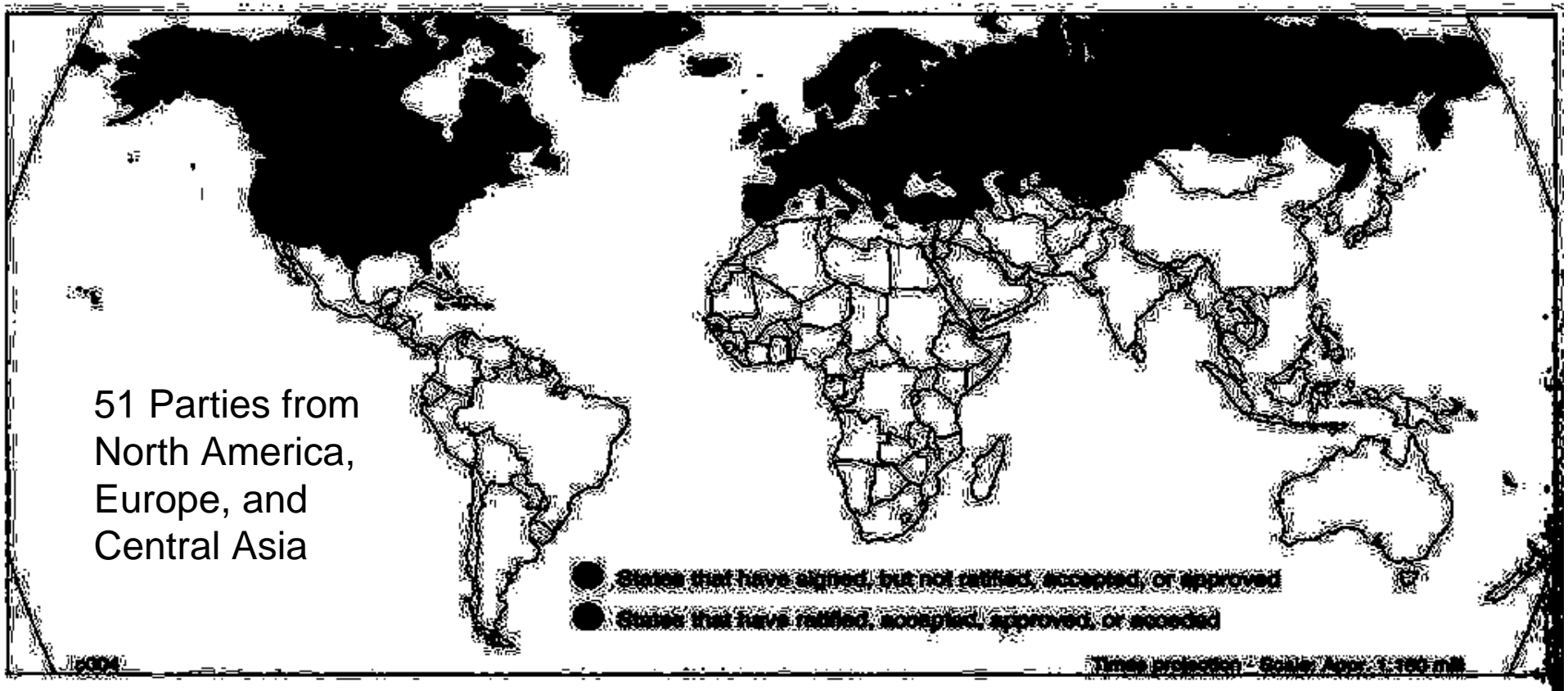


Intro to TF HTAP

1979 Convention on Long-Range Transboundary Air Pollution (LRTAP)



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

<http://www.unece.org/env/lrtap/>



Intro to TF HTAP

Purpose and Participation in TF HTAP

- Created in December 2004 by the LRTAP Executive Body under the European Monitoring and Evaluation Programme (EMEP), the atmospheric science arm of the LRTAP Convention.
- Charged to improve the scientific understanding of intercontinental transport and hemispheric air pollution in the Northern Hemisphere
- Pollutants of interest include ozone, fine particles, nitrogen and sulfur deposition, mercury, and persistent organic pollutants (POPs).
- The United States and the European Community are the Lead Parties.
- Participation is open to all interested experts. Countries (inside and outside the ECE region) are encouraged to nominate national focal points.

Policy-Relevant Science Questions

1. How does hemispheric transport affect air pollution?
2. How much do emissions in one country or region affect air pollution in another country or region?
3. How confident are we of the results and what is our best estimate of the uncertainties?
4. How will changes in emissions in one country or region affect air pollution in another country or region?
5. How may the source-receptor relationships change over the next 20 to 50 years due to changes in emissions?
6. How may the source-receptor relationships change due to climate change?
7. What efforts are needed to develop an integrated system of observation data and models?

Intro to TF HTAP

Where HTAP has been

<i>Dates</i>	<i>Locations</i>	<i>Partners</i>	<i>Topics Discussed</i>
2005	June	Brussels	Science Questions
2006	Jan	Washington	Model Intercomparison
	June	Moscow	Hg, POPs, CH ₄
	Oct	Beijing	Emissions and Projections
2007	Jan	Geneva	w/ WMO, GEO Observational Evidence
	May	Reading	Climate, HTAP 2007 Review
	Oct	Jülich	Model Intercomparison
2008	April	Rome	w/ UNEP Hg F&T Hg, POPs
	June	Washington	w/ NAS, AC&C Survey State of Science, Plan Cooperative Analyses

Progress to Date **Major Work Areas**

- **Emissions and Projections**
 - The EU Joint Research Centre Institute for Environment and Sustainability is developing an EDGAR-HTAP Inventory, tailored to the modelling approach of HTAP
 - US EPA will analyze new scenarios developed for the next round of IPCC models for use in HTAP multi-model experiments.

Progress to Date **Major Work Areas**

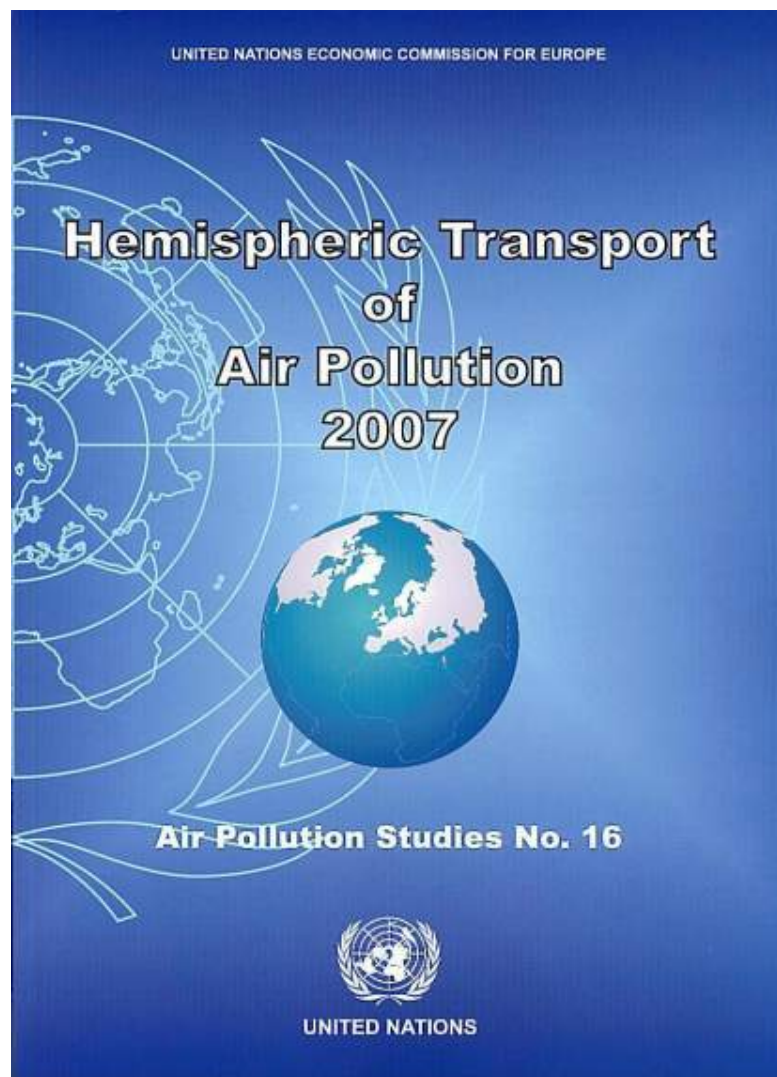
- **Emissions and Projections**
- **Integration of Observational Evidence**
 - NILU is developing a database of surface observations to support the assessment of intercontinental transport, including for use in model evaluation.
 - NASA is developing a database of relevant observations from aircraft campaigns and guidance on how to compare the observations to models.
 - NASA is developing a specific interface for its GIOVANNI system to facilitate access and comparison to some satellite observations.

Progress to Date Major Work Areas

- **Emissions and Projections**
- **Integration of Observational Evidence**
- **HTAP Multi-Model Experiments**
 - **35+** Models Participating To Date
 - Phased Experiments
 - SR: Source-Receptor Sensitivity Simulations
 - TP: Passive and Artificial Tracer Simulations
 - ES: Event Simulations
 - FC: Future Scenarios (Climate and Emissions)
 - Infrastructure
 - Data Server, Juelich, Germany
 - Data Processing and Visualization Tools (HemiTAP), Ispra
 - Wiki, Juelich
 - Model documentation using COST 728/732 Model Metadata Stds.
 - Standard naming convention created, based upon netCDF/CF convention

Progress to Date

HTAP 2007: An Interim Report

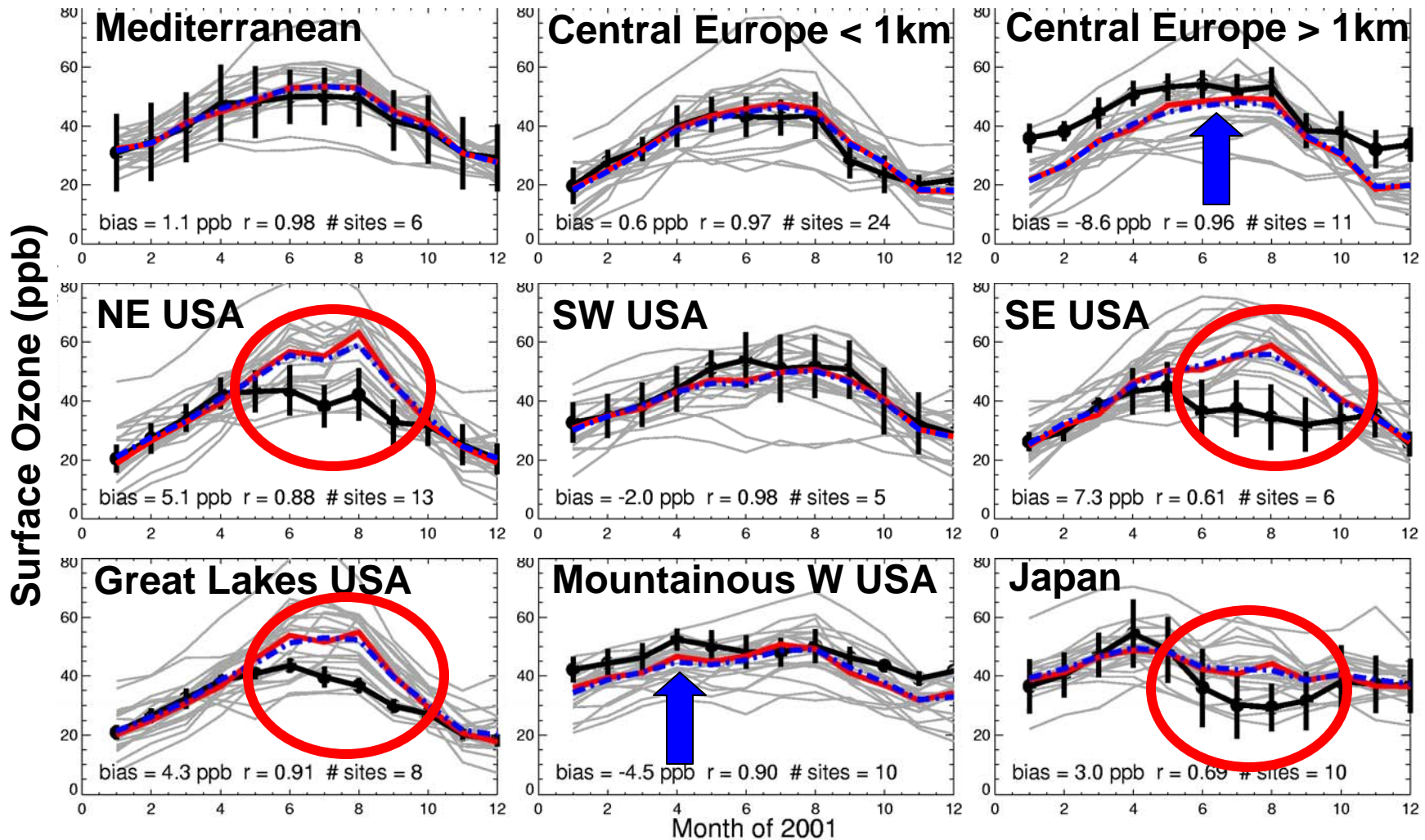


- Presented to EB December 2007
- Currently in print & online:
<http://www.htap.org>
- Focused on Ozone and Aerosols
 - Transport Processes
 - Observational Evidence
 - Emissions Inventories & Projections
 - Regional & Global Modeling
 - Summary Answers to Policy-Relevant Science Questions
- > 125 Experts from > 25 Countries Participated in the Process
- Reports initial results of HTAP Multi-Model Experiments

Structure of *HTAP 2010*

- **Part 1: Ozone, Aerosols, Deposition**
- **Part 2: Mercury**
- **Part 3: POPs**
- **Part 4: Synthesis**
 - “Summary for Policy Makers”
- **Executive Summary**
 - Official Document to the LRTAP Convention

Large inter-model range; multi-model mean generally captures observed monthly mean surface O₃



- Many models biased **low at altitude**, **high over EUS+Japan in summer**
- Good springtime/late fall simulation

Future Work Plan

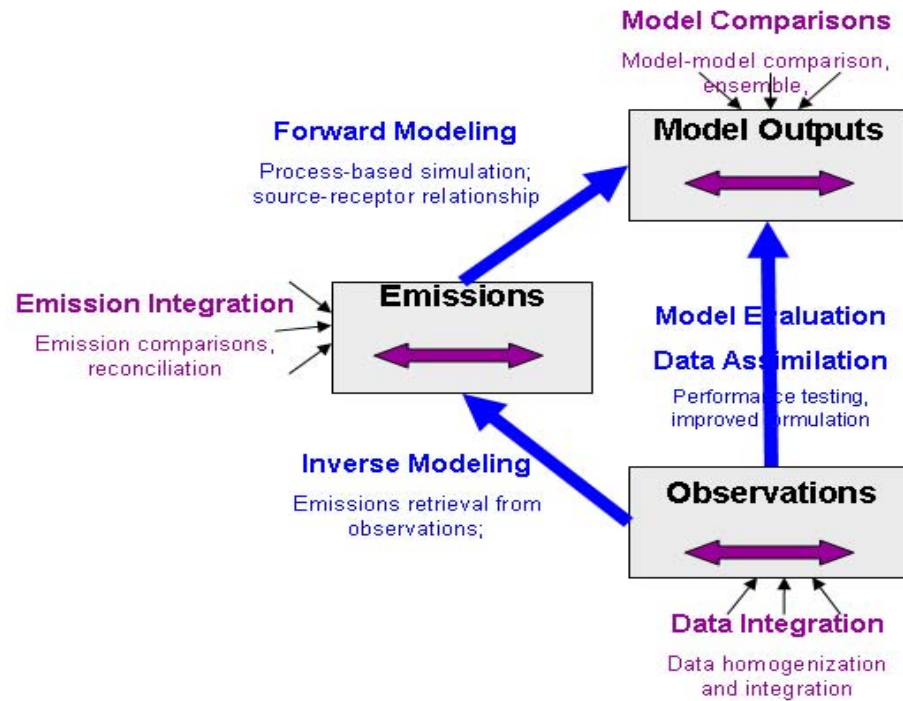
Where We Are Going

<i>Dates</i>	<i>Locations</i>	<i>Partners</i>	<i>Topics Discussed</i>
2008 Oct	Hanoi	w/ EANET	Focus on Asia
2009 Mar	St Petersburg		<i>Emissions, Hg/POPs Modeling</i>
June	Paris	w/ TFMM	Regional-Global and Climate-AQ Linkages
Nov			<i>2010 Assessment Authors</i>
2010 Feb			<i>2010 Assessment Review</i>
Jun			<i>2010 Assessment Acceptance</i>

Major Work Areas

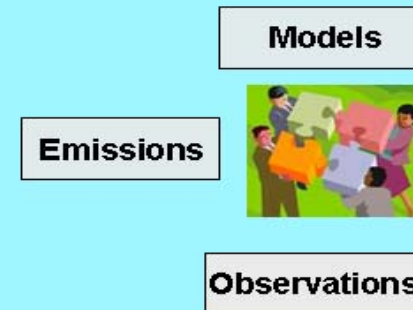
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2009 HTAP Assessment



The goal of HTAP Network:

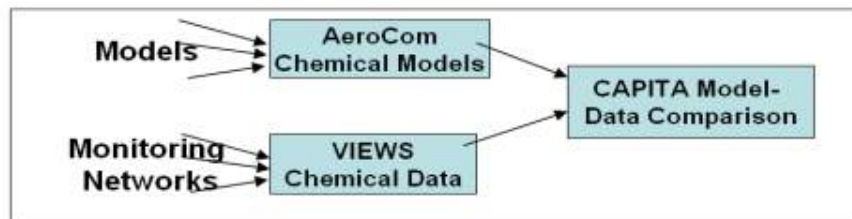
- **Connect** the data nodes
- **Enable** with shared tools



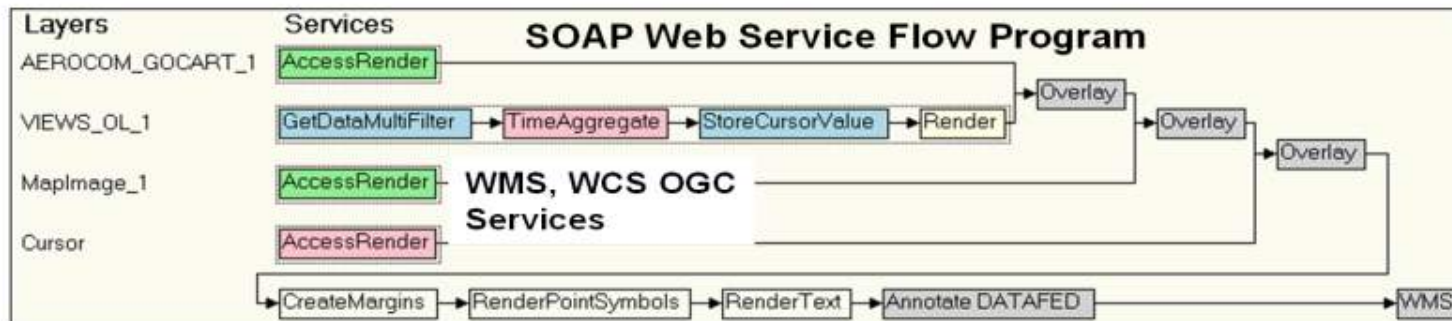
HTAP Network



HTAP Model-Data Comparison Example DataFed Web Service-Based Workflow Software



Model and VIEWS data are accessed from portals in Paris and Ft. Collins.
Aggregation, interpolation services harmonize model and data resolutions
Model is compared and evaluated with data through comparison operators



Data access by OGC standard services, WMS and WCS; processing and portrayal SOAP web services
Workflow is executed at the DataFed server and elsewhere

NEISGEI: Web Application (“Mashup”)

The screenshot shows the HTAP Comparison Tool web application running in a Mozilla Firefox browser. The browser's address bar displays the URL: <http://niceguy.wustl.edu/NEISGEI/HTAPComp/index.php?file=DefaultSettings.xml>. The application interface is divided into several sections:

- HTAP Comparison Tool**: The main title of the application.
- Grid a**: A large world map showing the distribution of vmr_no2.kg (volume mixing ratio of nitrogen dioxide in kilograms) across the globe. A legend on the left indicates values from 1E-08 to -1E-08 .
- Grid b**: A smaller world map for comparison, currently showing a dark blue color.
- Expression and Scale**: A panel on the right allows users to define the comparison expression (set to $a-b$), scale (Min/Max: -1.0e-8 to 1.0e-8), and grid resolution (set to "use finer"). Buttons for "Calculate", "Export as", and "KML" are provided.
- Session Management**: Buttons for "Import Session", "DefaultSettings", and "Save Session" are located below the expression panel.
- Grid a Controls**: Below the main map, there are "Sync" and "Time and Scale" buttons.
- Dataset and Parameter Settings**: Two panels at the bottom allow users to select datasets (HTAP_MOZARTTGFDL-v2 and HTAP_CAMCHEM-3311m13) and parameters (vmr_no2). They also include date and time selection (Year: 2001, Month: 8, Day: 1, Hour: 6) and buttons for "Update Map", "Export as", and "View in Datafile".

<http://niceguy.wustl.edu/NEISGEI/HTAPComp/>

Suggested Addition to the GEO Workplan: Atmospheric Model Evaluation Network

DA-09-02: Data Integration and Analysis

e) Atmospheric Model Evaluation Network

Demonstrate the use of web services to compare global and regional atmospheric models (including atmospheric chemistry/air quality models) to a variety of Earth observations from distributed archives using standardized approaches to evaluate and improve model performance. This effort will draw upon observations from surface air quality monitoring networks, satellites, aircraft, ground-based remote sensors, and sondes. The demonstration will build upon and contribute to the work of the Task Force on Hemispheric Transport of Air Pollution under the Convention on Long-range Transboundary Air Pollution, the IGAC-SPARC Atmospheric Chemistry and Climate Initiative, AEROCOM, and the Air Quality Model Evaluation International Initiative (AQMEII).

(related to HE-09-02(b) and AR-09-02(e)).

Suggested Addition to the GEO Workplan: Global Monitoring for Atmospheric Mercury

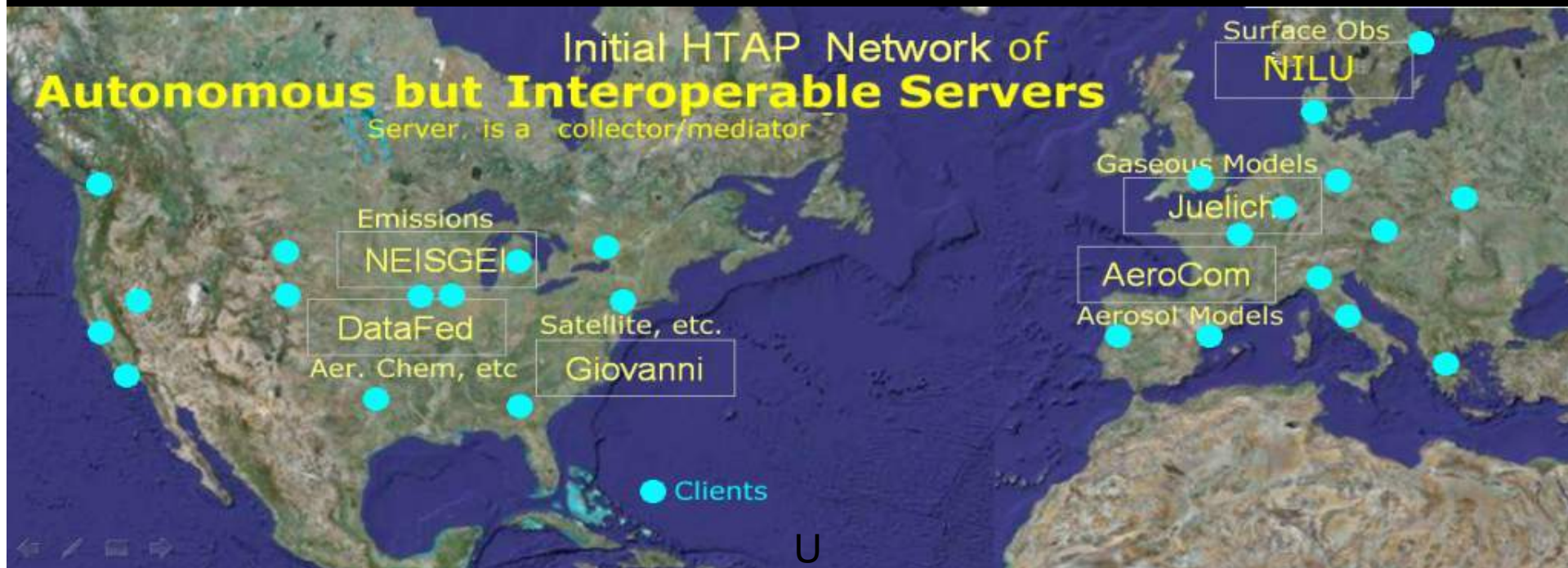
HE-09-02: Monitoring and Prediction Systems for Health

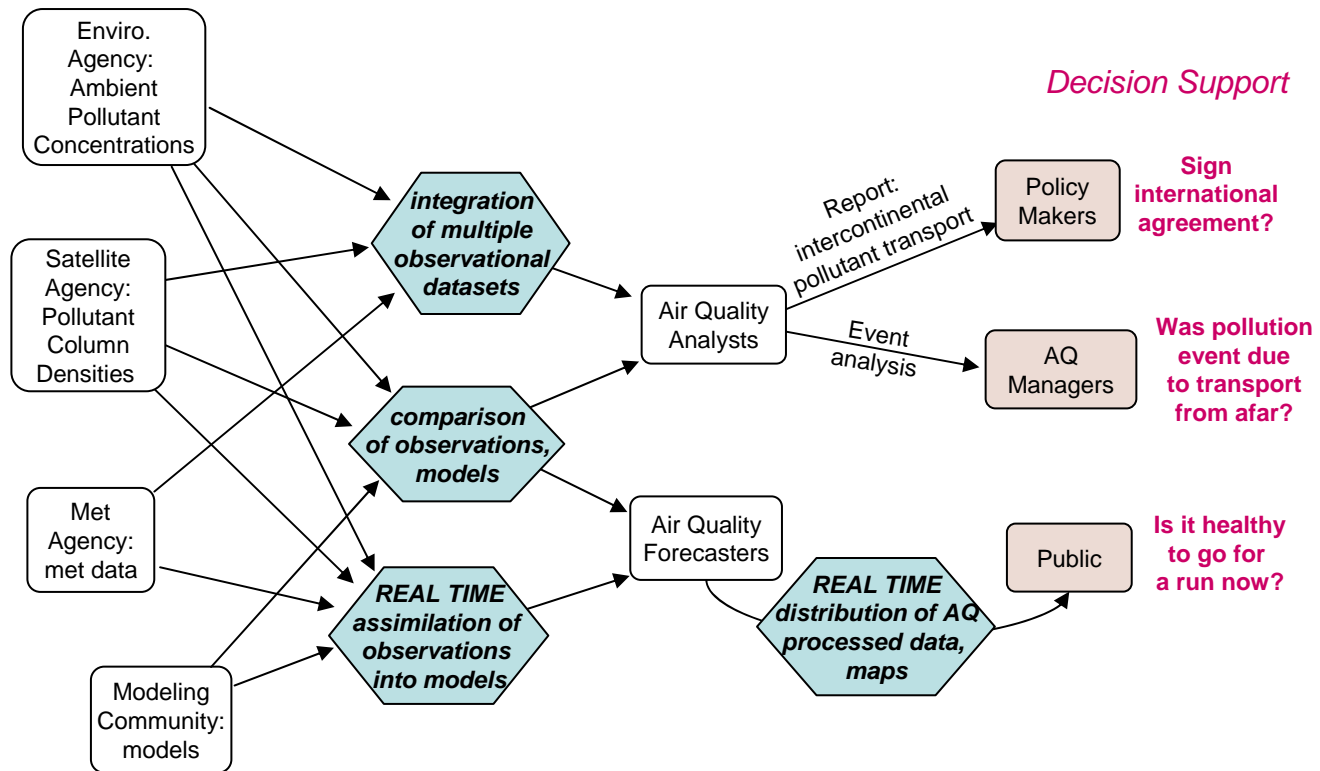
e) Global Monitoring Plan for Atmospheric Mercury

Develop a global monitoring network for mercury by harmonizing standard operating procedures for monitoring mercury and its compounds in air, atmospheric deposition, water, soil, sediments, vegetation and biota. The sharing of data from this network, allowing access to comparable and long-term data from a wide array of locations, will provide key information for the understanding of temporal and spatial patterns of mercury transport and deposition to, and evasion from, terrestrial and aquatic ecosystems. The data produced would support the validation of regional and global atmospheric mercury models for use in source-receptor assessments and evaluations of different policy options for reducing mercury pollution impacts on human health and ecosystems. The activity developed within this sub-task would support the achievement of the goals and objectives of the UNEP Mercury Programme and specifically of the UNEP Global Partnership for Mercury Air Transport and Fate Research (UNEP-MFTP); of the Task Force on Hemispheric Transport of Air Pollutants (TF HTAP) under the UNECE-LRTAP Convention including the European Monitoring and Evaluation Program (EMEP); and activities of other international programmes (e.g., IGBP-IGAC, -SOLAS). The work plan of the proposed sub-task will build upon the United States' MercNet initiative and international monitoring and modelling efforts led by Italy, Japan and South Africa.

Extra Slides

Many Clients





Emissions
Budgets
*budget
intercomparisons*

Observations
*observation
intercomparisons*

Atmospheric
Models
*model
intercomparisons*

