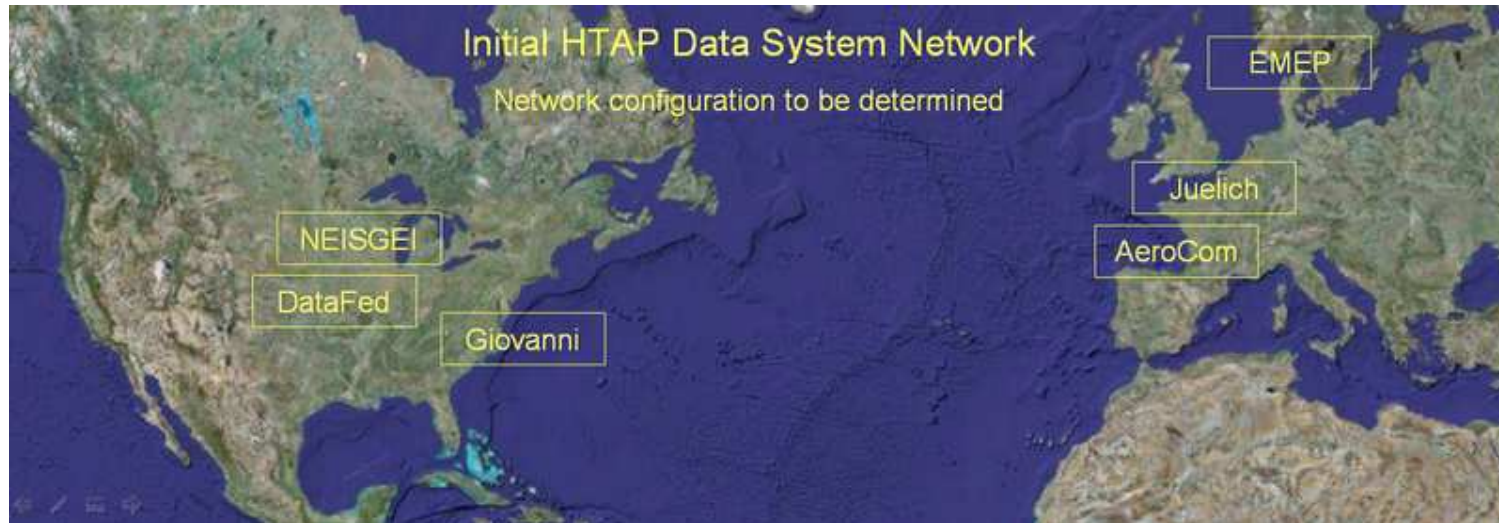


# HTAP Data Network Progress Report, June 2009



**Rudolf B. Husar**, Washington U., USA

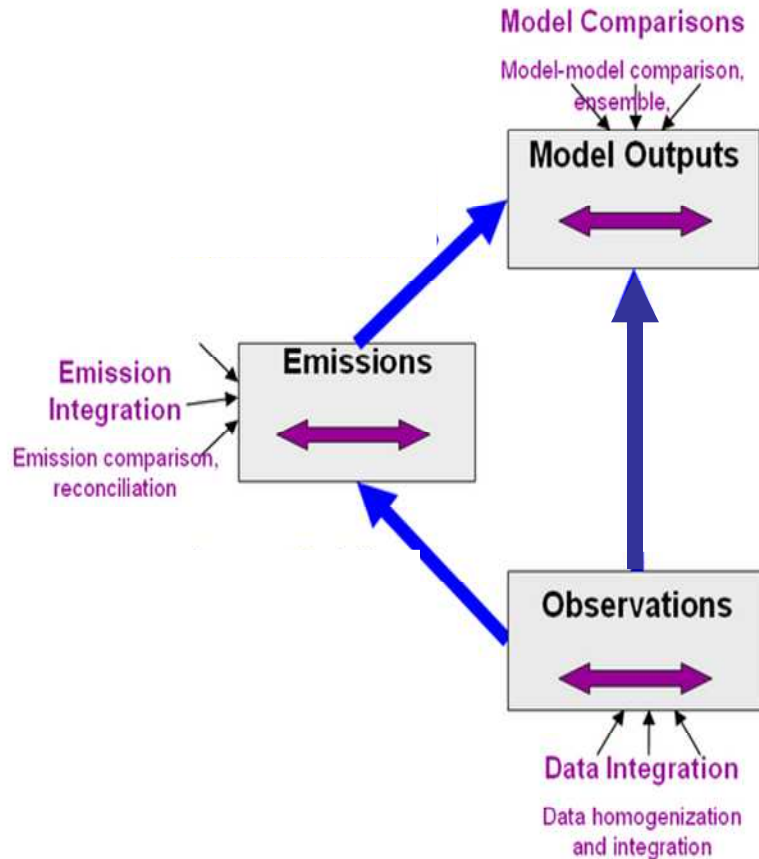
**Martin Schultz**, FZ Jeulich, Germany

**Greg Leptoukh**, NASA GSFC, US

**ESIP Summer Meeting**

July 8, 2009, Santa Barbara, CA

# HTAP Problem: Model-Observation-Emission Closure



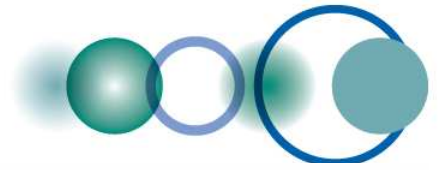
## Uniform access to ES data...

- **Models**
- **Satellite, surface obs.**
- **Emissions**

## Challenges

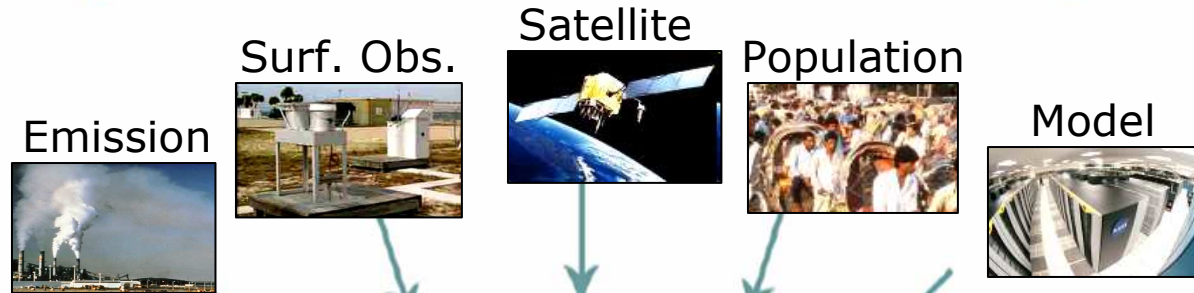
- Interface to user data and apps.
- Interface to GEOSS Infrastructure
- Persistency of HTAP data network

# GEOS Information Infrastructure

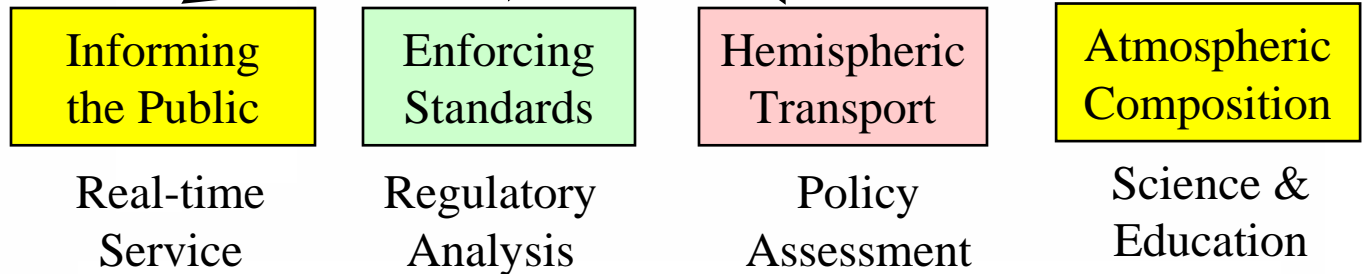


OBSERVING SYSTEMS

Any dataset is applicable to multiple uses



Any applications requires multiple datasets





# Standard Data Access Interface

Loosely coupled components

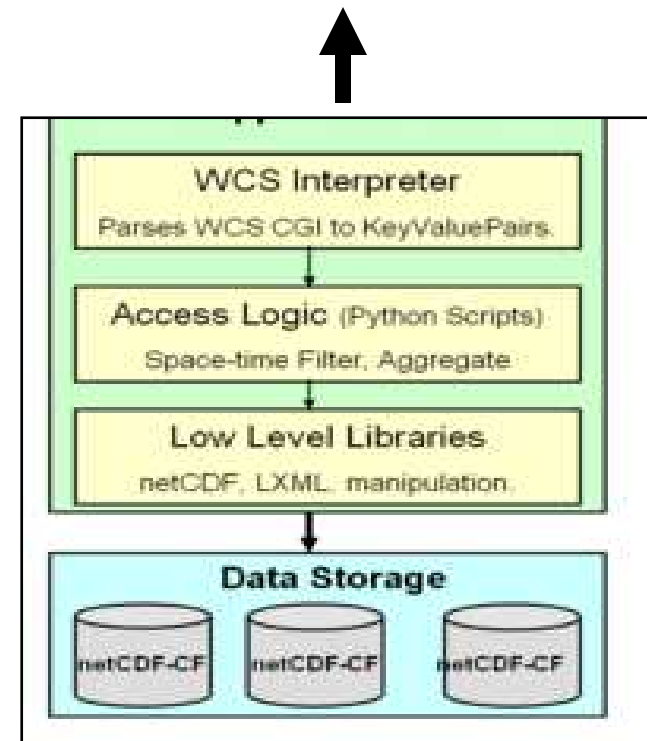


Space-Time Query Language

Query	GetData	Standards	Coding:
Where?	EBOX 	OGC, ISO	Geo-reference
When?	Time 	OGC, ISO	Time-code
What?	Temperature	CF	Std names
Format	netCDF, HDF	OGC, CF, EOS	Data format

WCS Data Wrapper

Standard WCS



# Enhancing data connectivity of modelling results obtained in the TFHTAP multi-model assessment study

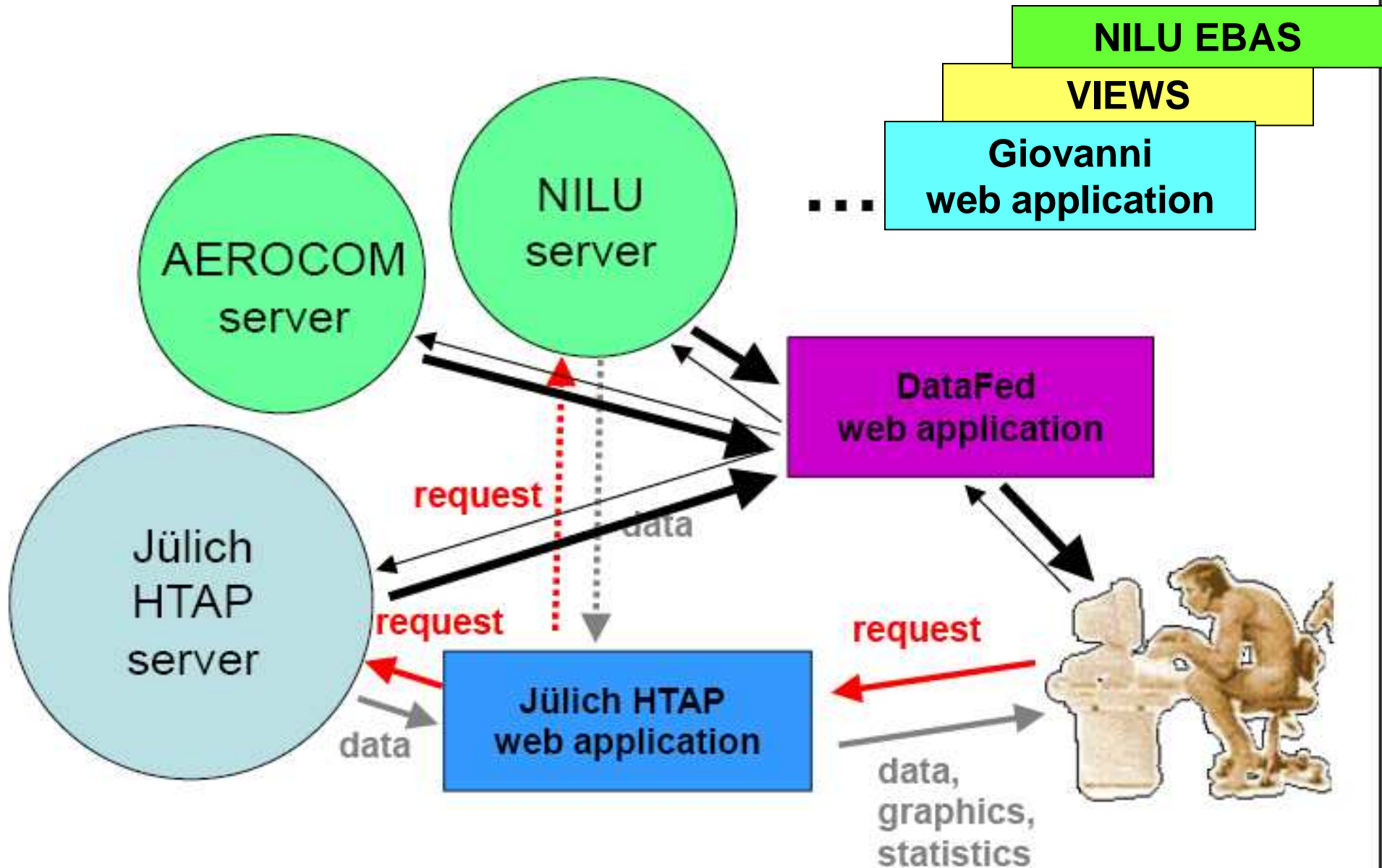
Martin Schultz, Michael Decker, Sebastian Lührs, Sabine Schröder  
Forschungszentrum Jülich, Germany

## Objectives of „HTAP server project“

June – Sep 2009

- Install WUSTL prototype software to establish connectivity
  - Screen and reformat existing data sets so that they can be made available
  - Compile data catalogues
  - Develop a demonstration web application
  - Analyse performance of data service with respect to hardware and software efficiency
-

# Concept



# Giovanni for HTAP

Gregory Leptoukh  
NASA Goddard Space Flight Center

Giovanni is a Web-based application to visualize, analyze, Earth science data

**HTAP-Giovanni** is a portal for visualization and analysis of HTAP multi-model experiments.



http://gdata1-ts1.sci.gsfc.nasa.gov/daac-bin/G3/constraints.pl

# Giovanni - The Bridge Between Science and Data

## Edit Constraints

**General Constraints**

Please select an experiment, a model, a diagnostic, and any number of variables associated with the selected diagnostic. Note that if a variable has more than two dimensions (e.g., a pressure or a sigma value), you will be required to make a vertical profile selection. Finally, select the type of visualization output. For valid inter-comparison (e.g., Lat-Lon Map of Time-Averaged Differences), select the same variable from either the same model and two different experiments, OR two different models and the same experiment.

<b>Experiment:</b> SR1 SR6EA SR6EU SR6NA SR6SA TP1 SR2 SR3EA SR3EU SR3NA <input type="button" value="Describe"/>	<b>Model:</b> CAMCHEM.3311m13 CAMCHEM.3514 CHASER.v03 EMEP.rv26 FRSGCUCI.v01 GEMAQ.EC GEOSChem.v07 GEOSChem.v45 GISS-PUCCINI.modelA GISS-PUCCINI.modelE <input type="button" value="Describe"/>	<b>Diagnostic:</b> aerosolaod aerosolm budgetm depdm emim metm sfc tracerm <input type="button" value="Describe"/>	<b>Variables:</b> area of grid box CO DMS HNO3 NO NO2 O3 OH PAN SO2 <input type="button" value="Select All"/>	<b>Output:</b> Animation Zonal Mean Lat-Lon map, Time-averaged Lat-Lon map of time-averaged differences Scatter plot Scatter plot, Time-averaged Time series Time series, Area-averaged differences Vertical Profile <input type="button" value="Describe"/> <input type="button" value="Edit Preferences"/>
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<b>2nd Experiment:</b> SR6EU SR6NA SR6SA TP1 SR2 <input type="button" value="Describe"/>	<b>2nd Model:</b> CAMCHEM.3311m13 EMEP.rv26 FRSGCUCI.v01 GEOSChem.v07 GEOSChem.v45 <input type="button" value="Describe"/>	<b>2nd Diagnostic:</b> aerosolaod aerosolm budgetm depdm emim <input type="button" value="Describe"/>	<b>2nd Set of Variables:</b> DMS HNO3 NO NO2 O3 <input type="button" value="Select All"/>
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**Bounding Box**  
West: [100.0] North: [00.0] East: [100.0] South: [00.0]

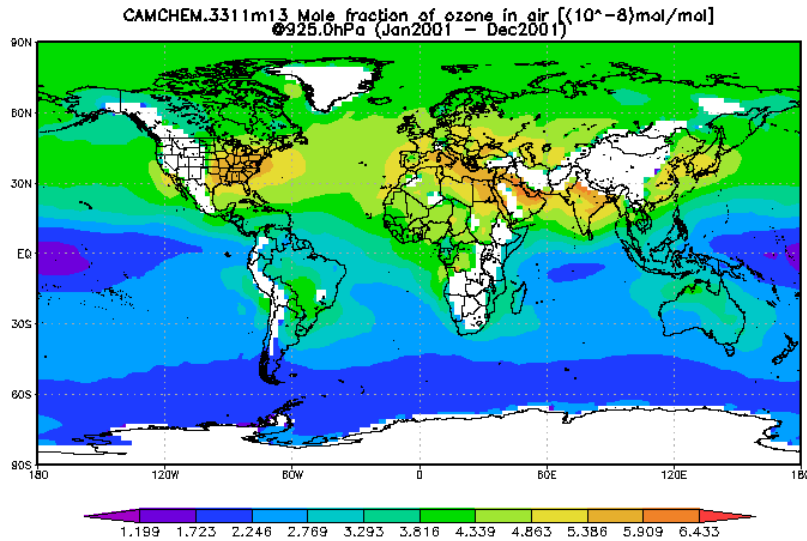
**Date Range**  
**Begin Date** Year: [2001] Month: [Jan] (Date Begin: Jan 2001)  
**End Date** Year: [2001] Month: [Dec] (Date End: Dec 2001)

Done

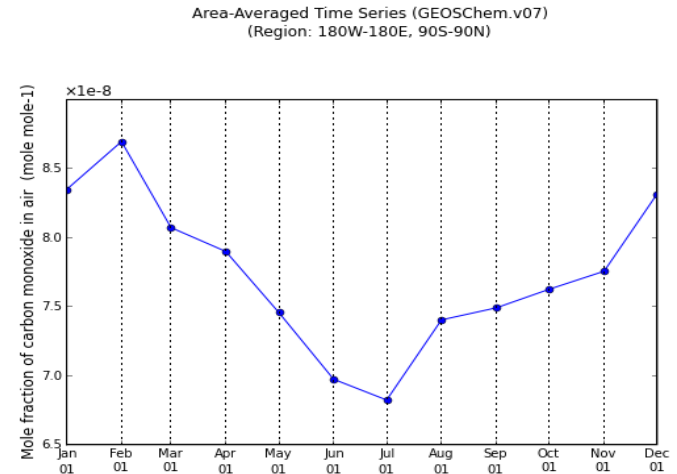
HTAP-Giovanni User Interface allows selection of second variable for inter-comparison

# Examples of HTAP-Giovanni Analysis and Display

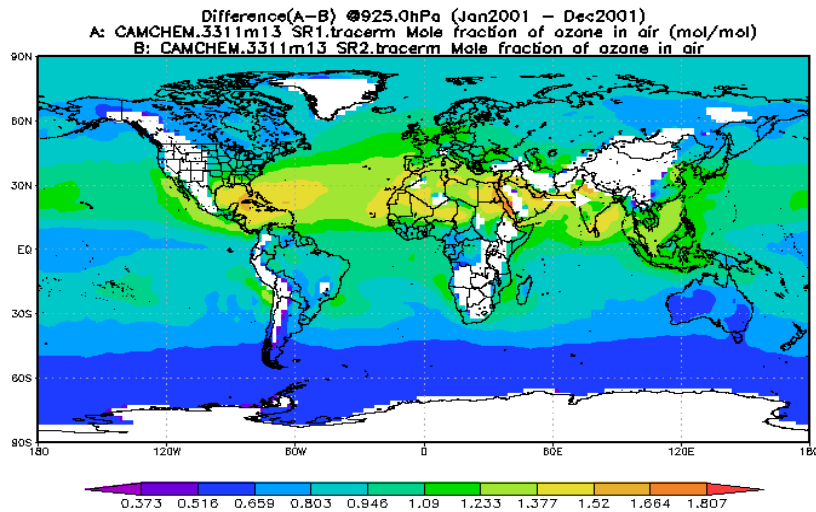
## Time-averaged ozone for SR1



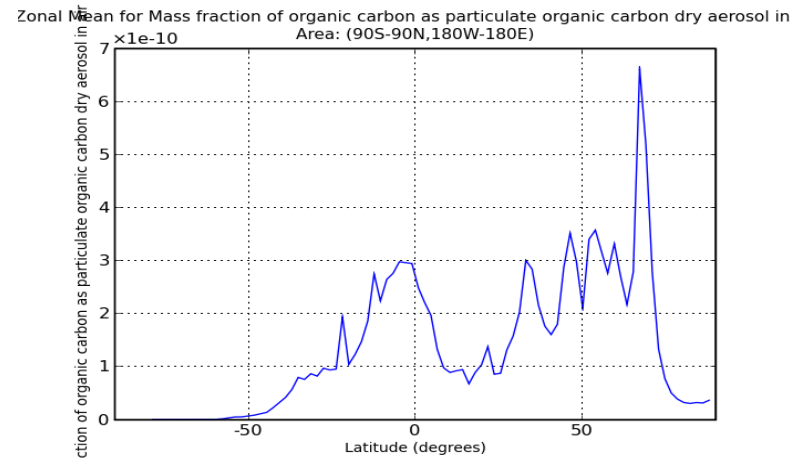
## Time Series



## Time-avg. difference between SR1 and SR2



## Zonal Mean



# Charge Questions for the Presenters

## **What user needs are you focused on now?**

Make AQ data ubiquitous through seamless access, tools  
Specifically to support HTAP, Exceptional Event Rule

## **What web services are you offering?**

Standard WCS access to model, obs., emission. Data (100+)  
Portable data wrapper templates, tools for WCS, WMS

## **What services you wish were available? Why?**

More data accessible through standard WCS, WMS  
Services are useless without data to operate on

## **What infrastructure is most needed?**

Master data catalog, metadata and tools for both  
Catalog-catalog connectivity tools methods

## **What are barriers to common infrastructure**

Many options, no dominant design, ever-changing environment  
Few incentives to overcome the 'energy barrier'