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# HTAP2 Data Analysis Logistics

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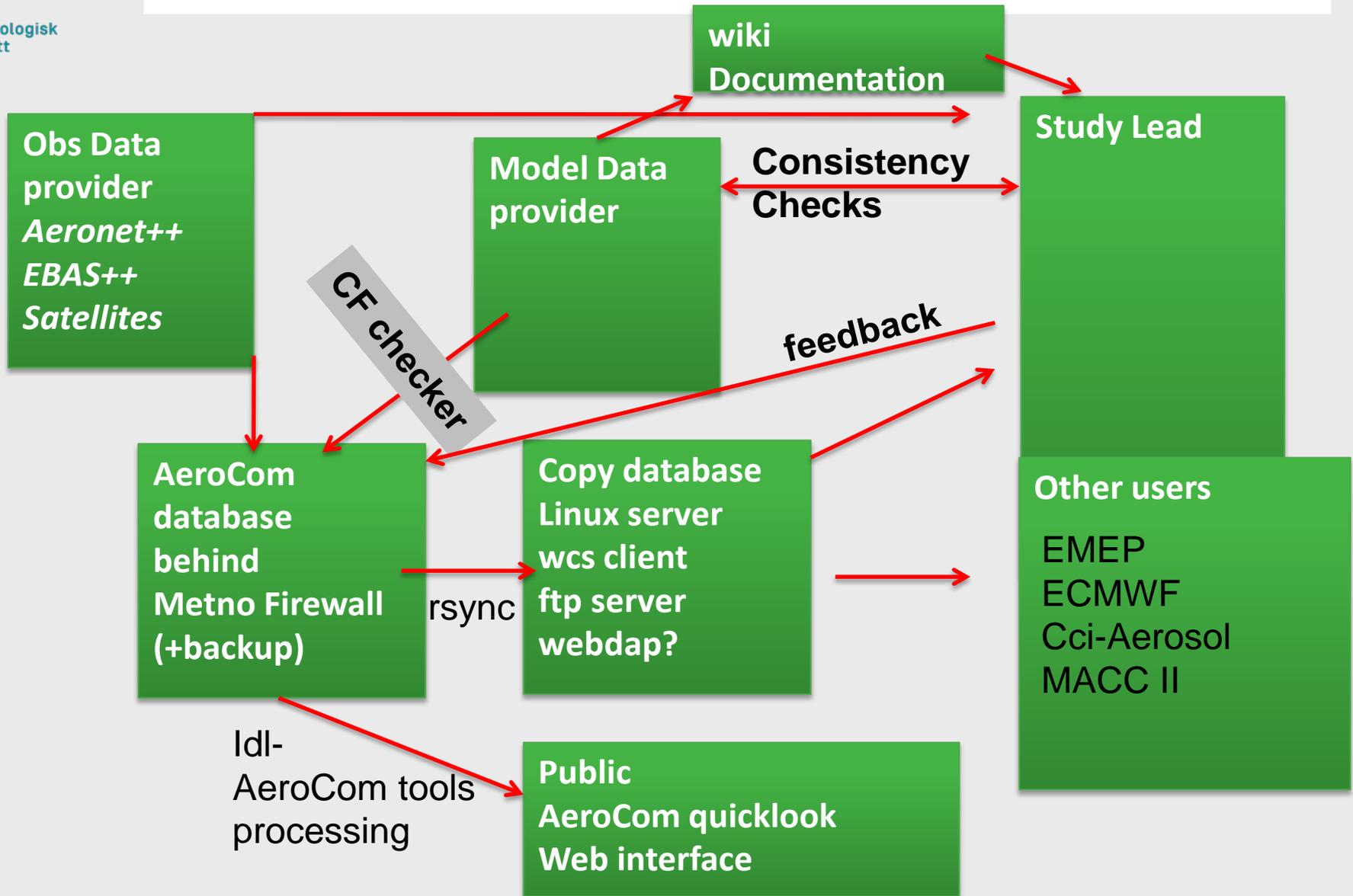
# Why should model authors put effort into harmonized model outputs?

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

# Data flow AeroCom/HTAP



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# 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/  
HTAP-2-data-submission](http://iek8wikis.iek.fz-juelich.de/HTAPWiki/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.inl.gov>



The screenshot shows the website's navigation structure. At the top, there are tabs for 'home', 'documents', 'conformance', 'discussion', 'governance', and 'working groups'. Below these is a 'log in' link. A breadcrumb trail indicates 'you are here: home → documents'. On the left, a 'navigation' sidebar lists 'Home', 'Documents', 'CF Standard Names', 'Conformance', 'Discussion', 'Governance', and 'Working Groups'. The main content area is titled 'Documents' and is divided into three columns: 'CF Conventions', 'CF Standard Names', and 'Other'. Each column contains a list of links to various documents and reports.

home documents conformance discussion governance working groups log in

you are here: home → documents

navigation

- Home
- Documents
- CF Standard Names
- Conformance
- Discussion
- Governance
- Working Groups

### Documents

CF Conventions	CF Standard Names	Other
<ul style="list-style-type: none"><li>CF 1.6<ul style="list-style-type: none"><li><a href="#">HTML, multi-page</a></li><li><a href="#">HTML, single-page</a></li><li><a href="#">PDF</a></li></ul></li><li>CF 1.5<ul style="list-style-type: none"><li><a href="#">HTML, multi-page</a></li><li><a href="#">HTML, single-page</a></li><li><a href="#">PDF</a></li></ul></li><li>CF 1.4<ul style="list-style-type: none"><li><a href="#">HTML, multi-page</a></li><li><a href="#">HTML, single-page</a></li><li><a href="#">PDF</a></li></ul></li><li>CF 1.3</li></ul>	<ul style="list-style-type: none"><li>Standard Name Table (v22, 12 February 2013)<ul style="list-style-type: none"><li><a href="#">HTML, single-page</a></li><li><a href="#">XML</a></li></ul></li><li>Previous versions<ul style="list-style-type: none"><li><a href="#">HTML v1, v2, v3, v4, v5, v6, v7, v8, v9, v10, v11, v12, v13, v14, v15, v16, v17, v18, v19, v20, v21</a></li><li><a href="#">XML v1, v2, v3, v4, v5, v6, v7, v8, v9, v10, v11, v12, v13, v14, v15, v16, v17, v18, v19, v20, v21</a></li></ul></li><li>Area Type Table (v1, 5 December 2008)<ul style="list-style-type: none"><li><a href="#">HTML, single-page</a></li><li><a href="#">XML</a></li></ul></li></ul>	<ul style="list-style-type: none"><li>CF Governance and Committees<ul style="list-style-type: none"><li><a href="#">CF governance document (2006) [PDF, HTML]</a></li><li><a href="#">Rules for changing CF Conventions</a></li><li><a href="#">Rules for correcting the CF documents</a></li><li><a href="#">Early draft of governance white paper (2005)</a></li><li><a href="#">Comments on draft</a></li></ul></li><li>CF Overview and Impact<ul style="list-style-type: none"><li><a href="#">Poster and abstract</a> – Hankin et al. (2008)</li><li><a href="#">Viewgraphs</a> – Balaji et al. (2008)</li><li><a href="#">Summary text</a> – Gregory (2005)</li></ul></li></ul>



# 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



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Task Force on Hemispheric Transport of Air Pollution



File upload facility for TFHTAP model data

Help

**File and CF-Version**

Select File(s) to Upload  Select CF-version to validate

**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)
- ℹ running CFchecker version 1.5.11 (INIT)

click here to list all errors!



# 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>](http://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=)

# Quick-looks via AeroCom web interface

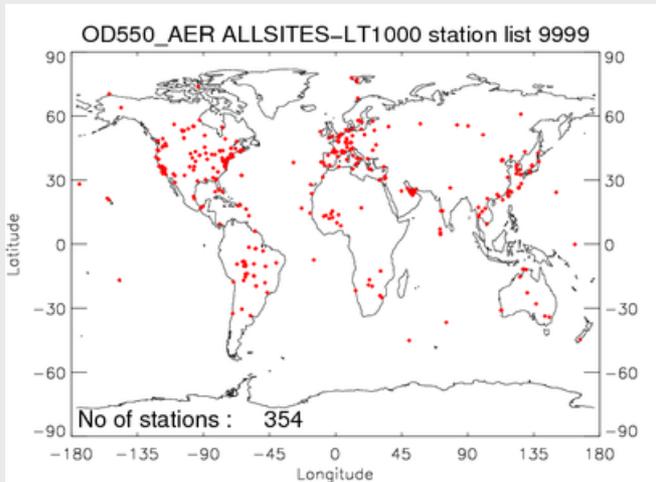
[http://aerocom.met.no/cgi-bin/aerocom/surfobs\\_annualrs.pl?Modellist='to be announced'](http://aerocom.met.no/cgi-bin/aerocom/surfobs_annualrs.pl?Modellist='to be announced')

surfobs\_annualrs.pl?Modellist="to be announced"

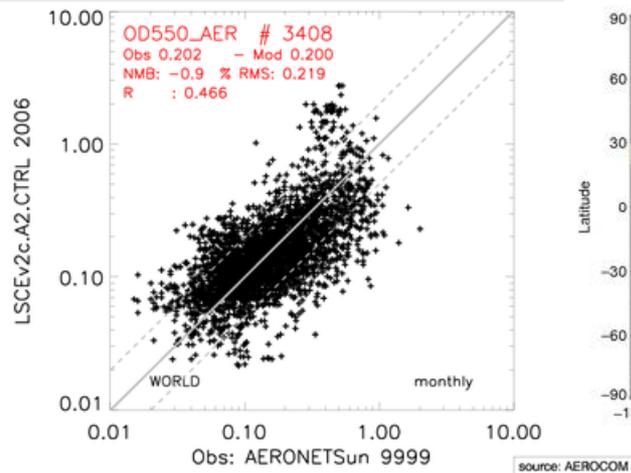


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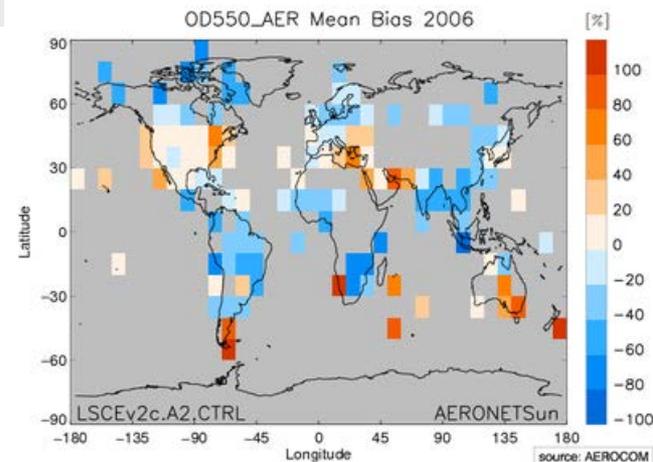
Where compared ?



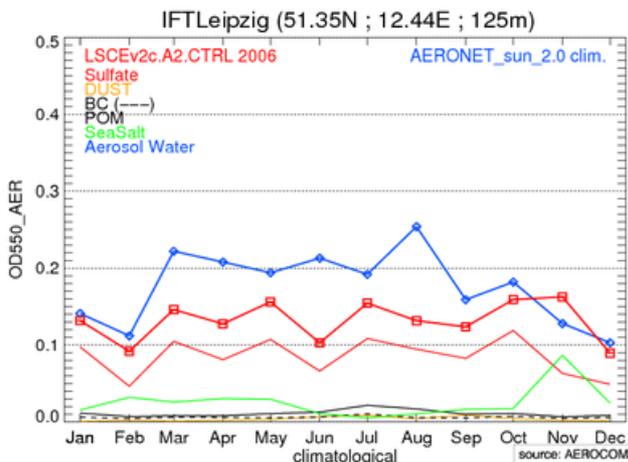
Correlated ?



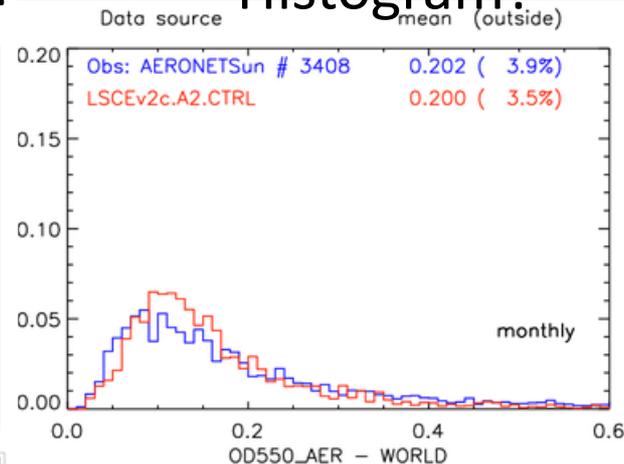
Regional Normalized Bias ?



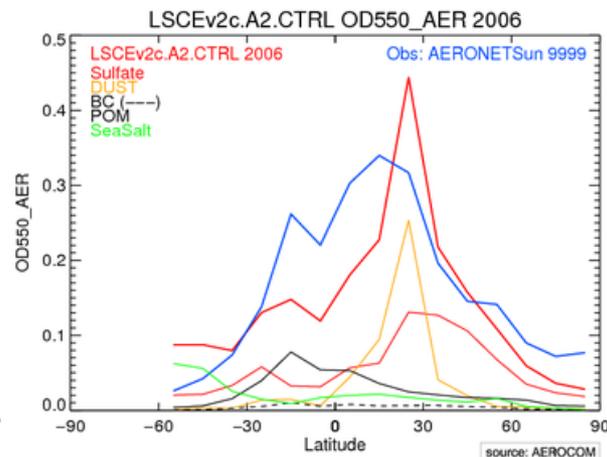
Local month to month?



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, ncvview, 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**

# That's all for HTAP...thanks



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