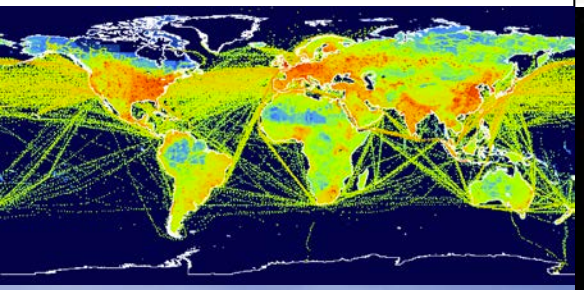
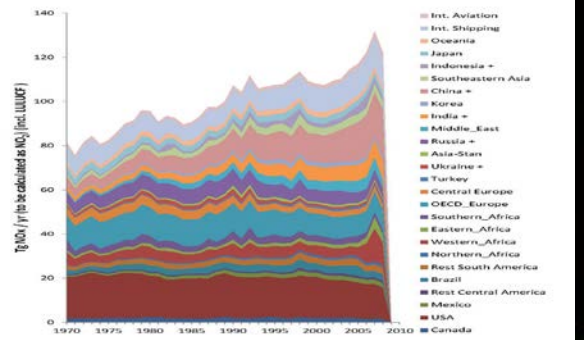
A new emissions module for GEOS-Chem

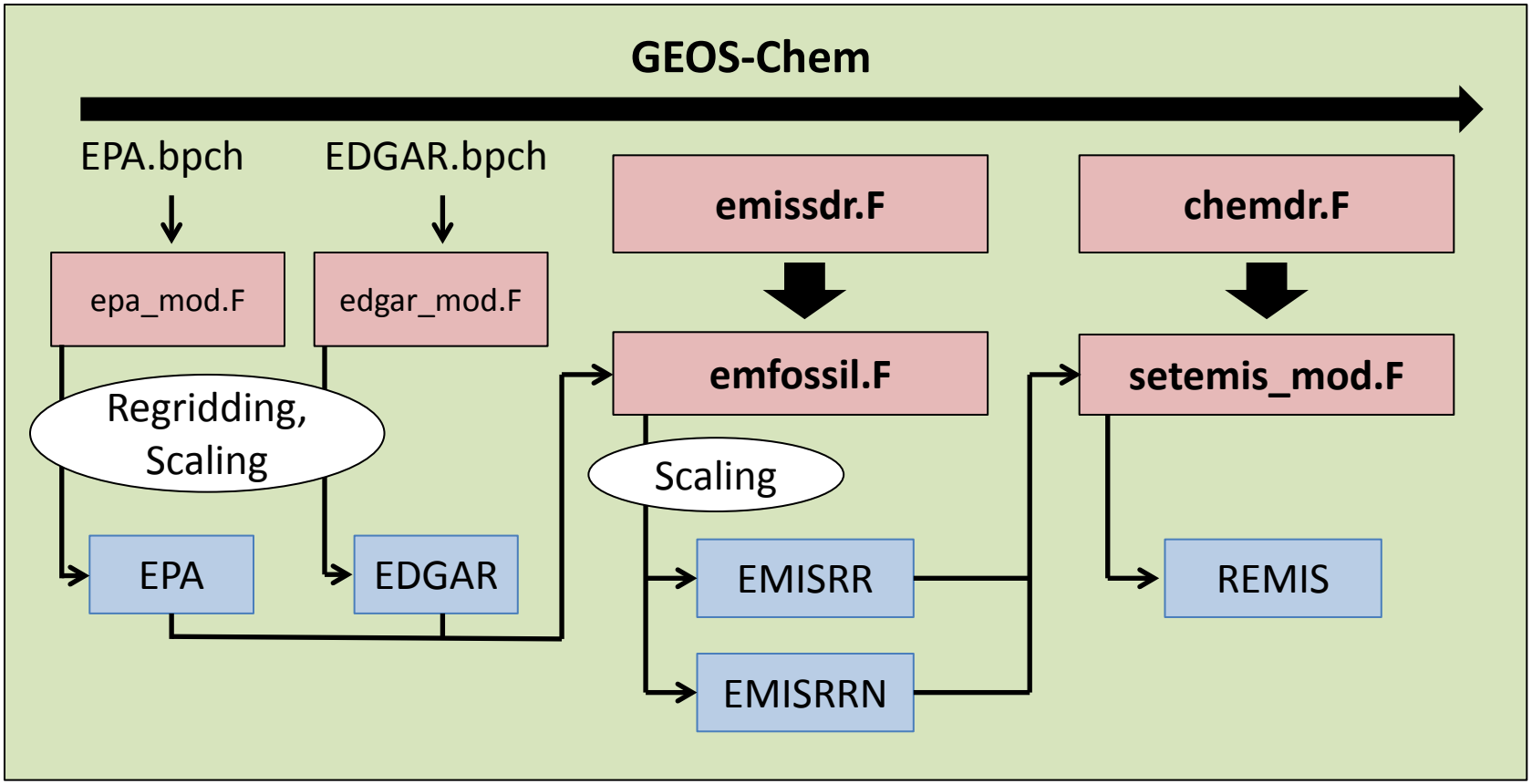
Christoph A. Keller
D. Jacob, M. Long, M. Payer, B. Yantosca

6th International GEOS-Chem meeting



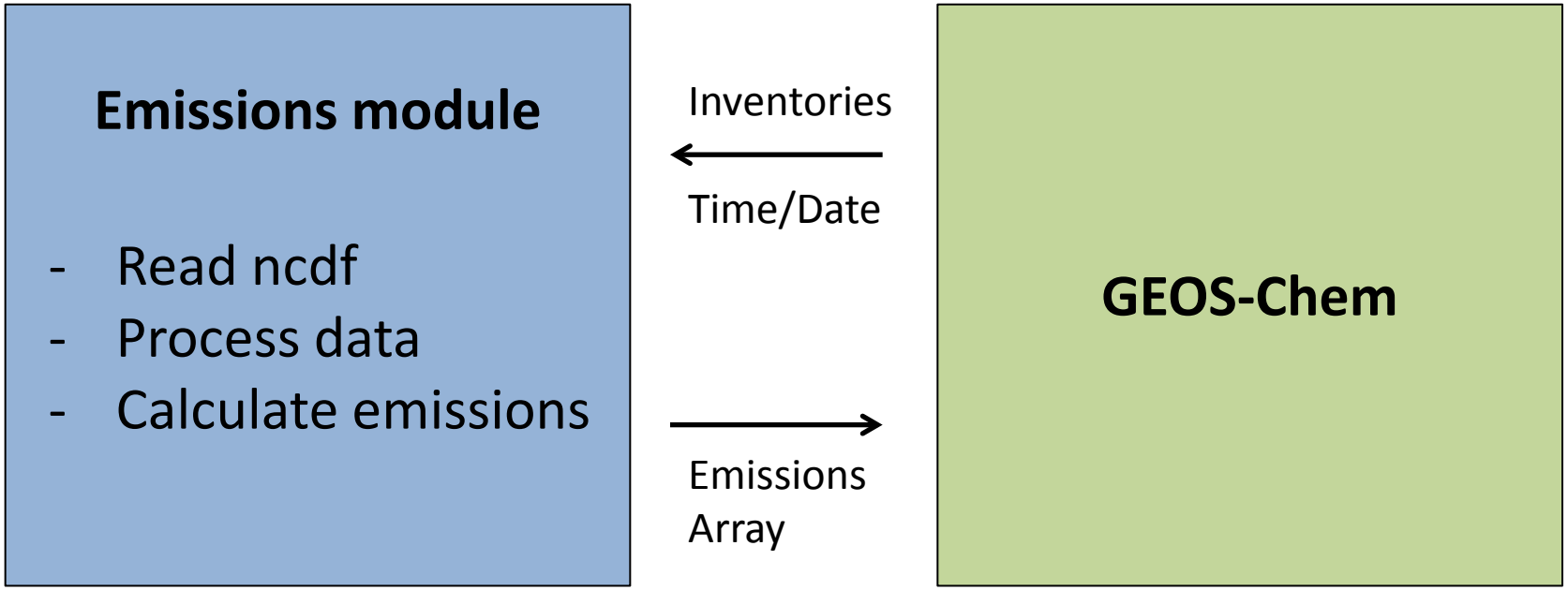


Current emissions code is not compatible with GIGC



- Bpch / ascii format not supported by ESMF
- Data reading must be separated from processing

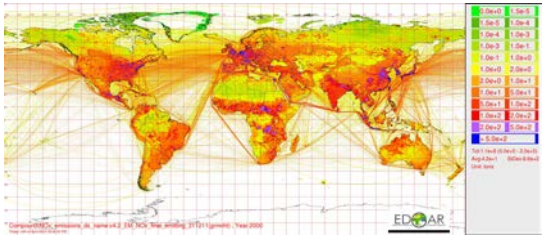
Stand-alone emissions module under development



- Stand-alone component, can also be used by other models
- Separates data reading and processing
- Provides flexible mechanism to add/update emissions

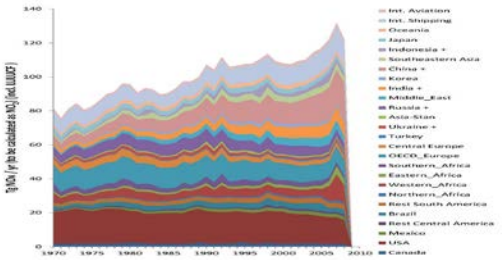
Modular approach for emissions calculation

Base emissions



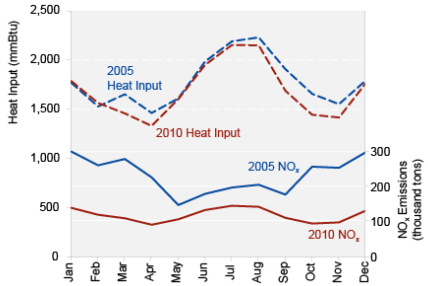
x

Annual scaling

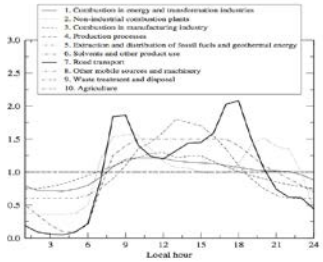


x

Seasonal scaling

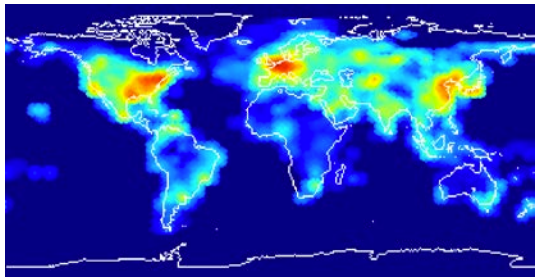


Diurnal scaling



x

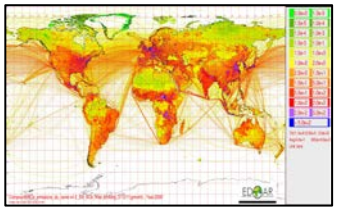
=



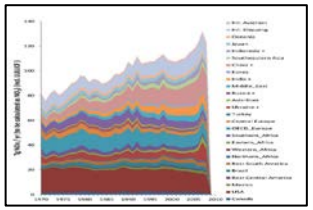
Emissions at given date

Modular approach for emissions calculation

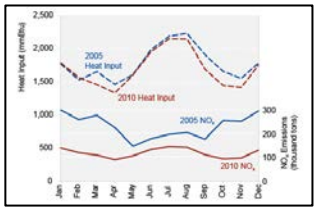
Base emissions



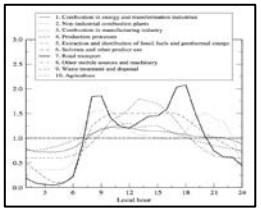
Annual scaling



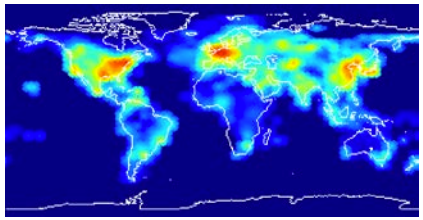
Seasonal scaling



Diurnal scaling



Container 1	X	Container 2	X	Container 3	X	Container 4
Name1 Data1 Tracer ID (Scale factors)		Name2 Data2 Tracer ID (Scale factors)		Name3 Data3 Tracer ID (Scale factors)		Name4 Data4 Tracer ID (Scale factors)



Emissions at time X

- Standardized units and grids
- Easy to change/update individual containers

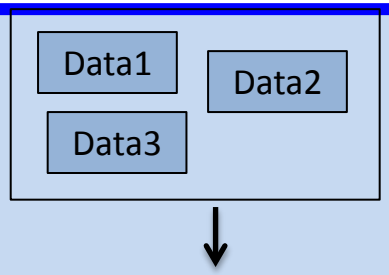
Emissions module controls main routines

User

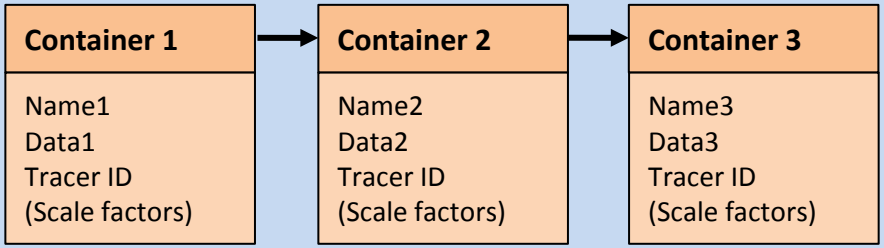
1. **Specify** files to read
→ At start or when updating data (e.g., new year, month, …)

Emissions module

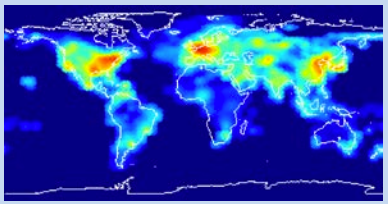
2. **Read** all listed files, regrid to simulation grid, convert units.



3. **Add / update container**, embed container into list



4. **Calculate emissions** from list
→ Each emission time step



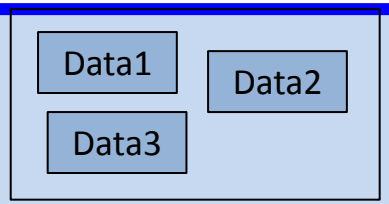
Adding new emissions becomes very easy!

User

1. **Specify** files to read
→ At start or when updating data (e.g., new year, month, …)

Emissions module

2. **Read** all listed files, regrid to simulation grid, convert units.



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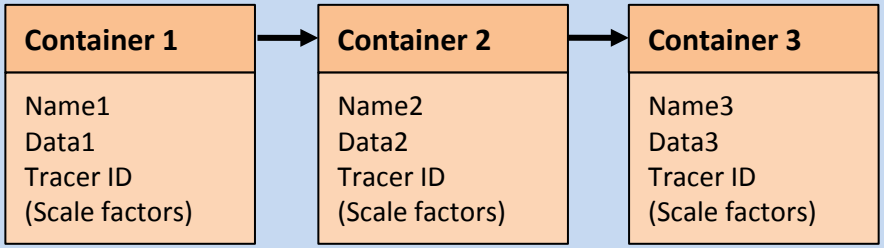

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