



## Task Force on Hemispheric Transport of Air Pollution

# Update on progress and proposed work for 2024-2025

<b>Co-Chairs</b>	Terry Keating (United States)	Tim Butler (Germany)
<b>Vice Chairs</b>	Rosa Wu (Canada)	Jacek Kaminski (Poland)

9<sup>th</sup> Joint Session of the EMEP Steering Body and the Working Group on Effects  
Geneva, September 11-15, 2023

# Proposed TF HTAP 2024-25 Work Plan

## Global Emissions Mosaics

Continue to explore the extension and expansion of global emissions mosaics, building on HTAPv3 (2000-2018).

HTAP3 Modelling Experiments

## O3, PM, S/N Deposition Under Future Scenarios

Organize new global model simulations of future scenarios developed by CIAM, including examination of the role of methane, source attribution methods, link to regional scale (TFMM, MSCW), links to impacts (ICP Veg, ICP Forests?).

## Mercury Trends and Source Attribution

Organize new global model simulations, initially to contribute to the Minamata Convention's effectiveness evaluation.

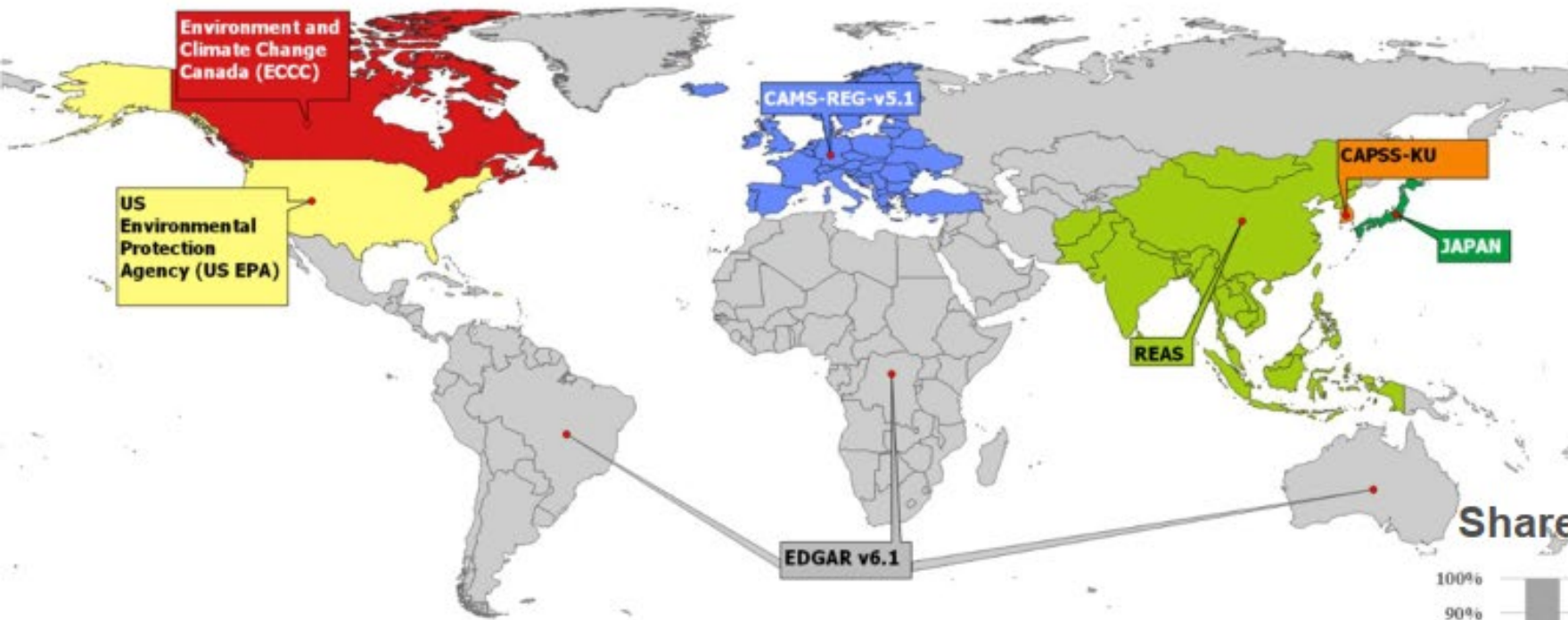
## Multi-Pollutant Impacts of Fires

Design a multi-model intercomparison of the multi-pollutant (PM, POPs, metals, O3) impacts of fires to be conducted over the next two work plans.

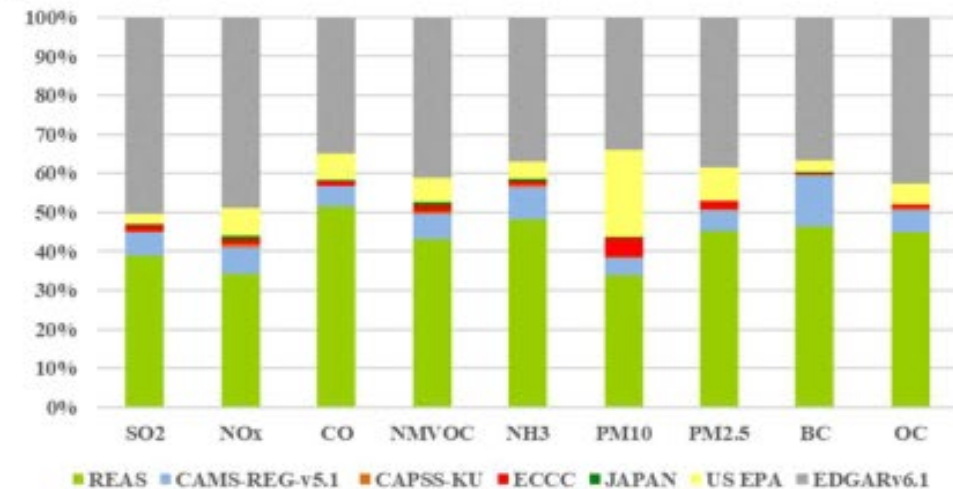
## Input to Decision Support Tools

Continue to produce emulators for our multi-model ensembles and incorporate these into screening models and decision support tools (e.g. building on openFASST concept).

# Recent historical emissions: the HTAPv3 global emission mosaic



Share of the emissions by data provider



- Explicit spatial distribution with gap filling
- Timeseries 2000-2018
- High number of emission sectors (16)
- Dataset released April 2022
- Available at [https://edgar.jrc.ec.europa.eu/dataset\\_htap\\_v3](https://edgar.jrc.ec.europa.eu/dataset_htap_v3)
- Published paper: <https://doi.org/10.5194/essd-15-2667-2023>

Slide from Monica Crippa, JRC

# Initial Wish List for HTAPv3 Fixes and Extensions

## Fixes

- European BC Emissions
- International Shipping Emissions in Emission Control Areas
- Aircraft Emissions Vertical Allocation
- Waste Sector
- USA Fugitive Dust Met Correction

## Time Extensions

- Canada
- Europe
- USA
- Greater Asia
- China

## Future

- VOC Speciation
- Linkage to CAMS
- Africa
- India
- Latin America



HTAP3:

## Three Sets of Experiments With A Common Base

### **1. New Global Policy Scenarios for Ozone, PM, and S/N Deposition**

- Organizing new global model simulations of future emissions scenarios developed using IIASA's GAINS model (and historical HTAPv3 emissions)
- Examining the role of methane as an ozone precursor, source attribution methods, regional-global scale linkages, and health and vegetation impacts.
- Currently planning simulations. Initial results expected in 2025. Planning separate discussions for week of November 27 with Chemistry-Climate Modelers (CCMs) and Chemical Transport Modelers (CTMs)
- Coordinator: Tim Butler, Research Institute For Sustainability, Potsdam, Germany



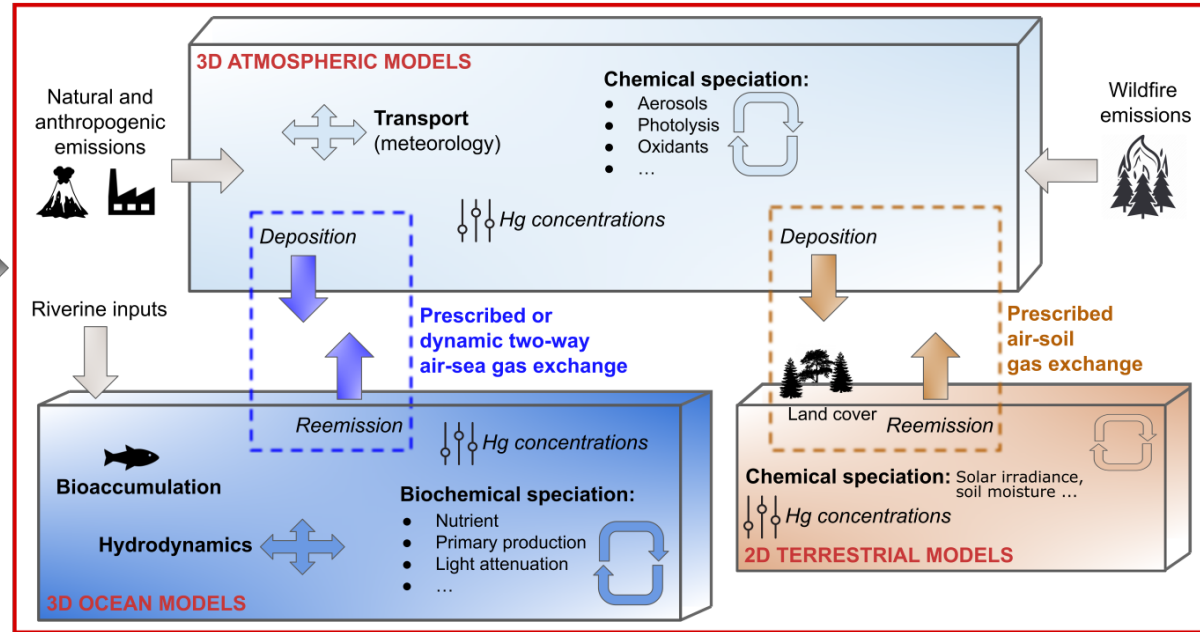
HTAP3:

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## **2. Multi-Compartment Hg Modeling and Analysis Project (MCHgMAP)**

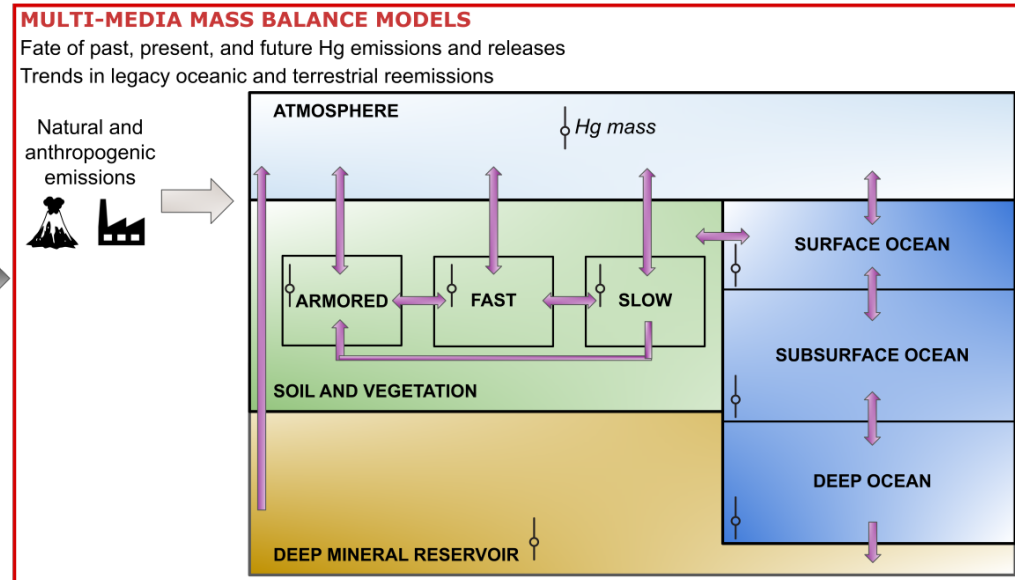
- Organizing new global model simulations, linking atmosphere, soil, ocean, and multi-compartment models, to contribute initially to the Minamata Convention's effectiveness evaluation.
- Multi-journal special issue to be launched soon with background paper. In 2024, focus will be on 2010-2020 baseline simulations. Additional sensitivity analyses to follow in 2025.
- Coordinator: Ashu Dastoor, Environment and Climate Change Canada

## CONTEMPORARY CYCLE



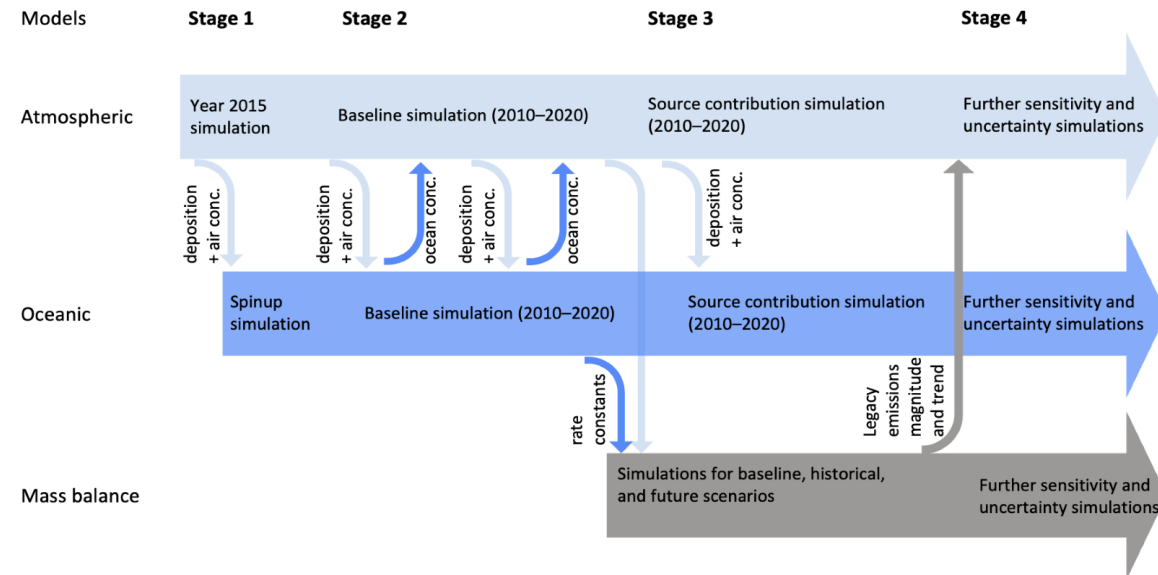
Legacy emissions magnitude and trend (upward arrow)  
Inter-media mass transfer rate coefficients (downward arrow)

## LONG-TERM CYCLE



# HTAP3/MCHgMAP

How can we best represent the cycling of Hg between environmental reservoirs on short-term and long-term timescales, including quantifying the role of “legacy emissions”?





HTAP3:

Three Sets of Experiments With A Common Base

### 3. Fires Multi-Pollutant Modelling

- Comparing the impact of wildfires and agricultural burning on PM, O<sub>3</sub>, metals, and POPs. Simulations to be conducted in 2024-2027.
- White paper open to participation
  - <https://nextcloud.gfz-potsdam.de/s/JQNn2NdZz4d66dn>
- Global Fire Emissions Workshop with IGAC/BBurned, November 7, 8, 9, 14
  - Historical emissions from the satellite record
  - Future scenarios using land-surface models
- Coordinator: Cyndi Whaley, Environment and Climate Change Canada
- Email List: [https://www.listserv.dfn.de/sympa/subscribe/htap-fires?previous\\_action=review](https://www.listserv.dfn.de/sympa/subscribe/htap-fires?previous_action=review)



# Decision Support and the openFASST Concept

- HTAP1 and HTAP2 resulted in large ensembles of model simulations from complex global and regional models.
- Wild et al. (2012) and Turnock et al. (2018) demonstrated a useful non-linear parameterization of annual average ozone results.
- TM5-FASST (van Dingenen et al. 2018) and other user-friendly, web-interface driven, reduced-complexity models have proven useful as screening or decision support tools.
- openFASST: Can we plug multi-model results from HTAP into a more modular FASST framework?
  - Allowing exploration of time series and future scenarios
  - Comparisons of the implications of model choice or S/R methodology
  - Allow updates to FASST as models and environmental conditions evolve

# Future work on source-receptor emulator models

- Explore incorporation into other reduced-complexity models?
  - Our goal isn't to necessarily have an "HTAP tool" but to enable the use of HTAP results.
- New discussions with Steven Turnock and Oliver Wild
- Task Force discussion envisioned for late October
- Proposed workshop session at
  - 12<sup>th</sup> International Congress on Environmental Modelling and Software (iEMS)
  - 23-27 June 2024, Michigan State University, East Lansing MI
- New HTAP3 model simulations coming in 2024-2027

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**Task Force on Hemispheric  
Transport of Air Pollution**



About TF HTAP

Questions and Answers

Events

Useful Links



**TRENDING NEWS**

ion AGENDA

HTAPv3 emission

Newsletter subscripion!

Spring meetings online 18-21 April – presentations

Fire White Paper Meeting – June 29

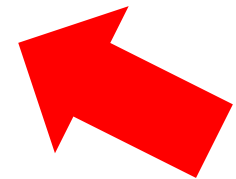
## Welcome to HTAP page

The Task Force on Hemispheric Transport of Air Pollution (TF HTAP) is an international scientific cooperative effort to improve the understanding of the intercontinental transport of air pollution across the Northern Hemisphere. TF HTAP was organized in 2005 under the auspices of the [UNECE Convention on Long-range Transboundary Air Pollution](#) (LRTAP Convention) and reports to the Convention's EMEP Steering Body. However, participation is open to all interested experts, both inside and outside the UNECE region.

### NEWSLETTER

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### RECENT POSTS

- ▶ Spring meetings online 18-21 April – presentations

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