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# HTAP2 Data Analysis Logistics

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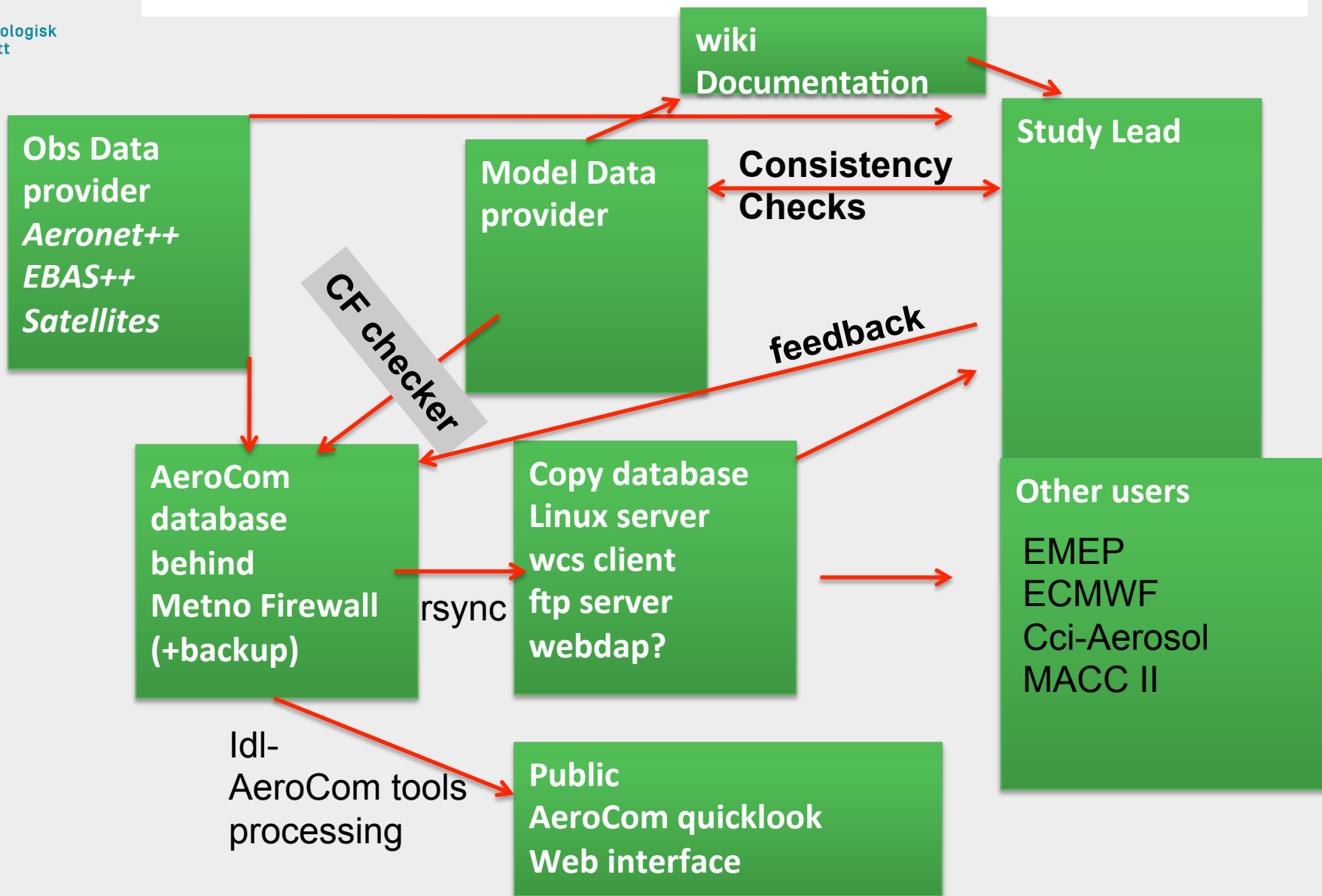


# Why should model authors put effort into harmonized model outputs?

- ☐ Data originator knows model data best
- ☐ Better communication of results
- ☐ Facilitating cross-model cross-data analysis
- ☐ Documentation & science traceability



# Data flow AeroCom/HTAP





# Overview

- ☐ How shall I format model data and check format?
- ☐ How can I upload model data?
- ☐ How can I check uploaded data?
- ☐ How to access the data for analysis?
- ☐ How to correct uploaded data?
- ☐ Am I allowed to carefully document uploaded data?

**SEE summary on HTAP wiki =>**  
**[http://iek8wikis.iek.fz-juelich.de/HTAPWiki/](http://iek8wikis.iek.fz-juelich.de/HTAPWiki/HTAP-2-data-submission)**  
**HTAP-2-data-submission**



# How shall I format model data and check format?

- ☐ Understand basics of netCDF and CF convention
  - <http://www.unidata.ucar.edu/software/netcdf/>
  - <http://cf-pcmdi.llnl.gov>
- ☐ Check output requirements (see B.Koffi talk)
- ☐ Use either
  - ☐ CMOR fortran routines & library (Climate Model Output Rewriter) using CMOR HTAP tables (*ready very soon..*)
    - <http://www2-pcmdi.llnl.gov/cmor/>
  - ☐ nco & cdo scripting to transform model output ( we will put example commands on wiki)
    - <http://nco.sourceforge.net>
    - <https://code.zmaw.de/projects/cdo>
- ☐ Rename files according to HTAP file name convention  
**ONE FILE PER VARIABLE AND YEAR**



# Where to find more on CF convention

## <http://cf-pcmdi.llnl.gov>

[home](#) | [documents](#) | [conformance](#) | [discussion](#) | [governance](#) | [working groups](#) [log in](#)

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## Documents

### CF Conventions

- **CF 1.6**
  - [HTML, multi-page](#)
  - [HTML, single-page](#)
  - [PDF](#)
- **CF 1.5**
  - [HTML, multi-page](#)
  - [HTML, single-page](#)
  - [PDF](#)
- **CF 1.4**
  - [HTML, multi-page](#)
  - [HTML, single-page](#)
  - [PDF](#)
- **CF 1.3**

### CF Standard Names

- **Standard Name Table (v22, 12 February 2013)**
  - [HTML, single-page](#)
  - [XML](#)
- **Previous versions**
  - [HTML v1, v2, v3, v4, v5, v6, v7, v8, v9, v10, v11, v12, v13, v14, v15, v16, v17, v18, v19, v20, v21](#)
  - [XML v1, v2, v3, v4, v5, v6, v7, v8, v9, v10, v11, v12, v13, v14, v15, v16, v17, v18, v19, v20, v21](#)
- **Area Type Table (v1, 5 December 2008)**
  - [HTML, single-page](#)
  - [XML](#)

### Other

- **CF Governance and Committees**
  - [CF governance document \(2006\)](#) [[PDF](#), [HTML](#)]
  - [Rules for changing CF Conventions](#)
  - [Rules for correcting the CF documents](#)
  - [Early draft of governance white paper \(2005\)](#)
  - [Comments on draft](#)
- **CF Overview and Impact**
  - [Poster and abstract](#) – Hankin et al. (2008)
  - [Viewgraphs](#) – Balaji et al. (2008)
  - [Summary text](#) – Gregory (2005)



# HTAP file name convention

- ❑ "htap2\_<ModelName>\_<ExperimentName>\_<VariableName>\_<VerticalCoordinateType>\_<Period>\_<Frequency>.nc"
- ❑ <ModelName> => can be chosen such that Model Name, Model version and possibly the institution can be identified. No underscores (\_) are allowed in <ModelName>, use (-) instead. Restrict <ModelName> to max 20 characters.
- ❑ <ExperimentName> => see HTAP2 Experiment Specifications on wiki page
- ❑ <VariableName> => see htap output variable names in excel sheet on wiki page
- ❑ <VerticalCoordinateType> => "Surface", "Column", "ModelLevel", "SurfaceAtStations", "ModelLevelAtStations"
- ❑ <Period> => "2008", "2010"
- ❑ <Frequency> => "timeinvariant", "hourly", "daily", "monthly", "sat1000", "sat1330", "sat2200", "sat0130"




# How shall I check the format?

- ❑ ***Upload (test-)file (<2GB) to CF checker***  
***<http://aerocom-test.met.no/upload>***
- ❑ ***See errors and warnings***  
***If you do not know how to correct, contact “htap”***  
***...we will try to build up a knowledge base for***  
***corrections***
- ❑ ***If the file is too big or upload too slow***  
***cut out first time steps with***  
***`ncks -d time,0,10 in.nc out.nc`***






# CF Checker upload interface



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



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File upload facility for TFHTAP model data

Help

File and CF-Version

Select File(s) to Upload

Select CF-version to validate 

cf-1.1


Test Results

File Name


File size

Upload Status

UM-CAM-v01\_SR6NA\_tracerm\_2001\_0003.nc



741 kByte

 failure

CF-Convention Test

✗ global Conventions attribute should be set to "CF-1.1", not "CF-1.0" (2.6.1)

✗ lev: missing formula variable in file: p0 (4.3.2)


✗ lon: a coordinate variable must have values that are strictly monotonic (5)

✗ lat: bounds variable "lat\_bnds" not found in file (7.1)


✗ lon: bounds variable "lon\_bnds" not found in file (7.1)

✗ lev: bounds variable "lev\_bnds" not found in file (7.1)

✗ time: bounds variable "time\_bnds" not found in file (7.1)

 running CFchecker version 1.5.11 (INIT)


...

click here  to list all errors!

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05/12/2013

HTAP meeting San Francisco

This tool is developed and maintained by  JÜLICH

ogisk institutt



# How can I upload model data?

- ❑ Obtain account on MetNo aerocom/htap server(s) by sending email to **jan.griesfeller@met.no** and **michael.schulz@met.no**
- ❑ Send public ssh key by email to Jan/Michael to allow MetNo giving you access
- ❑ Upload files to **aerocom-users.met.no:/media/scratch/incoming/<your dir>**  
OR  
**ftp.aerocom.met.no:/incoming/<your dir>**
- ❑ When ready notify **jan.griesfeller@met.no** and **michael.schulz@met.no** that you have uploaded data



# How can I check uploaded data?

After data are uploaded,  
they are copied to the internal aerocom/htap database,  
synchronised over night to the external htap database

THUS after “some days”

- ☐ Look into the database

aerocom-users.met.no:/metno/aerocom/users/aerocom1/  
HTAP2/<modeldir>

- ☐ Look for the quick-looks via aerocom web interface:

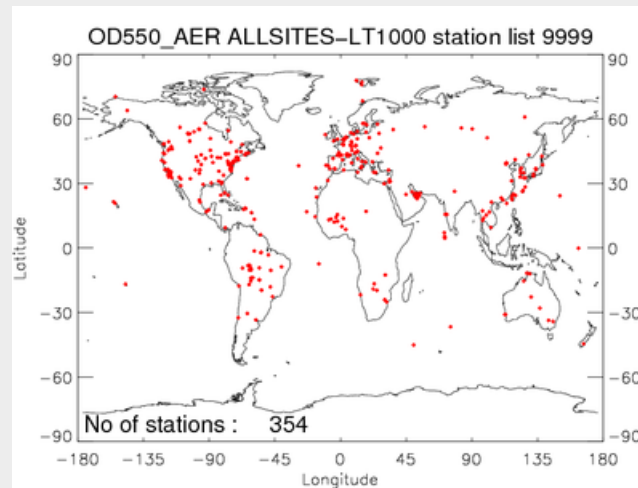
[http://aerocom.met.no/cgi-bin/aerocom/  
surfobs\\_annualrs.pl?Modellist=“HTAP2”](http://aerocom.met.no/cgi-bin/aerocom/surfobs_annualrs.pl?Modellist=“HTAP2”)

# Quick-looks via AeroCom web interface

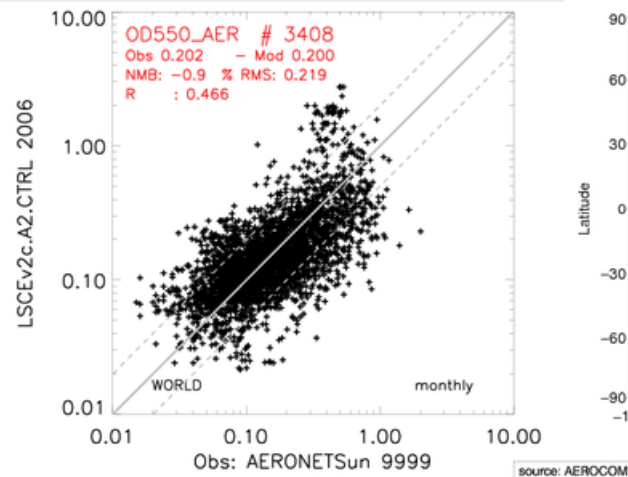
<http://aerocom.met.no/cgi-bin/aerocom/>

[surfobs\\_annualrs.pl?Modellist="to be announced"](http://aerocom.met.no/cgi-bin/aerocom/surfobs_annualrs.pl?Modellist='to be announced')

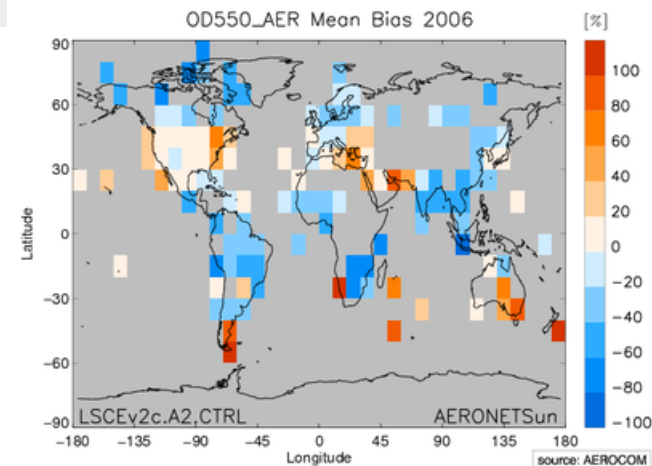
Where compared ?



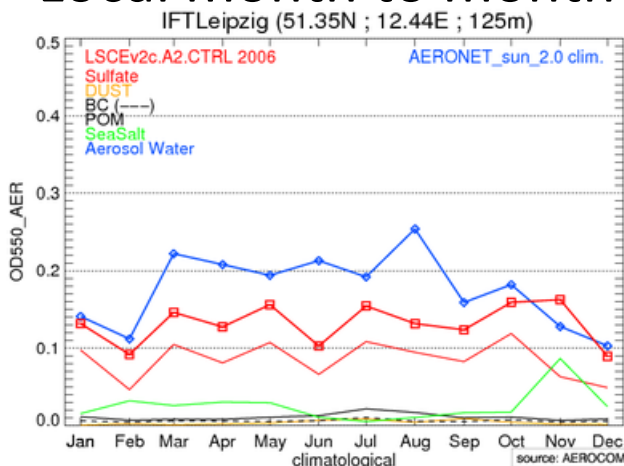
Correlated ?



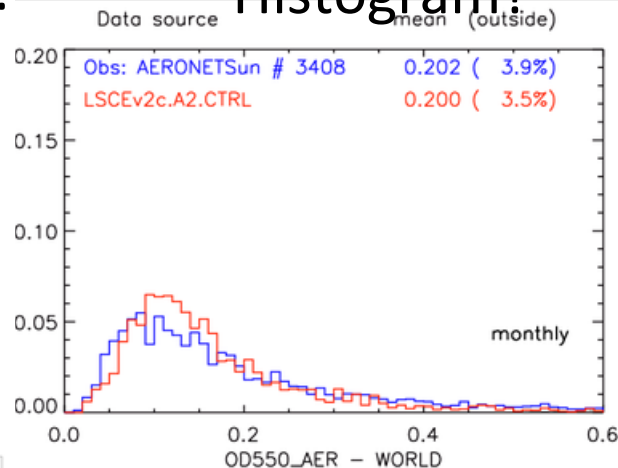
Regional Normalized Bias ?



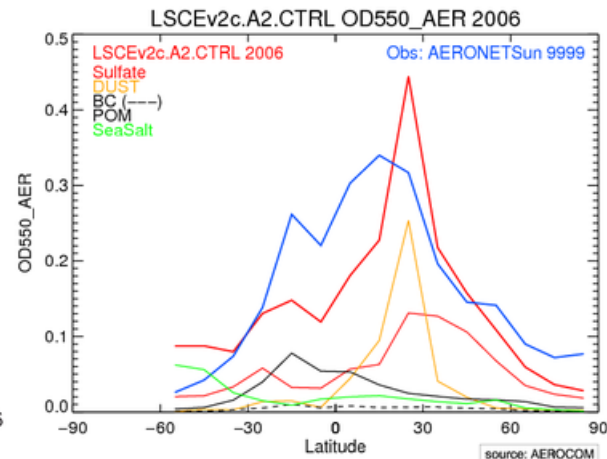
Local month to month?



Histogram?



Zonal Absolute Bias ?





# How to access the data for analysis?

- ❑ Via linux `aerocom-users.met.no`
  - ❑ User account required (same as for upload)  
**linux ubuntu precise w. emacs, scp,  
cdo, nco, ncview, etc**
- ❑ Via wcs client <http://join.iek.fz-juelich.de/htap/home>
- ❑ Copy with ftp, scp, wget, to your own disk
- ❑ Possibly also webdab & ESGF ( under investigation)



# How to correct uploaded data?

## Technical summary for polishing scientists

### M.Schulz & F.Dententer

- ☐ In case of updates of files, the model version identifier should also contain information on the resubmission of model results.  
**Additional files** which do not change an earlier submission **may contain the same version number** as an older submission. Corrections and **a model rerun should be accompanied by a new model version identifier**. Old still valid files may be merged upon request with new data. Old versions of model submissions will be temporally moved to a separate directory by Met.No, and where possible, deleted after some time. An exception will be made for versions that have been used in publications. **Modellers are responsible for communication of major updates to their models (e-mail and log-files, see below)**. Model analysers are responsible for frequently verifying changes in model submissions (e.g. before submitting a paper).
- ☐ Make sure Corrections end up in the database !!



# Am I allowed to carefully document uploaded data?

☐ YES

☐ Please do on wiki yourself, “log style”:

<http://iek8wikis.iek.fz-juelich.de/HTAPWiki/htap2-file-submission>

☐ Please put:

Model version explanation, Date of submission, Contact person, Link to more detailed documentation, comment on specific version used,

☐ Add in particular a remark if corrections were made

☐ **SUBMIT MODEL DESCRIPTION DOCUMENT to Terry**



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# That's all for HTAP...thanks