versions
- Temporal
- Geographical

Dataset

CAMS

- CAMS-REG-ANT
- CAMS-GLOB-TERM
- CAMS-GLOB-SOIL
- CAMS-GLOB-BIO
- CAMS-GLOB-AIR
- CAMS-GLOB-TEMPO
- CAMS-REG-TEMPO
- CAMS-GLOB-ANT
- CAMS-GLOB-OCE
- GFASv1.3
- CAMS-GLOB-VOLC
- CAMS-GLOB-SHIP
- GFASv1.2
- CoCO2-PED2018-ANT
- CoCO2-PED2021-ANT

EDGAR

- HTAPv2
- EDGARv5-monthly
- EDGARv4.3.2
- HTAPv3
- EDGARv7
- EDGARv4.tox2
- EDGARv6
- EDGARv4.tox1
- EDGARv4.3.2-monthly
- EDGARv5

CEDS

- CEDS

ECLIPSE

- ECLIPSE-V6
- ECLIPSE-GAINS-V5a

Surfaces

- Surfaces

GEIA

- GEIA-Volcanoes
- GEIA-SO2-NOx
- GEIA-Soils
- GEIA-N2O
- GEIA-BC-Aerosol-Model
- GEIA-Lightning
- GEIA-CFCs
- GEIA-Reactive-Chlorines
- GEIA-BC

Future Scenarios

- RCP60
- RCP85
- RCP45
- SSPs
- RCP3PD

Inverse Modelling

- LSCE
- PARASOL
- Jiang
- Muller
- TEMIS-OMI
- IASB-TD-OMI
- DECSO-NOx
- IASB-TD-OMI-NCP
- DATABASE-Terpenoids
- MarcoPoloKNMI
- TCR-2

GLOBAL more datasets

- GUESS-ES
- FINN
- POET
- GFED4
- HYDE1.3
- GFlaringS3
- MEGAN-MACC
- AMMABB
- MACCcity-anthro
- IS4FIRES
- Global-Ch
- CONFORM
- Andres-CO2-v2016
- POPE
- Junker-Liousse
- MEGANv2
- RETRO
- ACCMIP
- CoCO2-MOSAIC
- MACCcity-bb
- GICC
- MACCcity-CONFORM

REGIONAL datasets

- EMEP
- CR2-MMA
- DACCIWA
- APIFLAME
- L14-Africa
- DACCIWA-flaring
- CNEA-3IA-GEAA
- REAS2.1
- MPI-CNRS
- REASv3.2
- MIXv2
- SAFAR-India
- DACCIWA2
- PAPILA
- INEMA2.0-Chile

ANCILLARY data


- Pixel-Area
- MODIS-LandCover
- GPW3-Population
- MODIS-MCD2
- C3S-LC-LCCS
- GPW3
- MODIS-MCD64A1
- GEOLAND
- Population

Geographical regions

- Cities
- IMAGE2.4
- World
- OCEANS
- GFED

ECCAD catalogue

“Species” item → list of all available species + their origin + their molecular mass
 The colored dots show the type of emissions for each species



Catalogue
Data & Tools
Metadata

English
?
Sign in

Inventories
Species
Sectors
Versions
Temporal
Geographical

Anthropogenic
 Biomass burning
 Biogenic
 Oceanic
 Soil
 Volcanic
 lightning
 Termites
 total
 Vegetation
 Fires
 Geography
 Population
 pixel area
 Temporal profiles

Major Species

| Parameters | CH4 | CO2 | N2O | CO2-excl-short-cycle | CO2_ff | CO2_bf | CO2-organic-cycle | H2 | NMVOCS | NO2 | NO3 | NOx | CO | OCS | SO2 | DMS | NH3 | NH4 | SO4 | PM1 | ash | OC-fine | EC-fine | SO4-fine | Na-coarse | TPM | Na-fine | SO4-coarse | OM | OC-coarse | PM2.5 | other-minerals-coarse | TC | PM10 | OC | other-minerals-fine | EC-coarse | EC | BC | Hg | Hg-G | Hg-D | Hg-P | Cd | Pb | |
|----------------------|-----|-----|-----|----------------------|--------|--------|-------------------|----|--------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|---------|---------|----------|-----------|-----|---------|------------|----|-----------|-------|-----------------------|----|------|----|---------------------|-----------|----|----|----|------|------|------|-----|-----|-----|
| Molecular Mass | 16 | 44 | 44 | 44 | 44 | 44 | 44 | 2 | 72 | 44 | 1 | 30 | 28 | 60 | 64 | 62 | 17 | 17 | 96 | 1 | 1 | 12 | 12 | 96 | 11 | 1 | 11 | 96 | 1 | 12 | 1 | 1 | 12 | 1 | 12 | 1 | 12 | 12 | 12 | 12 | 200 | 200 | 200 | 200 | 112 | 207 |
| CAMS | ●● | ●● | ●● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| CEDS | ●● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| ECLIPSE | ● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| EDGAR | ● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Future Scenarios | ●● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| GEIA | ● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| GLOBAL more datasets | ● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Inverse Modelling | ● | ● | ● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| REGIONAL datasets | ●● | ●● | ●● | ● | ● | ● | ● | ● | ●● | | | ●●● | ●● | ● | ●● | ●● | ●● | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |

CFC/Halogenated/Chlorinated species

| Parameters | CINO2 | CH2Cl2 | Cl | ALD2 | FORM | C2Cl4 | CH2Br2 | CFC12 | PFOA | hydrogen-cyanide | CH3CCI3 | CHBr3 | CH3Cl | CH3I | HCl | chlorinated-HC | CHClCCl2 | PFOS | CHCl3 | CFC11 | ALDX |
|----------------------|-------|--------|----|------|------|-------|--------|-------|------|------------------|---------|-------|-------|------|-----|----------------|----------|------|-------|-------|------|
| Molecular Mass | 35 | 35 | 35 | 1 | 1 | 35 | 174 | 120 | 500 | 27 | 35 | 253 | 35 | 142 | 35 | 138 | 35 | 500 | 35 | 137 | 1 |
| CAMS | | | | | | | ● | | | ● | | ● | ● | ● | | ● | ● | | | | |
| CEDS | | | | | | | | | | | | | | | | ● | ● | | | | |
| EDGAR | | | | | | | | | | | | | | | | ● | ● | | | | |
| Future Scenarios | | | | | | | | | | | | | | | | ● | ● | | | | |
| GEIA | ● | ● | ● | | | | | | ● | | ● | | | ● | ● | ● | ● | | ● | ● | |
| GLOBAL more datasets | | | | | | | | | ● | | ● | | | ● | ● | ● | ● | | ● | ● | |
| REGIONAL datasets | | | | ● | ● | | | | | | | | | | | ● | ● | | | | ● |

Alkanes/Alkenes/Alkynes

| Parameters | octene | butanes-and-higher-alkanes | propyne | hexanes | butenes | propadiene | ethane | butanes | propane | butenes-and-higher-alkenes | propene | ethene | pentenes | hexanes-and-higher-alkanes | heptane | pentanes | acetylene | hexene | other-alkenes-and-alkynes |
|----------------------|--------|----------------------------|---------|---------|---------|------------|--------|---------|---------|----------------------------|---------|--------|----------|----------------------------|---------|----------|-----------|--------|---------------------------|
| Molecular Mass | 112 | 58 | 40 | 86 | 56 | 40 | 30 | 58 | 44 | 56 | 42 | 28 | 70 | 86 | 98 | 72 | 26 | 84 | 56 |
| CAMS | ● | ●● | | ●● | ● | | | ●● | ●● | ●● | ●● | ●● | ● | | ● | ●● | ● | ● | ● |
| CEDS | | | | | | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● |
| EDGAR | | | | | | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● |
| Future Scenarios | | | | | | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● |
| GLOBAL more datasets | | ●● | | | ● | | | ●● | ●● | ●● | ●● | ●● | | | | ●● | ●● | ●● | ●● |
| REGIONAL datasets | | ● | | | ● | | | ●● | ●● | ●● | ●● | ●● | | | | ● | ● | ● | ● |

Remark about the species molecular masses. They have all have been harmonized, using standard values of the masses used in the chemistry-climate community

In ECCAD, all the NO_x emissions are given in kg NO_x-NO/m²/s

Note: in many papers, no information is given about the molecular mass of NO_x

 Major Species

| Parameters | CH4 | CO2 | N2O | CO2-excl-short-cycle | CO2_ff | CO2_bf | CO2-organic-cycle | H2 | NMVOCs | NO2 | NO3 | NO _x | CO | OCS | SO2 | DMS | NH3 | NH4 | SO4 |
|----------------------|-----|-----|-----|----------------------|--------|--------|-------------------|----|--------|-----|-----|-----------------|----|-----|-----|-----|-----|-----|-----|
| Molecular Mass | 16 | 44 | 44 | 44 | 44 | 44 | 44 | 2 | 72 | 44 | 1 | 30 | 28 | 60 | 64 | 62 | 17 | 17 | 96 |
| CAMS | ●● | ●● | ●● | ● | ● | ● | ● | ● | ●● | | | ●●●● | ●● | ● | ●● | ●● | ●● | | ● |
| CEDS | ● | ● | | | | | | | ● | | | ● | ● | | ● | | | | ● |
| ECLIPSE | ● | | | | | | | | ● | | | ● | ● | | ● | | | | ● |
| EDGAR | ● | ● | ● | ● | | | ● | | ● | | | ● | ● | | ● | | | | ● |
| Future Scenarios | ●● | | | | | | | | ●● | | | ●● | ●● | | ●● | | | | ●● |
| GEIA | | | ●● | | | | | | | | | ●●●● | | | ●● | | | | |
| GLOBAL more datasets | ●● | ●● | ●● | | ● | ● | | ● | ●● | | | ●●●● | ●● | | ●● | ● | | | ●● |
| Inverse Modelling | | | | | | | | | | ● | | ●●●● | ●● | | ● | | | | |
| REGIONAL datasets | ●● | ●● | ●● | | ● | ● | | ● | ● | | ● | ●● | ●● | ● | ●● | | | | ●● |

ECCAD Metadata

All datasets are provided with detailed metadata

- What is in the dataset: species, sectors, etc.
- Spatial and temporal resolution
- Versions
- Methodology
- References and citation
- Data URL

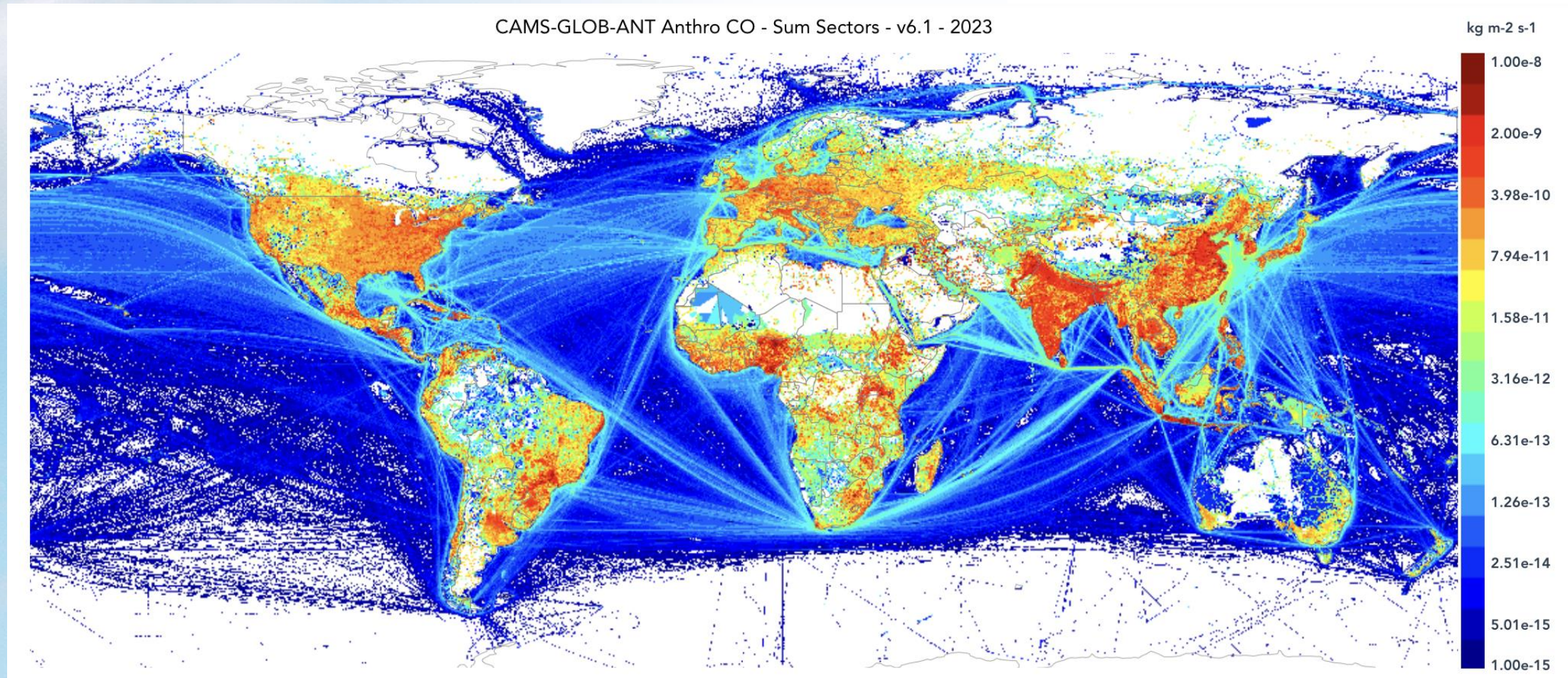
Example for CAMS-GLOB-ANT

| Dataset name | CAMS-GLOB-ANT |
|------------------------|---|
| Title | CAMS Global anthropogenic emissions |
| Release date | 2023 |
| Spatial coverage | Global [latmin: 90 latmax: 90 lonmin: -180 lonmax: 180] |
| spatial-resolution | 0.1x0.1 |
| Temporal coverage | Monthly / Yearly - Period 2000 to 2024 |
| Parameters | Anthropogenic - 36 parameters Anthropogenic - 21 sectors |
| Versions/Scenarios | Versions/Scenarios (6) v5.1 (v5.1 emissions from EDGARv5 up to 2015 ed with CEDSv2 values up to 2019) v5.2 (v5.2 include ship emissions from CAMS-GLOB-SHIP v2.1 for SMOPO v3.1) v5.3 (v5.3 include update ship emissions from CAMS-GLOB-SHIP v3.1 for 7 species) v6.1 (v6.1 based on EDGARv6 same methodology as v5.3) |
| Institute | Laboratoire d'Aérodynamique/CNRS - Toulouse - France NOAA Earth System Research Laboratory - Boulder - United States Observatoire Midi-Pyrénées/CNRS - Toulouse - France |
| Contacts | Antonin Soule (antonin.soule@euro.obs-mip.fr) - Claire Granier (claire.granier@bnoxa.gov) - Nicolas Zibermann (nicolas.zibermann@obs-mip.fr) - Sabine Darnas (sabine.darnas@obs-mip.fr) |
| Restricted data | Visualization and download allowed |
| Abstract | In support of the CAMS global simulations, an inventory was developed for the years 2000-2023 for the atmospheric compounds included in the CAMS model. Emissions are provided for 17 sectors, depending on the species. The spatial resolution of the inventory is 0.1x0.1 degree. Emissions are provided as monthly averages. The dataset is based on the EDGARv5 annual emissions to which we apply the monthly temporal profiles from CAMS-GLOB-TEMPO. The emissions are extended to the most recent years using trends from the CEDS global inventory. |
| Methodology | The CAMS-AQ projected emissions are based on a combination of the CEDS and EDGARv4.3.1 historical data. Specifically, a linear trend for each species is fit to the 0.5x0.5 degree global CEDS data for the years 2011-2014. These trends are then disaggregated to a 0.1x0.1 degree grid and used to project the EDGARv4.3.2010 emission estimates forward to the year 2018. The aligning and consolidation of sectors between the two datasets is detailed in the reference indicated below. |
| Reference and citation | |
| Permalink | https://earth.esm.fra.de/data/cams-glob-ant |
| ECCAD citation | Users of the ECCAD products are required to acknowledge ECCAD in all communications and publications for the archiving and distribution of the data, and to quote the reference(s) indicated in CITATION. |
| dataset-citation | Soule, A., C. Granier, S. Darnas, N. Zibermann, T. Doumbia, M. Guervara, J.-P. Jalkanen, S. Ketka, C. Liousse, M. Crippa, D. Guizzardi, R. Hooley, S. J. Smith Global Anthropogenic Emissions (CAMS-GLOB-ANT) for the Copernicus Atmosphere Monitoring Service Simulations of Air Quality Forecasts and Reanalysis Earth Syst. Sci. Data 2023 Reviewer link to CAMS-GLOB-ANT emission dataset for ESSD special issue on surface emissions Granier, C., S. Darnas, W. Denier van der Gon, J. Dubalova, N. Eljundi, B. Gallo, M. Gauss, M. Guervara, J.-P. Jalkanen, J. Kuenen, C. Liousse, B. Quack, D. Simpson, K. Sindelarova The Copernicus Atmosphere Monitoring Service global and regional emissions (April 2019 version) Report April 2019 version, doi:10.24380/obs-kn16, 2019 |
| Dataset DOI | |
| Original data site | |
| Data URL | https://earth.esm.fra.de/data/cams-glob-ant |
| Documentation | ECCAD-CAMS-GLOB-ANT version description.pdf |
| History | Data distributed by ECCAD-AERIS |
| Source | EDGARv5 and CEDS emissions |
| Original format | NetCDF |
| Licence | The CAMS-GLOB-ANT dataset is licensed under the Creative Commons Attribution 4.0 International licence (CC BY 4.0). The summary of the licence can be found here https://creativecommons.org/licenses/by/4.0/legalcode |
| User constraints | The User shall take all relevant steps to maintain the rights of the various Licensors including those of the CNRS-INSU and CNRS. In particular, he shall clearly mark on all communications and distributed documents, the name and identification of the various Licensors, whose list is provided in the metadata file, and refer to the ECCAD-AERIS portal as the service provider. The manner how each product has to be referenced is explicitly written in the metadata file of the ECCAD-AERIS product. It's expressly agreed that the User shall refrain from any commercial use whatsoever, direct or indirect, of products provided by ECCAD-AERIS. |

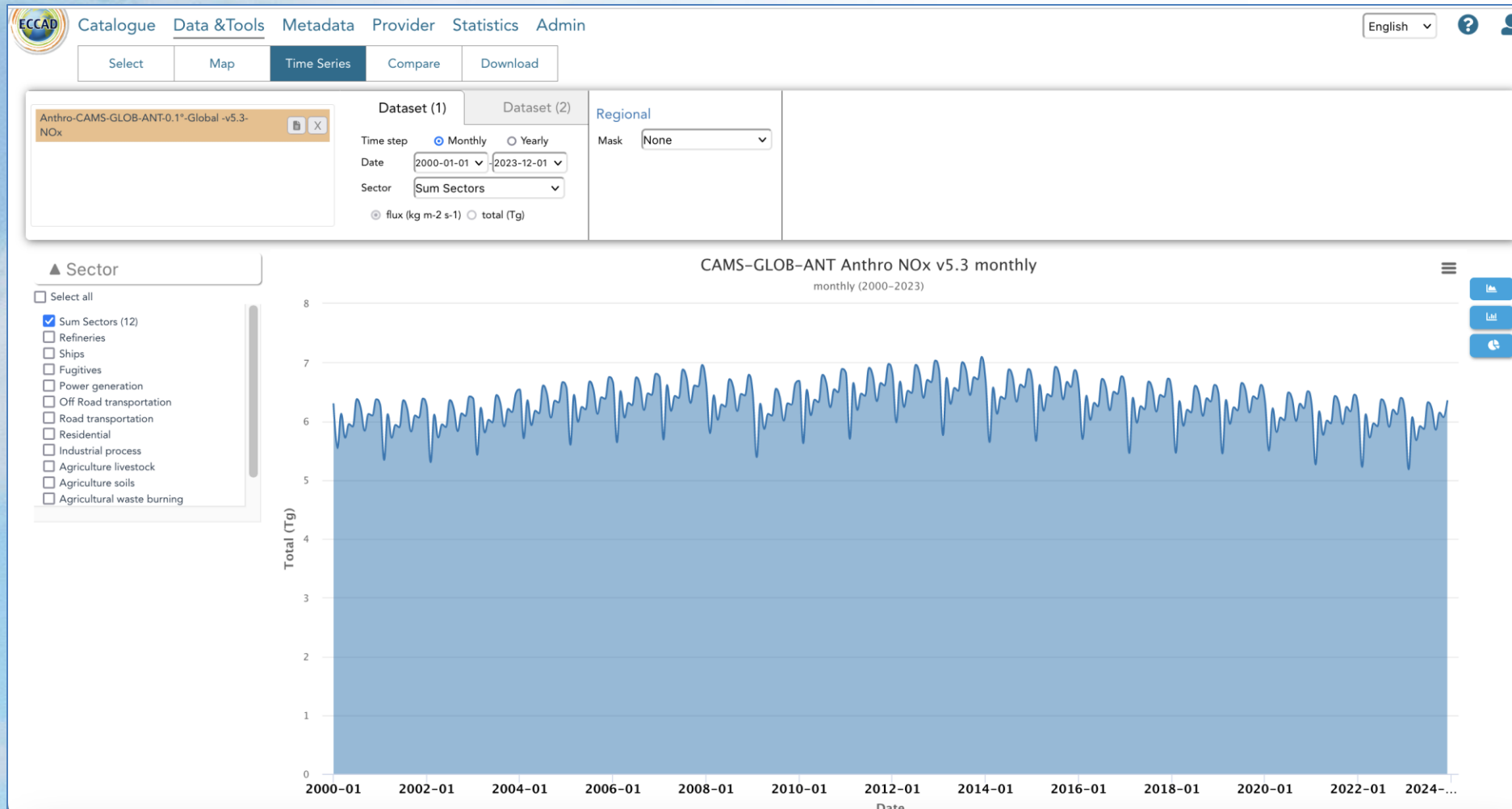


Examples of the ECCAD tools

- Maps of gridded emissions: choice of dataset, species, monthly/yearly averages, sectors, etc.
- Choice of automatic color scale or to enter the range manually
- Zoom; choice of plot for a specific country



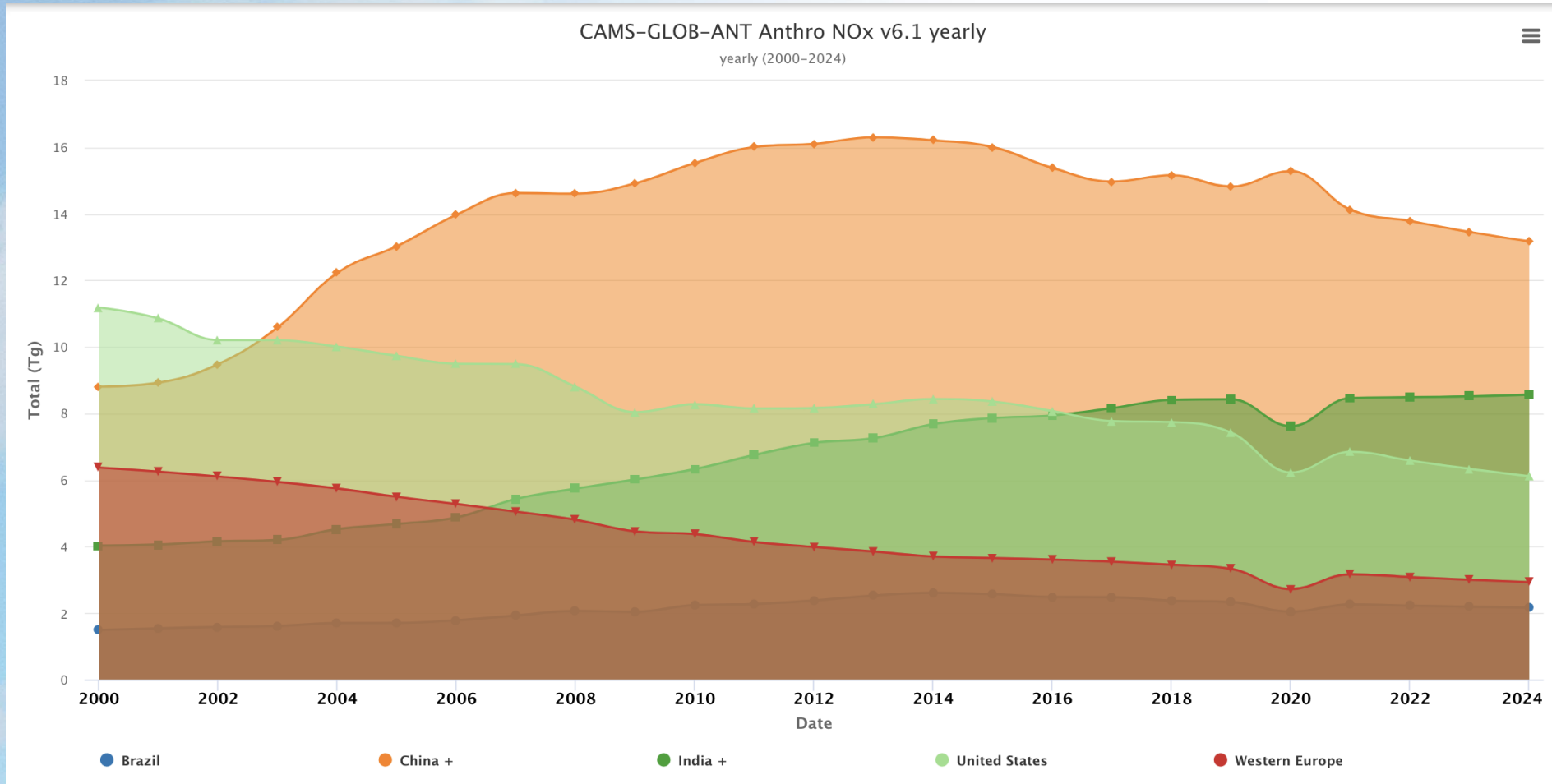
Time series and pies, using the “Time series” item (1)



Example: monthly totals of the NOx emissions from 2000 to 2024

Such plots can be done for different countries, large regions, different sectors, etc.

Time series and pies, using the “Time series” item (2)

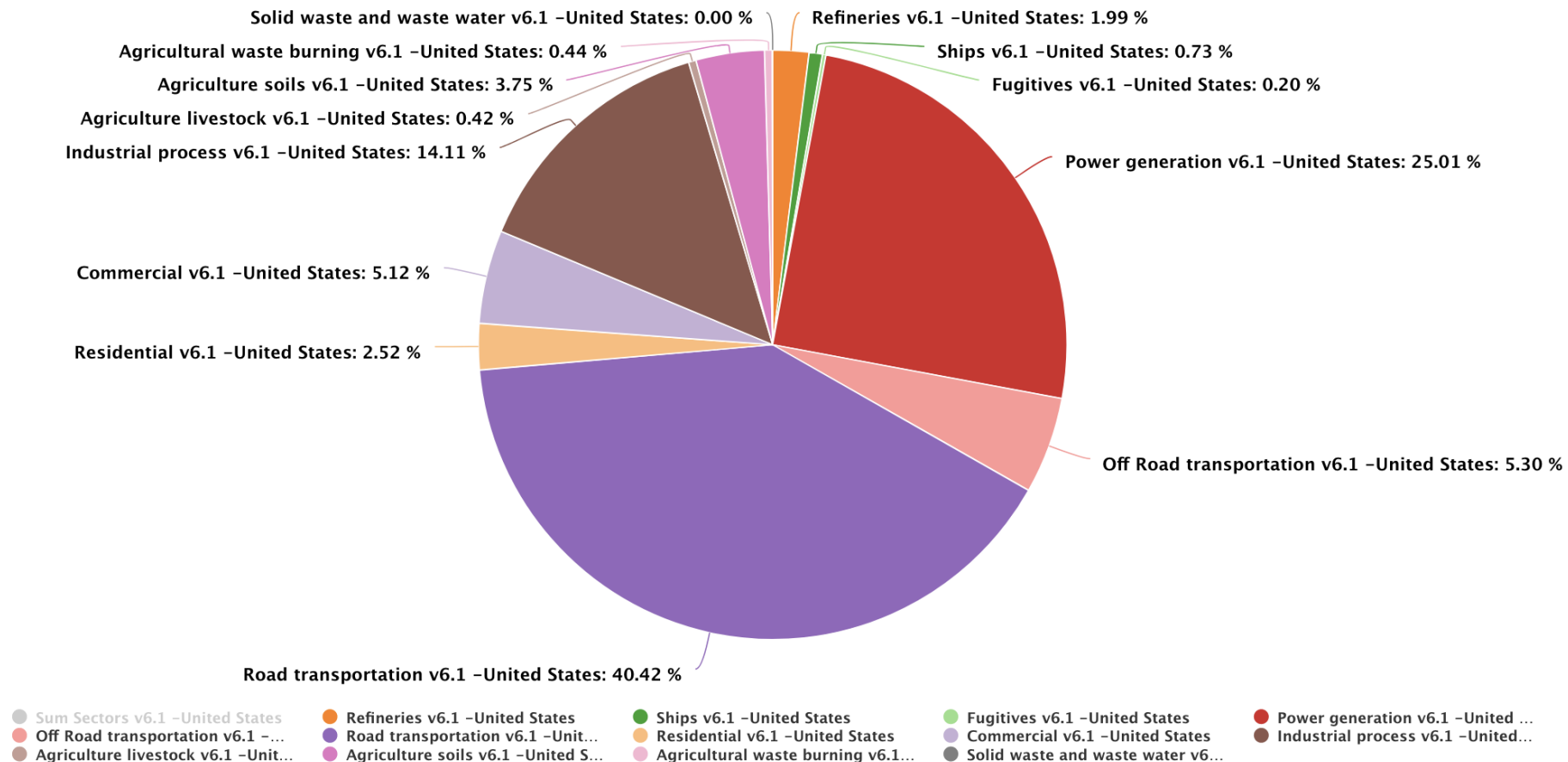


Example: monthly totals of the NOx emissions from 2000 to 2024

The values calculated for different countries can be superimposed (could be done also for different sectors)

Time series and pies, using the “Time series” item (3)

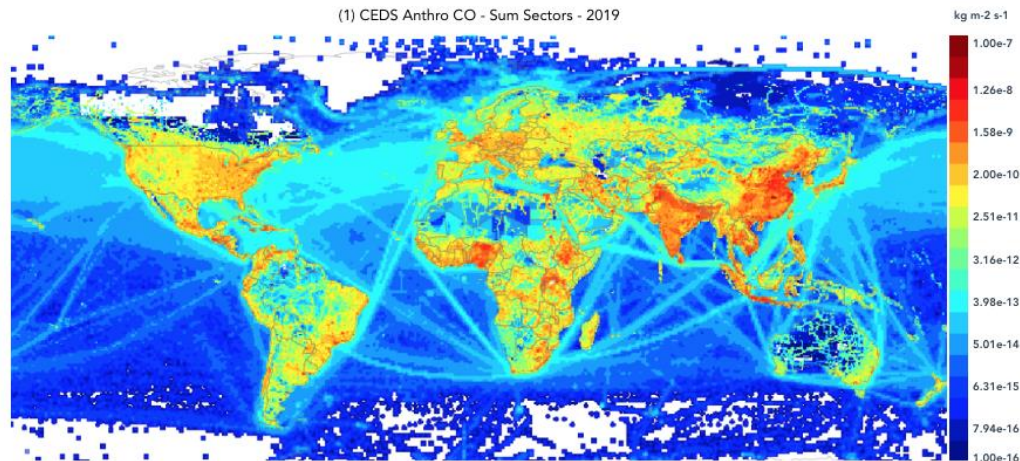
CAMS-GLOB-ANT Anthro NOx v6.1 yearly
yearly (2023-2024)



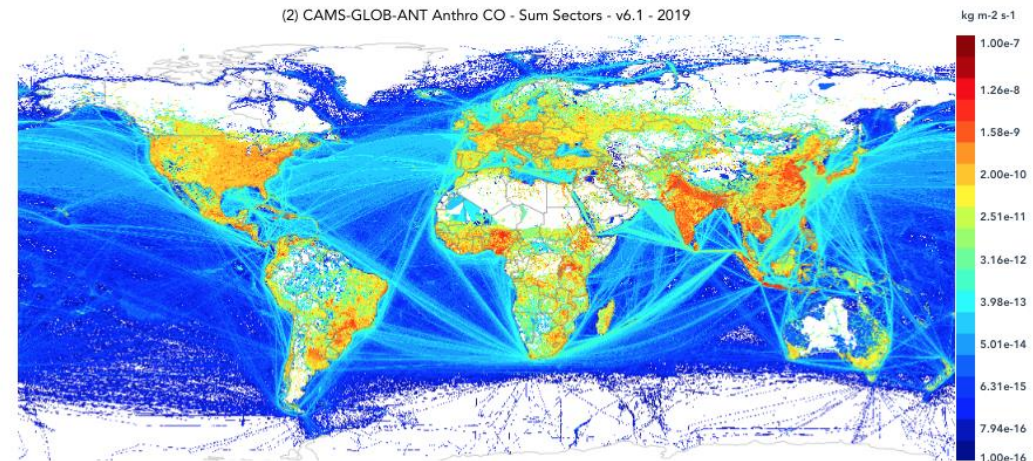
Example: main contribution to the NOx emissions in the USA from all considered sectors in the CAMS inventory

All these values can be exported as CSV or excel files for further analysis

Comparison tool

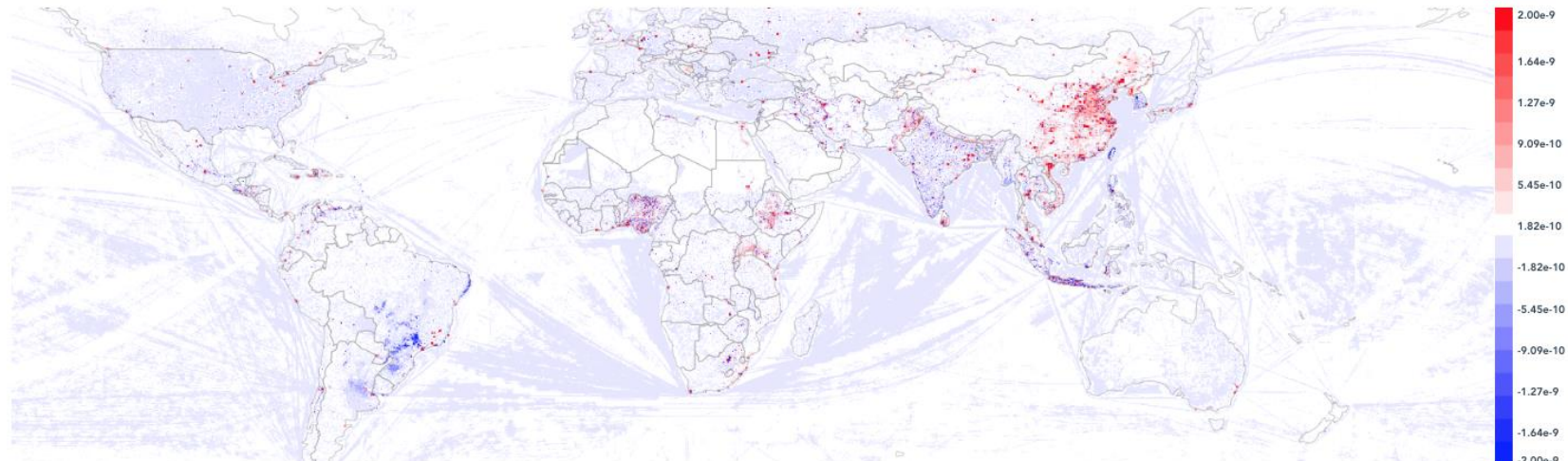


grid max : 2.05e-7
grid min : 9.66e-33



grid max : 5.20e-6
grid min : 3.30e-32

[CEDS Anthro CO - Sum Sectors 2019] - [CAMS-GLOB-ANT Anthro CO - Sum Sectors - v6.1 2019]



grid max : 2.05e-7 total : -6.33e-6 std : 2.60e-9
grid min : -4.99e-6 avg : -9.77e-13

Most datasets on ECCAD can be downloaded

Providers can ask us to include data on ECCAD to check/analyze the data. These datasets are only visible to the providers, and cannot be plotted/downloaded

The screenshot shows the ECCAD web interface. The 'Download' button in the top navigation bar is circled in red. Below it, a list of datasets is shown, with 'Anthro-CAMS-GLOB-ANT-0.1°-Global -v5.3-NOx' selected. The 'Time step' is set to 'Monthly' and the 'Date' range is '2000-01-01' to '2023-12-01'. The 'Sector' is 'Sum Sectors'. The 'NetCDF file' section shows a link to 'view CAMS-GLOB-ANT'. Below this, the 'Gridded NetCDF files' section shows options for 'NOx' and 'Sum Sectors', with '1 file for full period (2000 - 2024)' selected. The 'Species' is 'NOx' and the 'Sector' is 'All'. There are checkboxes for 'Include TimeSeries CSV files' (All, Total Grid, Regional masks) and 'Information on download options'. A red oval highlights the 'I agree with the following Data Policy' checkbox and the text below it: 'Before downloading data set from this database, we request that each user consult the relevant detailed information, which indicates the specific rights applicable to that particular data set. When using or displaying the dataset, the user is requested to indicate the corresponding citation:'. Below this, there are three citation links for different versions of the dataset.

ECCAD Catalogue Data & Tools Metadata Provider Statistics Admin English ?

Select Map Time Series Comparison **Download**

monoterpenes
Anthro-CAMS-GLOB-ANT-0.1°-Global -v5.3-N2O
Anthro-CAMS-GLOB-ANT-0.1°-Global -v5.3-NH3
Anthro-CAMS-GLOB-ANT-0.1°-Global -v5.3-NMVOcs
Anthro-CAMS-GLOB-ANT-0.1°-Global -v5.3-NOx
Anthro-CAMS-GLOB-ANT-0.1°-Global -v5.3-OC

Time step Monthly Yearly
Date 2000-01-01 2023-12-01
Sector Sum Sectors
 flux (kg m-2 s-1) total (Tg)

NetCDF file
[view CAMS-GLOB-ANT](#)

Gridded NetCDF files

NOx Sum Sectors 1 file for full period (2000 - 2024)
 Select species Select sector 1 file / year period 2000 - 2023

Time step : Monthly
Size : 13 GB

Species : NOx
Sector : All

Include TimeSeries CSV files
 All
 Total Grid
 Regional masks
- GPW3 : Countries, Continents - World : selected countries - IMAGE2.4 : 26 regions, 40 regions
- OCEANS : oceans and seas, european seas - Cities : 3 cities, 27 cities - GFED : 14 basis regions

Information on download options
 I agree with the following Data Policy

Before downloading data set from this database, we request that each user consult the relevant detailed information, which indicates the specific rights applicable to that particular data set. When using or displaying the dataset, the user is requested to indicate the corresponding citation:

- Kuenen, J., Dellaert, S., Visschedijk, A., Jalkanen, J.-P., Super, I. and Denier van der Gon, H., 2021, Copernicus Atmosphere Monitoring Service regional emissions version 4.2 (CAMS-REG-v4.2), Copernicus Atmosphere Monitoring Service [publisher], ECCAD [distributor], 2021 doi:10.24380/0vzb-a387
- Kuenen, J., Dellaert, S., Visschedijk, A., Jalkanen, J.-P., Super, I. and Denier van der Gon, H., 2021, Copernicus Atmosphere Monitoring Service regional emissions version 5.1 business-as-usual 2020 (CAMS-REG-v5.1 BAU 2020), Copernicus Atmosphere Monitoring Service [publisher], ECCAD [distributor], 2021 doi.org/10.24380/eptm-kn40
- Reviewer link to, CAMS-REG snapshot dataset, for ESSD special issue on surface emissions,,

Questions/issues?

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- **Nicolas Zilbermann: nicolas.zilbermann@obs-mip.fr**

If you want an online demonstration, please ask me during the conference