



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

# **Progress of the TF HTAP**

Co-Chairs

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10 September 2013

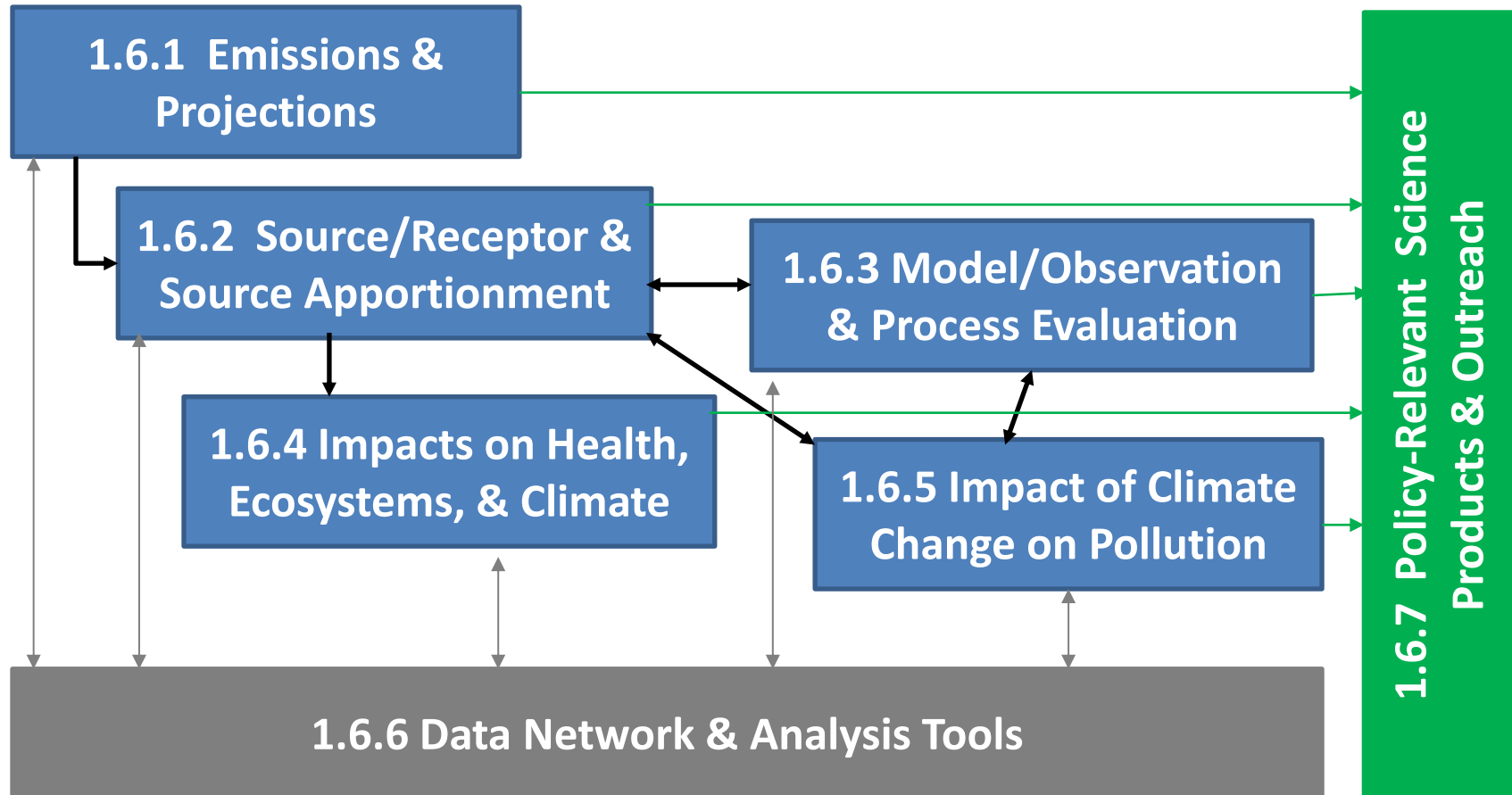
## *What is the TF HTAP?*

# **Mandate from Executive Body (2010)**

- Improve the understanding of the transport of air pollution across the Northern Hemisphere. Air pollution includes:
  - Ozone and its precursors, including NO<sub>x</sub>, VOC, CO, and methane
  - Particulate Matter and its components, including black carbon
  - Mercury
  - Persistent Organic Pollutants (POPs)
- Assess potential emission mitigation options available inside and outside the UNECE region
- Assess the impacts of the options on regional and global air quality, public health, ecosystems, and near-term climate change
- Work in collaboration with other groups inside and outside the Convention.

# Themes of Cooperative Activities Under TF HTAP

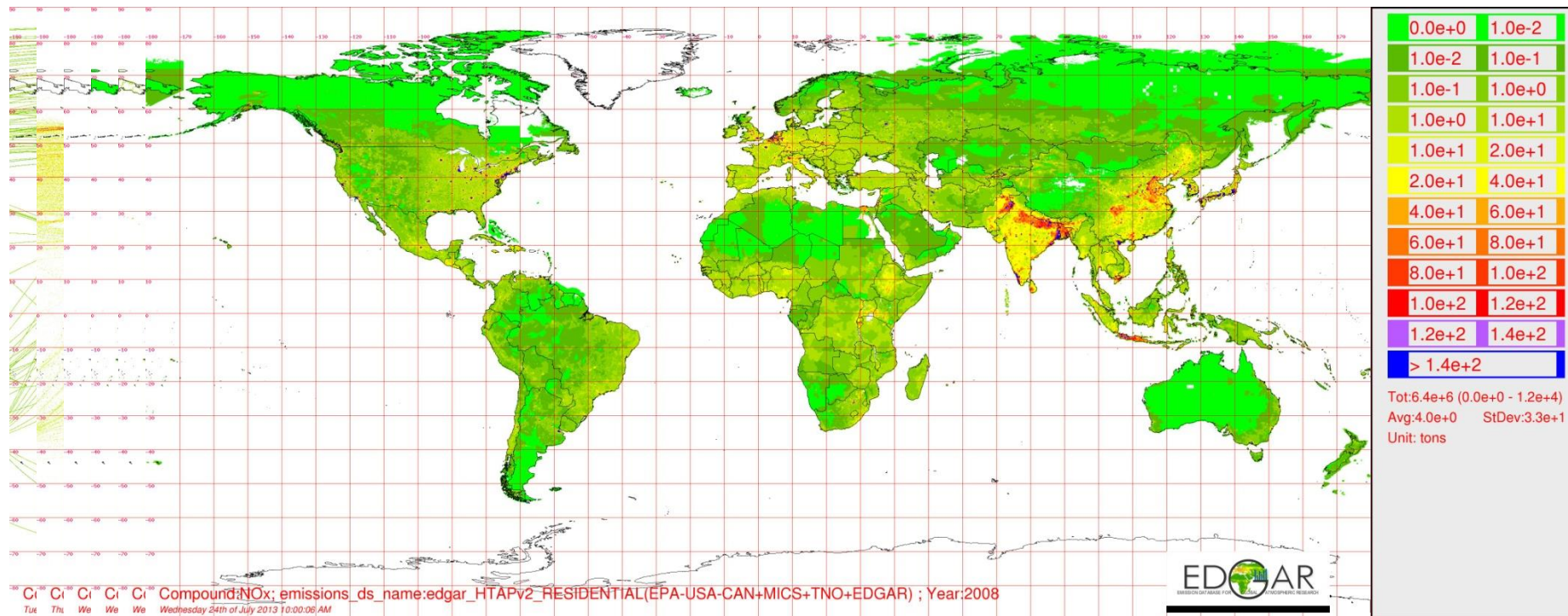
As Numbered in Convention Work Plan



> 35 Work Packages identified, each with a volunteer leader.

# 2008 & 2010 Global Emissions Mosaics

- SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, CH<sub>4</sub>, CO, NH<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, BC, OC
- 0.1°x0.1° grid, annual (monthly for some sectors)
- Aviation, Shipping, Electricity Generation, Industry, Transport, Residential, Agriculture

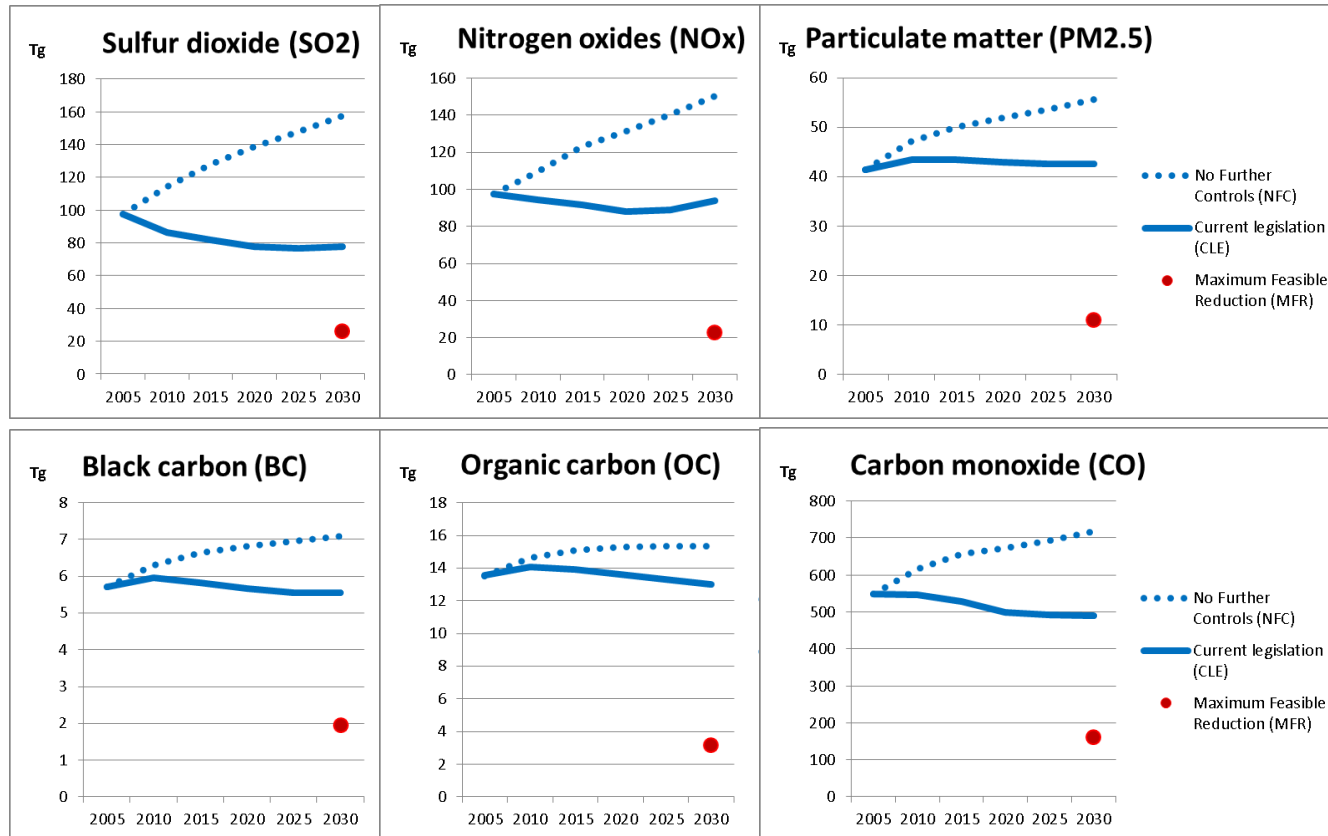


- 2008 Now Available, 2010 Coming Soon
- [http://edgar.jrc.ec.europa.eu/htap\\_v2/index.php?SECURE=123](http://edgar.jrc.ec.europa.eu/htap_v2/index.php?SECURE=123)

## 1.6.1 Emissions & Projections

# 2010-2030 Emissions Scenarios

- October 2012 Workshop with TFIAM
- CIAM developing 3 “benchmark” scenarios:
  - Current Legislation, No Further Control, Maximum Feasible Reduction

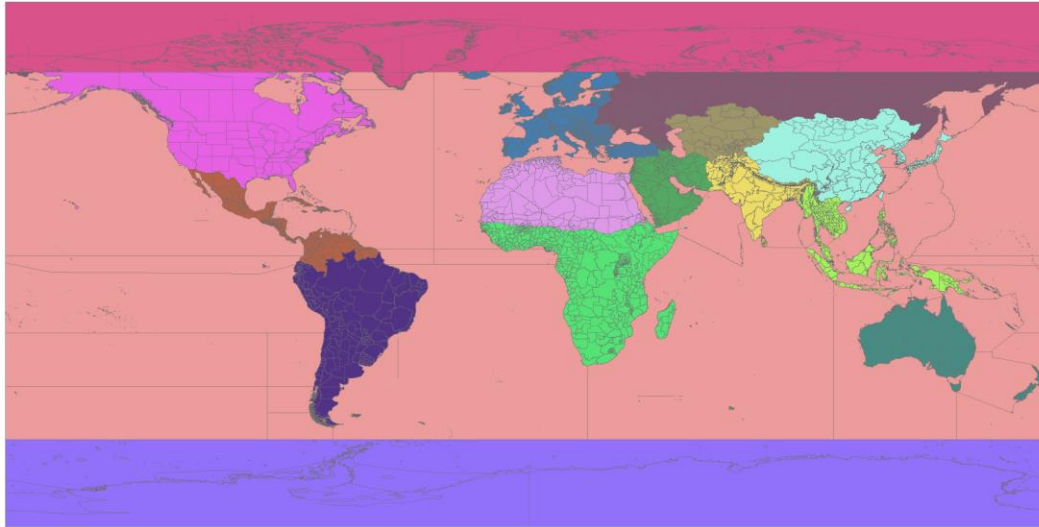


- Future workshop with TFIAM on cost-effective global control strategies?

## 1.6.2 Source-Receptor Analyses

### Source-Receptor Analyses

- Planned Experiments Focus on 2008-2010
- World divided into 16 regions (60 sub-regions).



7 Regions identified as priorities:  
North America, Europe,  
East Asia, South Asia,  
Russia/Belarus/Ukraine,  
Middle East.

- Perturbation Experiments: 20% Emission Reductions By Region and Sector (or By Region and Pollutant)
- Matched Global and Regional Perturbation Simulations
- Comparison of Perturbation and Other S/R Methods
- **Focus of Next Meeting: 5-6 December, San Francisco**

## 1.6.2 Source-Receptor Analyses

# Modeling Groups That Have Indicated Interest

Institution	Country	Model
NASA GSFC	United States	GEOS-5/GOCART, NU-WRF
Univeristy of Edinburgh	United Kingdom	STOC-HadAM3/UKCA (WRF-EMEP)
CIEMAT	Spain	CHIMERE
MIT	United States	GEOS-Chem
NIWA	New Zealand	niwa-UKCA
Norwegian Meteorological Institute	Norway	EMEP MSC-W
University of Colorado Boulder	United States	GEOS-Chem
Princeton University & NOAA GFDL	United States	GFDL AM3
Michigan Technological University	United States	GEOS-Chem
University of Wisconsin--Madison	United States	CMAQ
Lancaster University	United Kingdom	FRSGC/UCI CTM
York University	Canada	GEM-AC
University of Leeds	United Kingdom	CAM-chem
Met Office Hadley Centre	United Kingdom	HadGEM2
NCAR	United States	CAM-chem
Institute for Advanced Sustainability Studies	Germany	CAM-Chem
Indian Institute of Tropical Meteorology	India	WRF-Chem
ICIMOD	Nepal	WRF-Chem
Meteorological Synthesizing Centre - East	Russia	GLEMOS
Environment Canada	Canada	GEM-MACH

### ***1.6.3 Model-Observation and Process Studies***

## **Joint Analyses and Detailed Case Studies**

#### **Coordination with:**

AQMEII

MICS-Asia

EuroDelta 3

CCMI

AeroCom

POLMIP

GMOS

POPs

#### **Analyses of:**

Satellite Observations

Vertical Profiles

Ozone Deposition and Stomatal Flux

Global Ozone Observations

Regional Inflow/Outflow Budgets

(Western North America, Arctic, ...)

Comparison of S/R Methods

Biomass Burning

Black Carbon

Sulfate and Nitrate Budgets

Sensitivity at Local Scales

Optical Properties of Aerosols



# Future Steps on Impacts Assessment

## *1.6.4 Health, Ecosystem, Climate Impact Assessments*

- **Proposed Workshop on Impact Assessment Methods**
  - Opportunities to link to WGE, CCAC, Malé Declaration, EANET, ABC, AMAP, GBD, and other activities

## *1.6.5 Impact of Climate Change on S/R Relationships*

- **Future Report Based on Insights from IPCC and CCMI**

## ***1.6.6 Distributed Data Network and Web-Based Tools***

### **Data Network Status**

Major focus of March 2013 meeting in conjunction with WMO/GAW.

#### **Data Archives**

FZ Juelich (HTAP1 modeling, MACC)

WU-StL ouis/DataFed (surface, satellite observations)

NILU/EBAS (surface observations)

MetNo/AeroCom (HTAP2, AeroCom modeling)

GEIA/ECCAD (emissions)

JRC/ Ensemble (AQMEII modeling)

NASA/ADAM (aircraft observations)

NOAA/CCMI (aircraft, surface observations, emissions)

SNU/ABC-Asia (surface observations)

CAS/MICS-Asia (MICS-Asia modeling)

CEOS(DLR)/ACP (satellite observations)

EPA/AirNow (surface observations)

GAW/WDCs (surface observations)

## 1.6.6 Distributed Data Network and Web-Based Tools

### Data Network Status

Major focus of March 2013 meeting in conjunction with WMO/GAW.

### Web-Based Access and Analysis Tools

FZ Juelich JOIN

<http://join.iek.fz-juelich.de/htap>

MetNo AeroCom Tools

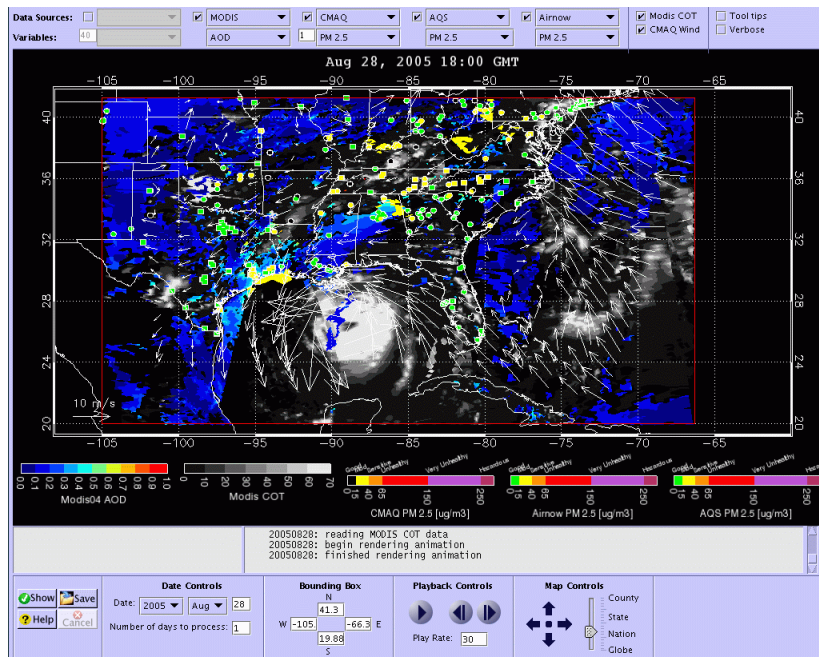
<http://aerocom.met.no/>

JRC Ensemble

<http://ensemble2.jrc.ec.europa.eu/>

US EPA RSIG

<http://badger.epa.gov/rsig>



RSIG: Overlay of Model AOD and PM2.5 with Satellite and Surface Observations

## *1.6.7 Policy Relevant Products and Outreach*

### **Our Strategy**

- Annual Report – Highlighting Policy Relevant Findings
  - Pushing to have some new messages by end of 2014
- Report/Paper for Each Work Package or Thematic Area
- Joint Workshops with Other International Cooperative Efforts
- Participation in Major International Conferences
- Simple Web-Based Tools for Exploration of Policy Implications of Results

# Work Flow and Timeline

