The Global Emissions InitiAtive's Vision for Improved Emissions Information

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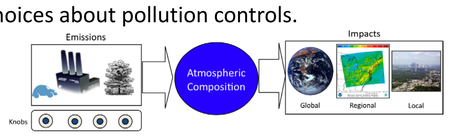
Motivation

Actions and decisions about the atmosphere focus on emissions
(A. R. Ravishankara)

High quality emissions information is needed to calculate past, present, and future atmospheric composition, assess impacts on air quality and climate, and to make choices about pollution controls.



We are in the Century of Accountability
(D. W. Fahey)

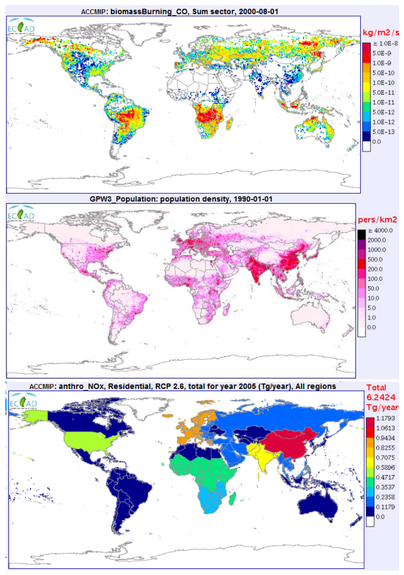
Changing economies, demographics, agricultural practices, and energy sources, along with mandates to evaluate mitigation efforts and demonstrate compliance with legislation, are leading to new challenges in emissions understanding.

*G. J. Frost, et al. (2013) Atmospheric Environment, **81**, 710-712*

ECCAD: Emissions of chemical Compounds & Compilation of Ancillary Data

http://pole-ether.fr/eccad

GEIA's emissions data portal provides consistent access to inventories and ancillary data with easy-to-use tools for analysis and visualization. ECCAD serves scientific research & assessment efforts, including HTAP, CCMI, CMIP, MACC, and the SENEX/SOAS field experiments.



Emissions Inventories

Relational database that provides consistent access to many global & regional inventories

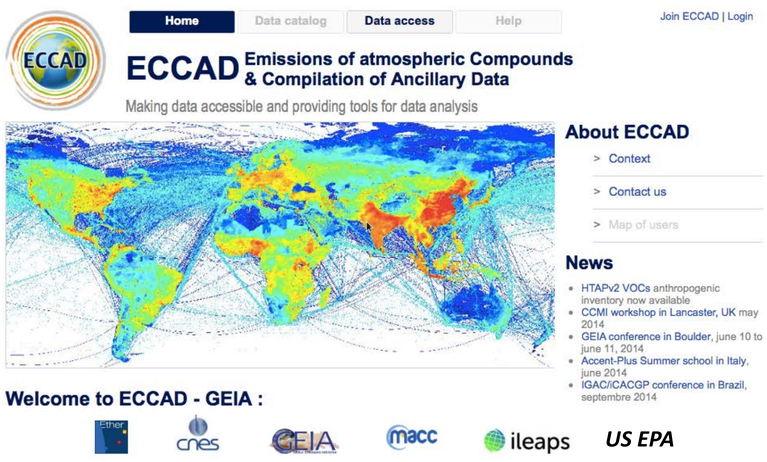
Ancillary Data

Access to ancillary data used to construct emissions inventories: population, vegetation, fire data

Interactive Graphical Tools

Online maps, time series, and data analysis

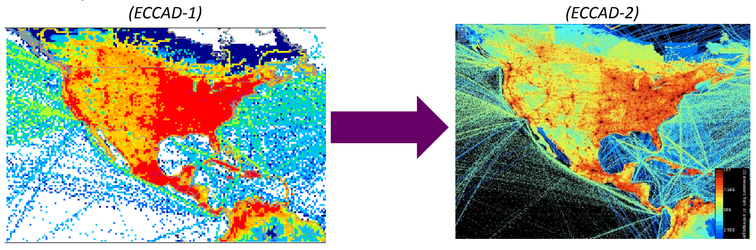
ECCAD-2 Portal Under Development eccad2.sedoo.fr/eccad2



The ECCAD-2 portal will support any resolution latitude/longitude datasets, compared with the 0.5° limitation of the current ECCAD-1 database.

MACCity CO Emissions, 0.5° resolution (ECCAD-1)

HTAPv2 CO emissions, 0.1° resolution (ECCAD-2)



Contacts

General GEIA questions: Paulette Middleton*, Greg Frost*, Leonor Tarrasón*, Claire Granier*
GEIA data management & ECCAD: Claire Granier*
GEIA web site & network: Paulette Middleton*
Inventory comparisons: Claire Granier*
Community historic global emissions: Claire Granier*, Steve Smith (ssmith@pnnl.gov), Jean-François Lamarque (*lamar@ucar.edu*), Greg Frost*
17th GEIA Conference: Greg Frost*, Leonor Tarrasón*, Yuxuan Wang (yuxuan.wang@gmail.com), Qiang Zhang (qiangzhang@tsinghua.edu.cn)

**See email addresses at top of poster*

Mission

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***.

Who is GEIA

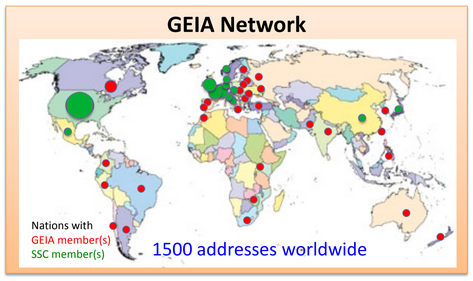
GEIA Leadership Team
Co-Chairs: Gregory Frost, Leonor Tarrasón
Database Manager: Claire Granier
Network Manager: Paulette Middleton

GEIA Scientific Steering Committee

Alexander Baklanov	Terry Keating
Beatriz Cardenas	Zbigniew Klimont
Hugo Denier van der Gon	Catherine Liousse
Gregory Frost	Paulette Middleton
Claire Granier	Toshimasa Ohara
Alex Guenther	Ute Skiba
Greet Janssens-Maenhout	Leonor Tarrasón
Johannes Kaiser	Yuxuan Wang

GEIA Connections

GEIA Network



GEIA Web Portal

http://www.geiacenter.org

GEIA's online emissions information center

GEIA Working Groups

China Emissions WG

Contacts: Kebin He, Qiang Zhang, Yuxuan Wang
- Improve scientific basis for emissions from China
- Coordinate Chinese groups working on emissions
- Contribute to East Asian Emissions Assessment (*ACP*)

VOC Emissions WG

Contacts: Erika von Schneidemesser, Hugo Denier van der Gon
- Improve global understanding of VOC emissions speciation
- Leverage on-going VOC measurements, inventories, & modelling
- Evaluate most important VOC source sectors

Latin America/Caribbean (LAC) Emissions WG

Contacts: Nicolas Huneeus, Laura Dawidowski, Néstor Rojas
- Develop and evaluate LAC-specific emissions information
- Create LAC regional emissions database and inventory
- Build LAC emissions expert community & link to global efforts

Urban Emissions WG

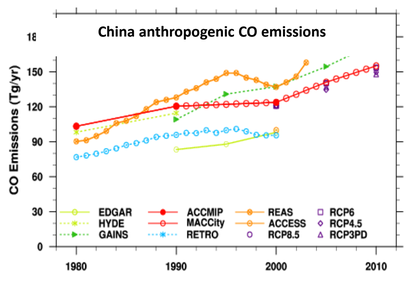
Contacts: Leonor Tarrasón
- Bring together techniques for urban emissions characterization
- Build capacity in megacities around the world

Community Historical Global Emissions

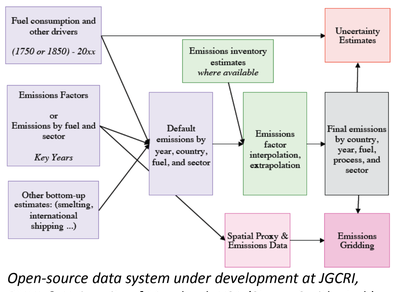
Historical global emissions estimates for trace gases and aerosols are critical to atmospheric chemistry and earth system models. Current global and regional inventories tend to agree on emissions trends, but there are large discrepancies between the absolute emissions estimates of individual datasets.

GEIA is working to develop a new community historical scientific emission inventory framework and evaluated global inventory products for 1750-2015. An initial objective is emissions input for the Climate Model Intercomparison Project Phase 6 (CMIP6).

Proposed attributes for new datasets:
- Anthropogenic and biomass burning emissions
- Uncertainties using different input assumptions
- Consistent historical trends for all species
- Seasonality in anthropogenic emissions
- Improved NMVOC speciation
- 0.1° resolution



There are significant differences between current historical global and regional inventories, as demonstrated by this comparison of datasets for China (C. Granier et al., 2011).



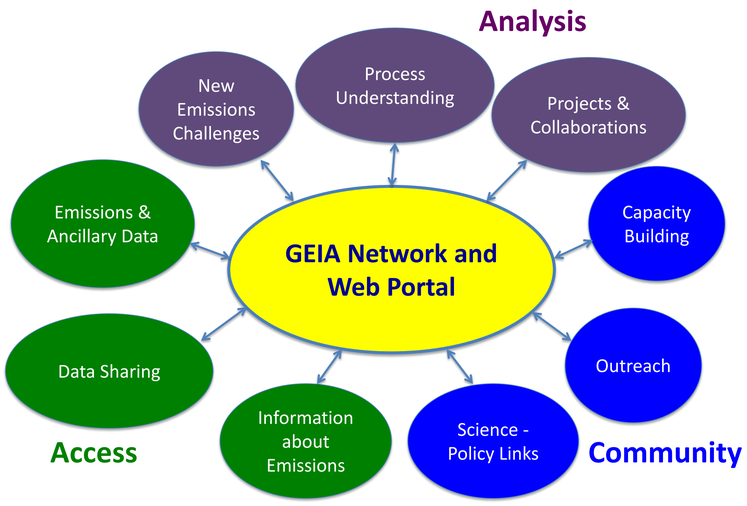
Open-source data system under development at JGCRI, PNNL & University of Maryland, USA (Steven Smith et al.)

Goals

*G. J. Frost, et al. (2013) Atmospheric Environment, **81**, 710-712*

By 2020, GEIA aims to be a key forum for emissions knowledge that serves stakeholders and decision-makers in a rapidly evolving global society.

The core activities of GEIA include:
- Building the scientific basis for emissions data by enhancing ***analysis*** of emissions processes
- Promoting broad and consistent ***access*** to emissions information
- Strengthening the ***community*** of emissions stakeholder groups



16th GEIA Conference

Bridging Emissions Science and Policy

10-11 June 2014
National Center for Atmospheric Research
Boulder, Colorado, USA

Conference Objective
Explore role of emissions as crucial link between scientific innovation and societal development

Questions Addressed
How are recent measurement advancements helping to better quantify emissions?
What are new developments in emissions process understanding?
What are challenges in interpreting past emissions trends and projecting future emissions?
How does improved emissions knowledge inform critical societal issues?

Format
- 150 oral and poster presentations
- Panel of agency representatives
- Demos of online emission portals
- 200 participants from 6 continents in research, regulatory, policy, & assessment communities

Topics identified for further study
- Land use
- Fire emissions
- Energy production
- Agricultural emissions
- VOC speciation
- Emissions from Asia
- Urban emissions
- Historical emissions
- Closing BU/TD gaps

For more info, see **IGAC Newsletter Issue 52 (August 2014)**, *and* http://www.geiacenter.org/community/geia-conferences/2014-conference

17th GEIA Conference

Influence of Urbanization on Emissions Worldwide

18-20 November 2015
Tsinghua University
Beijing, China

- Explore implications of urbanization on characterization and analysis of anthropogenic and natural emissions and their environmental and societal impacts at local to global scales.
- Aim to understand how recent measurement advancements, developments in emissions process understanding, and progress in interpreting past emissions trends and projecting future emissions are helping to inform critical societal issues, particularly those related to urbanization.
- More information available soon at http://www.geiacenter.org/

Get Involved with GEIA

Contribute to GEIA's vision for improved understanding of air quality and climate through better understanding of emissions
- Become an active member of GEIA
- Share your expertise and data with the GEIA community
- Participate in GEIA working groups, or propose a new one!
- Use GEIA resources to carry out your professional endeavors

Go to http://www.geiacenter.org to learn more!