New FLUXDATA collection

Aim of the presentation: **get feedbacks and suggestions from you in the next days**

The LaThuile 2007 collection

The LaThuile 2007 data collection gave a lot of visibility to FLUXNET and the eddy covariance technique in general. This visibility can be also useful to support the regional networks, critical for the FLUXNET success.

A good number of synthesis papers based on the data collection have been published and a lot are under preparation. This scientific activity gave also the possibility to establish new collaborations and links between scientists and networks.

However we also learned in these years what should be improved respect to the LaThuile 2007 collection in particular in the view of the new collection under preparation:

- Additional methods should be used in the data processing
- PI's version should be added if different from the others provided
- Different data sharing positions between PIs exist, so different policies could be proposed in particular given the interest from external communities.
- Ancillary data are important. Very important.
- Gaps in some region should be filled
- Uncertainties need to be estimated and added.

Fluxdata.org – Dataset Development

Individual Sites

Flux/Met Data

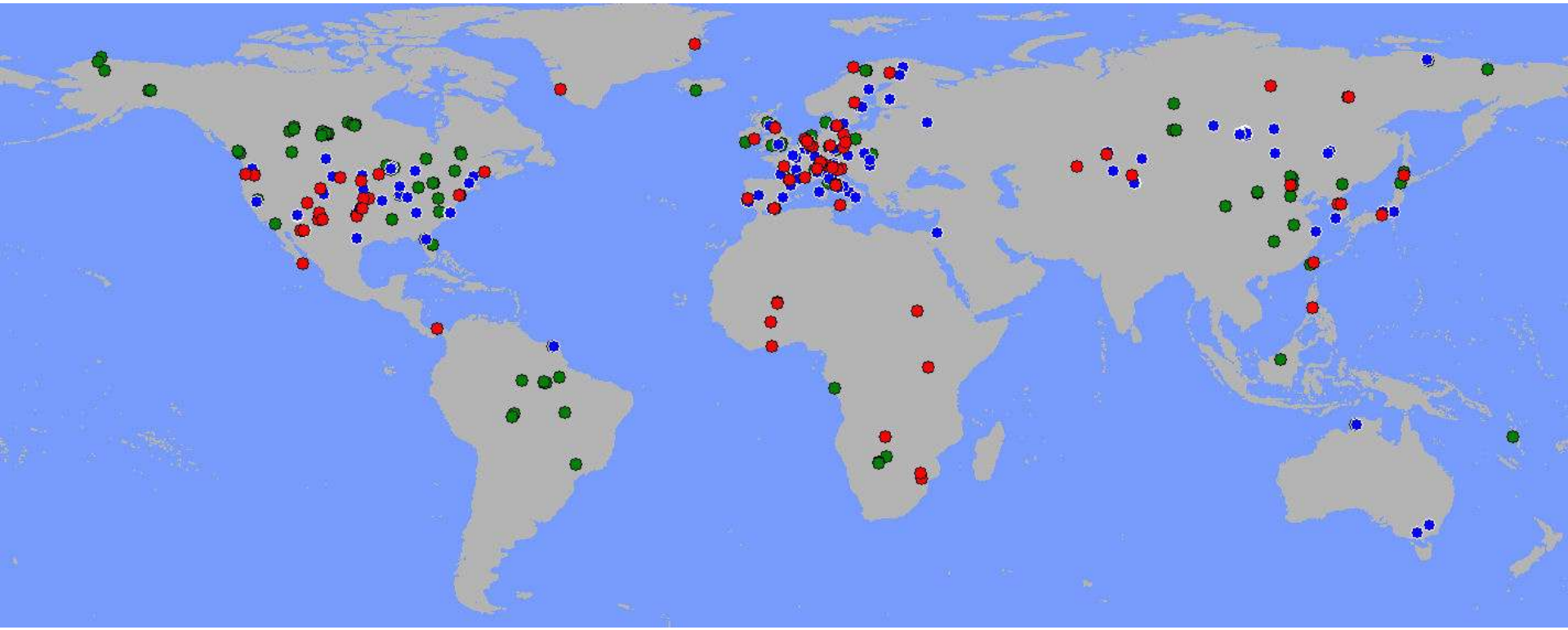
BADM Data

Flux/Met Data

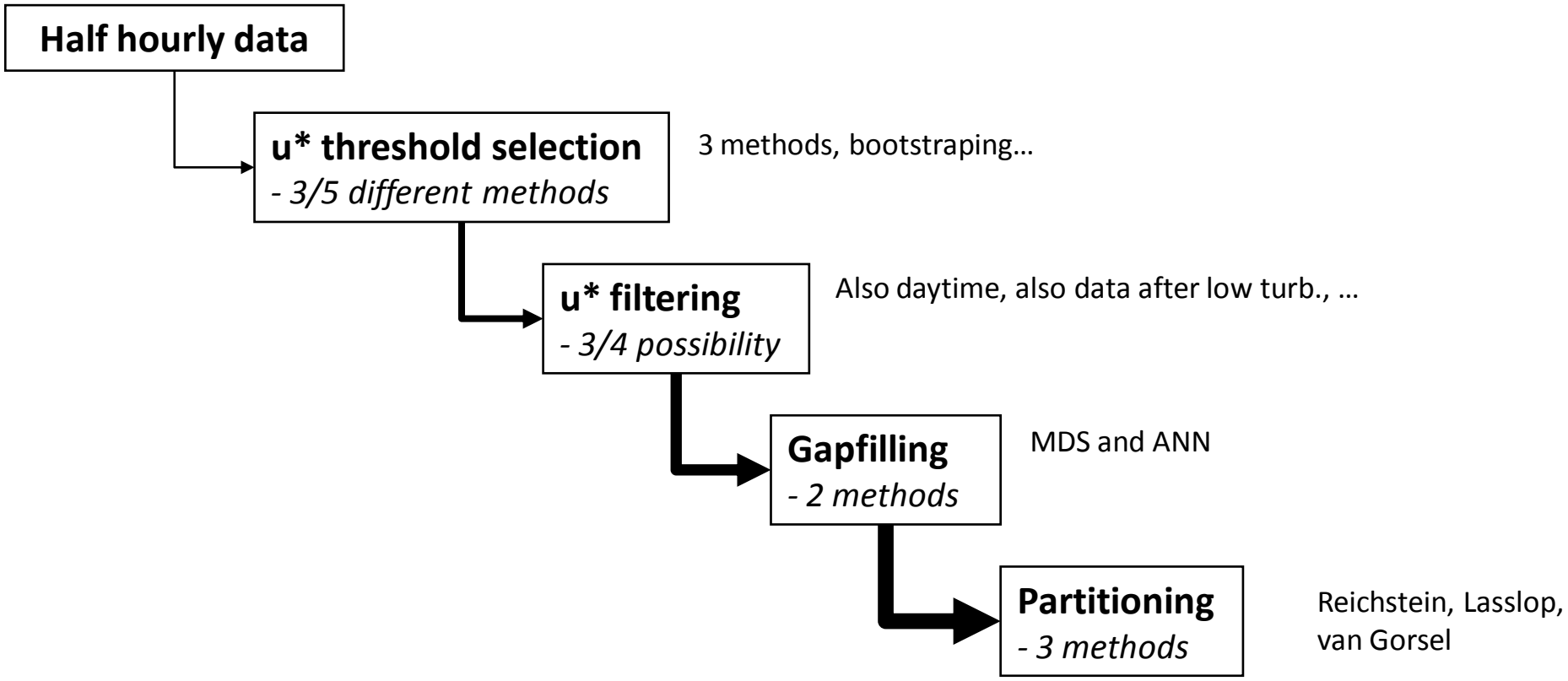
BADM Data + Flux/Met Gap-Filled/QA/Products

New sites in the next collection

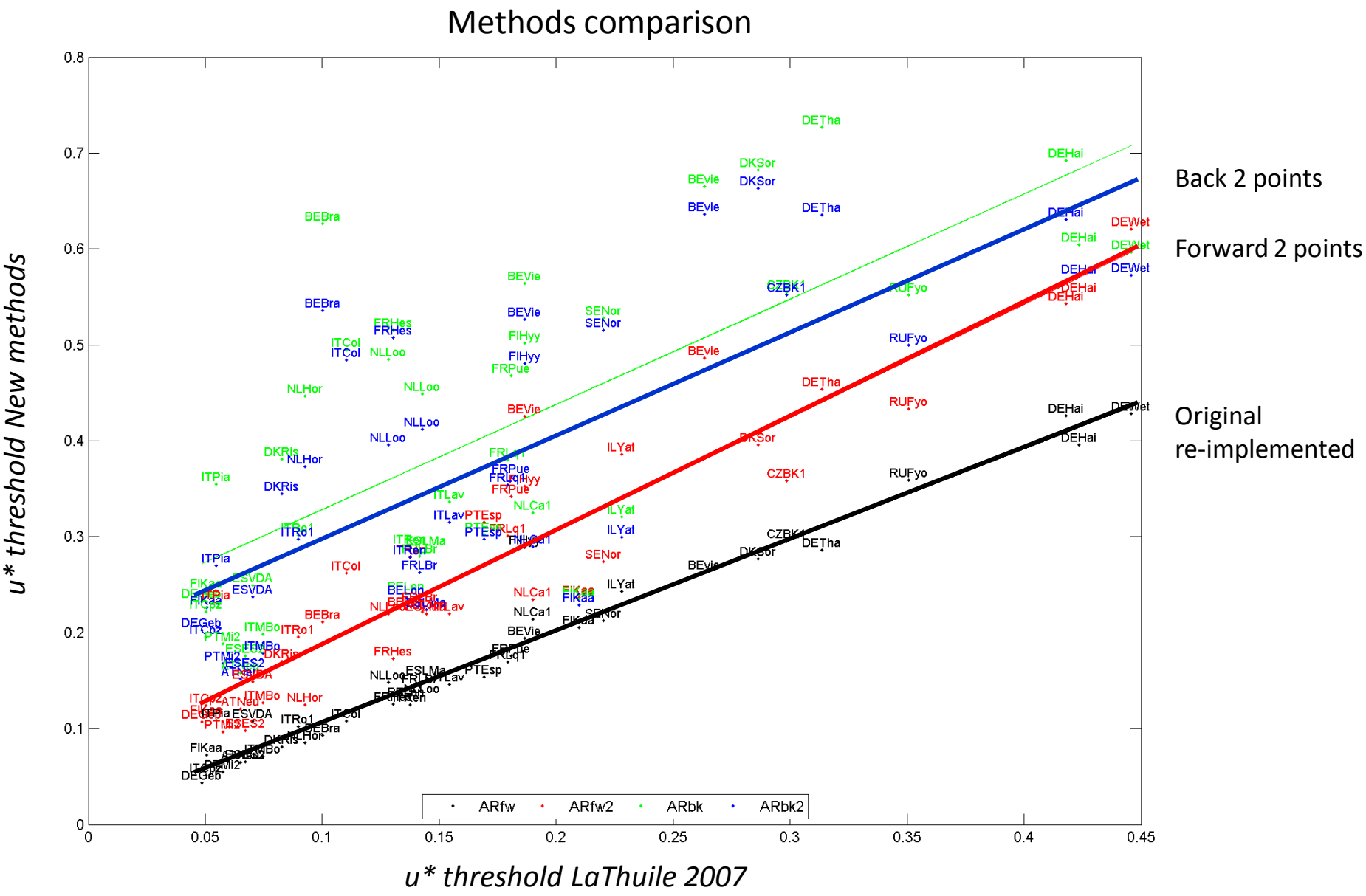
LaThuile 2007 New data submitted New sites (90)



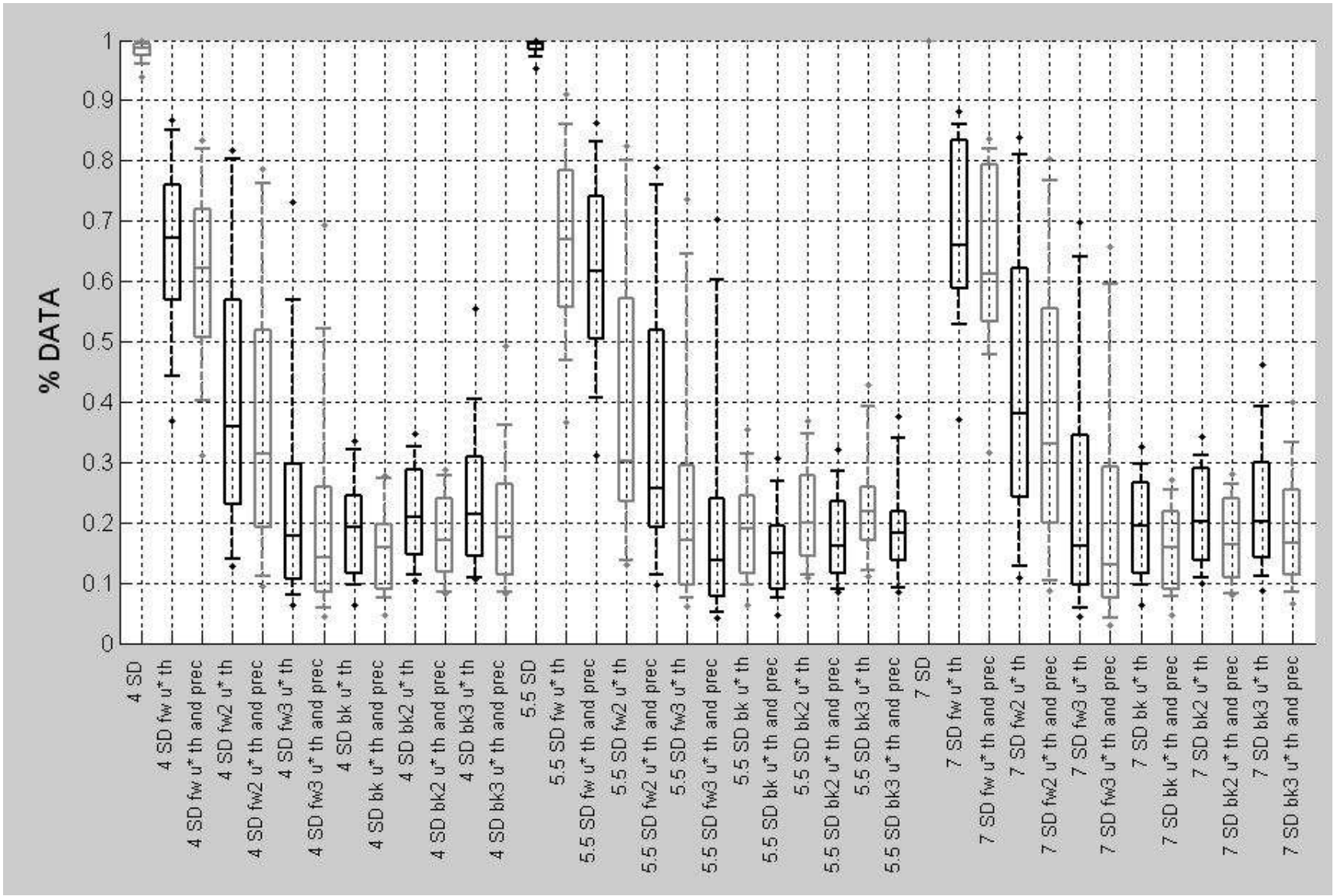
Data processing and uncertainty estimation



Ustar threshold selection, different methods



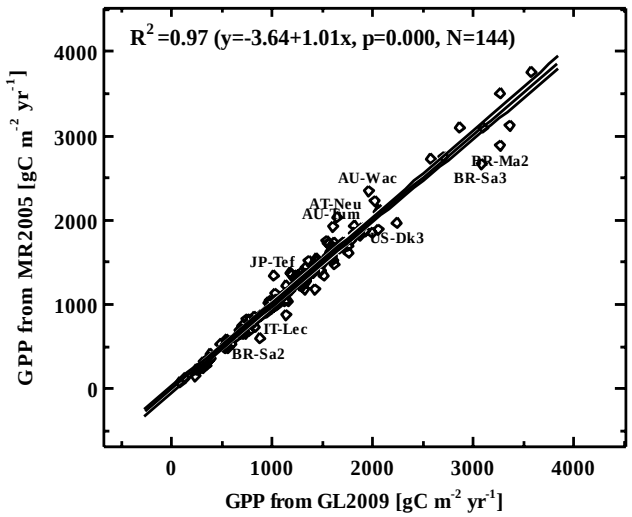
Data left after filtering

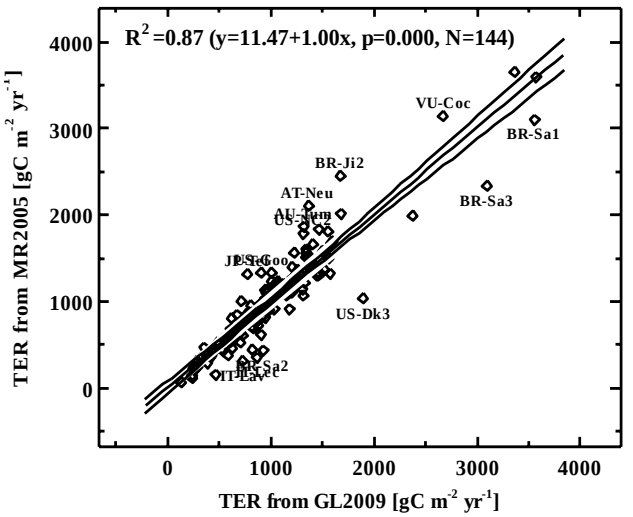


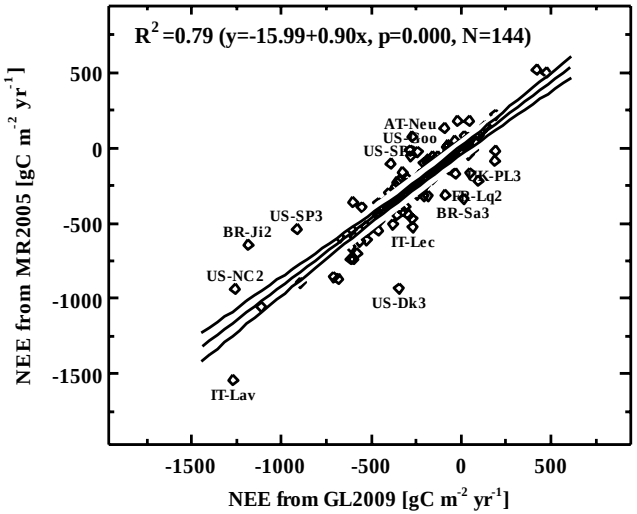
Ustar threshold selection

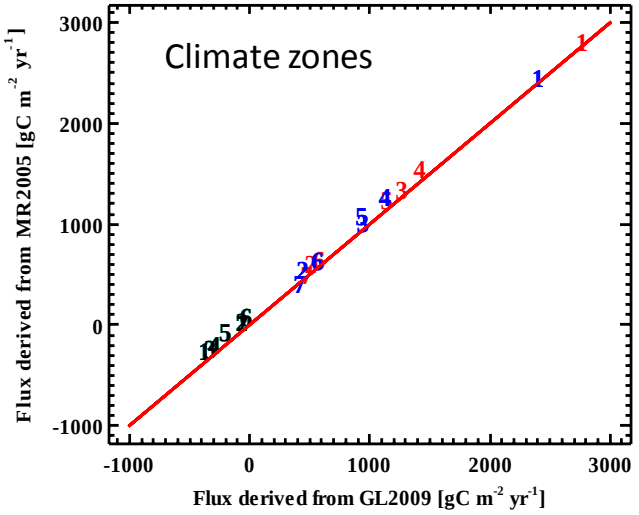
The different methods developed give in general higher threshold values respect to the LaThuile07.

However comparing night-time and day-time based partitioning methods (day-time almost not influenced by u*) the agreement is high in most of the cases.



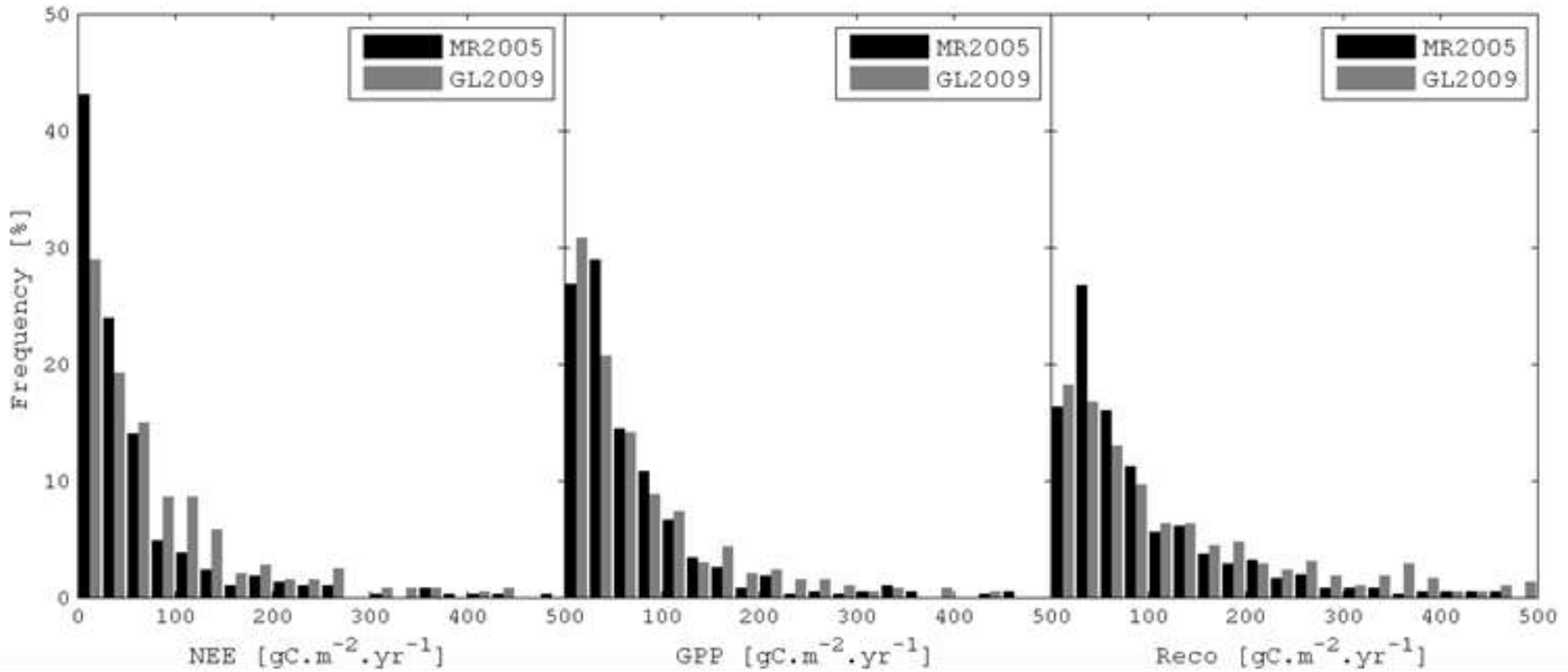






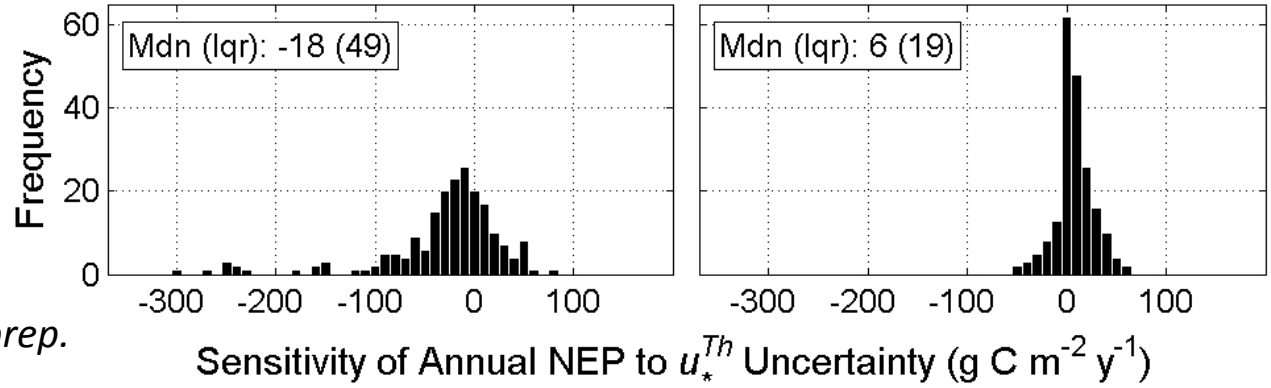
Uncertainty quantification

Ustar and partitioning – NEE, GPP, Reco



Reichstein et al in prep.

Ustar methods and uncertainty – NEE



Barr et al in prep.

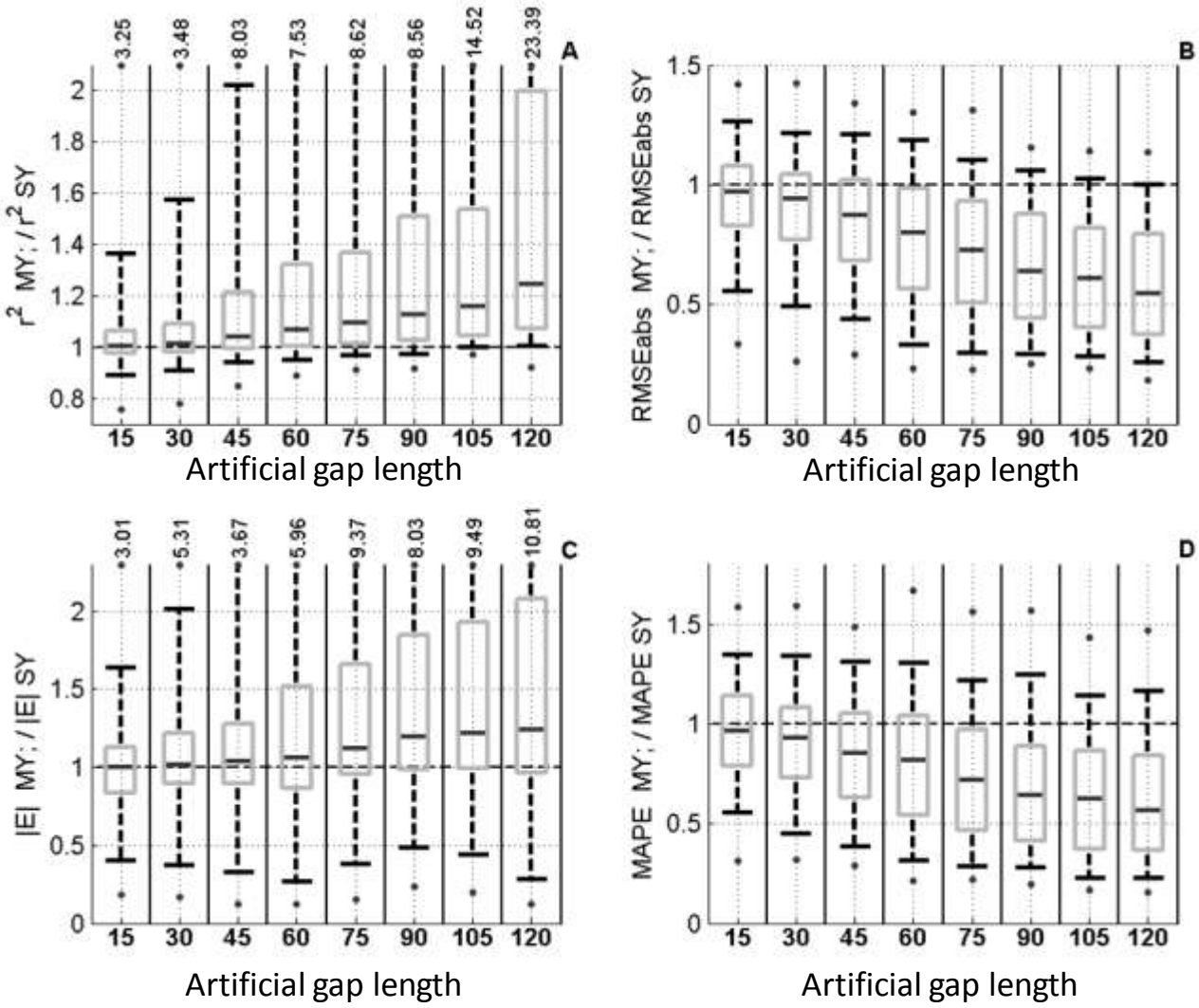
Gapfilling

Gapfilling is not the main source of uncertainty and the methods used (MDS and ANN) have been tested in the Moffat et al. 2007 comparison.

Long gaps remain a problem, in particular if occur during critical phenological phases (spring).

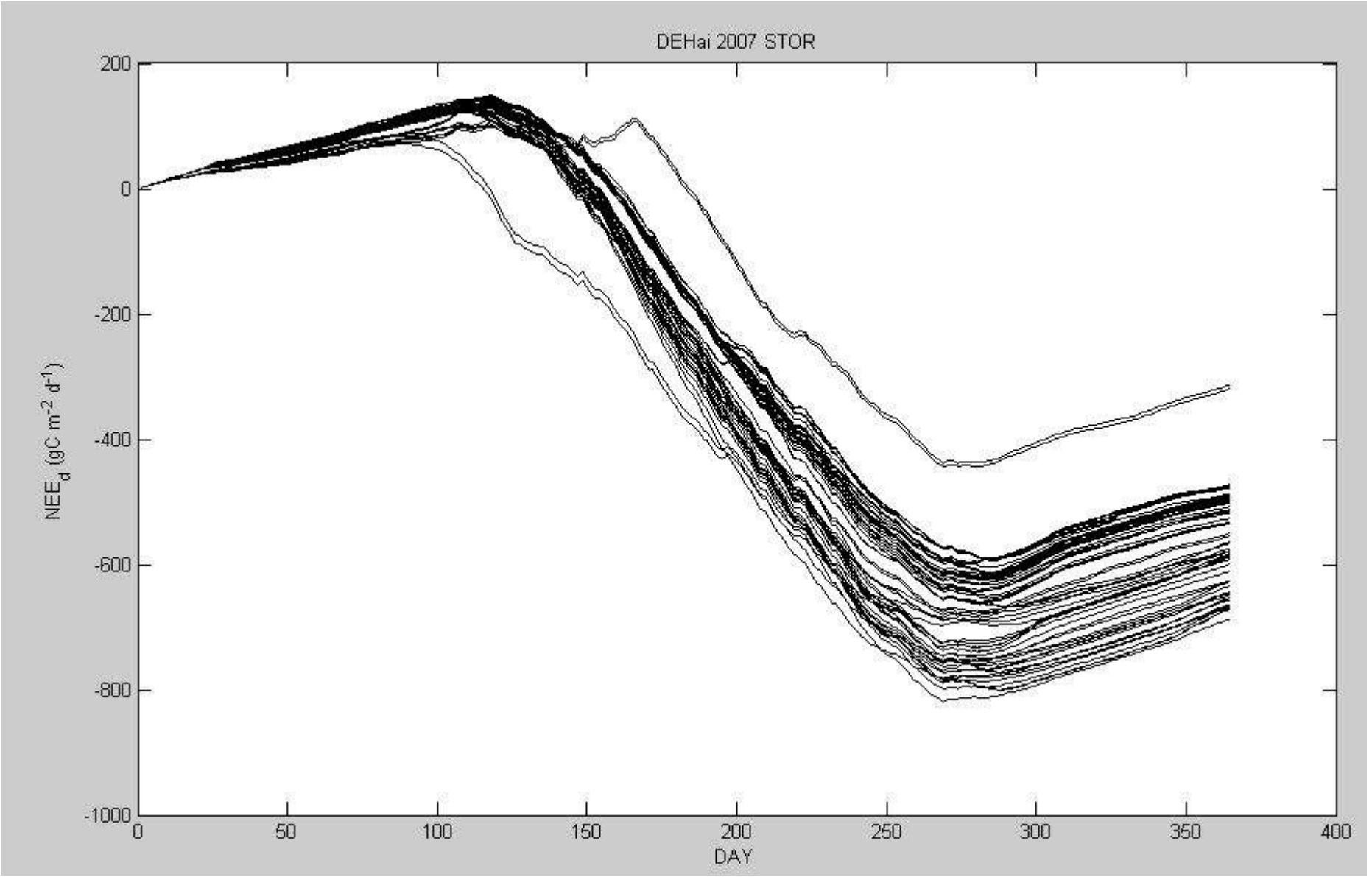
When multiple years are available, gapfilling model parameterization can use the information about relations drivers-fluxes from others years.

Methods comparison (MultiYear vs Single Year)



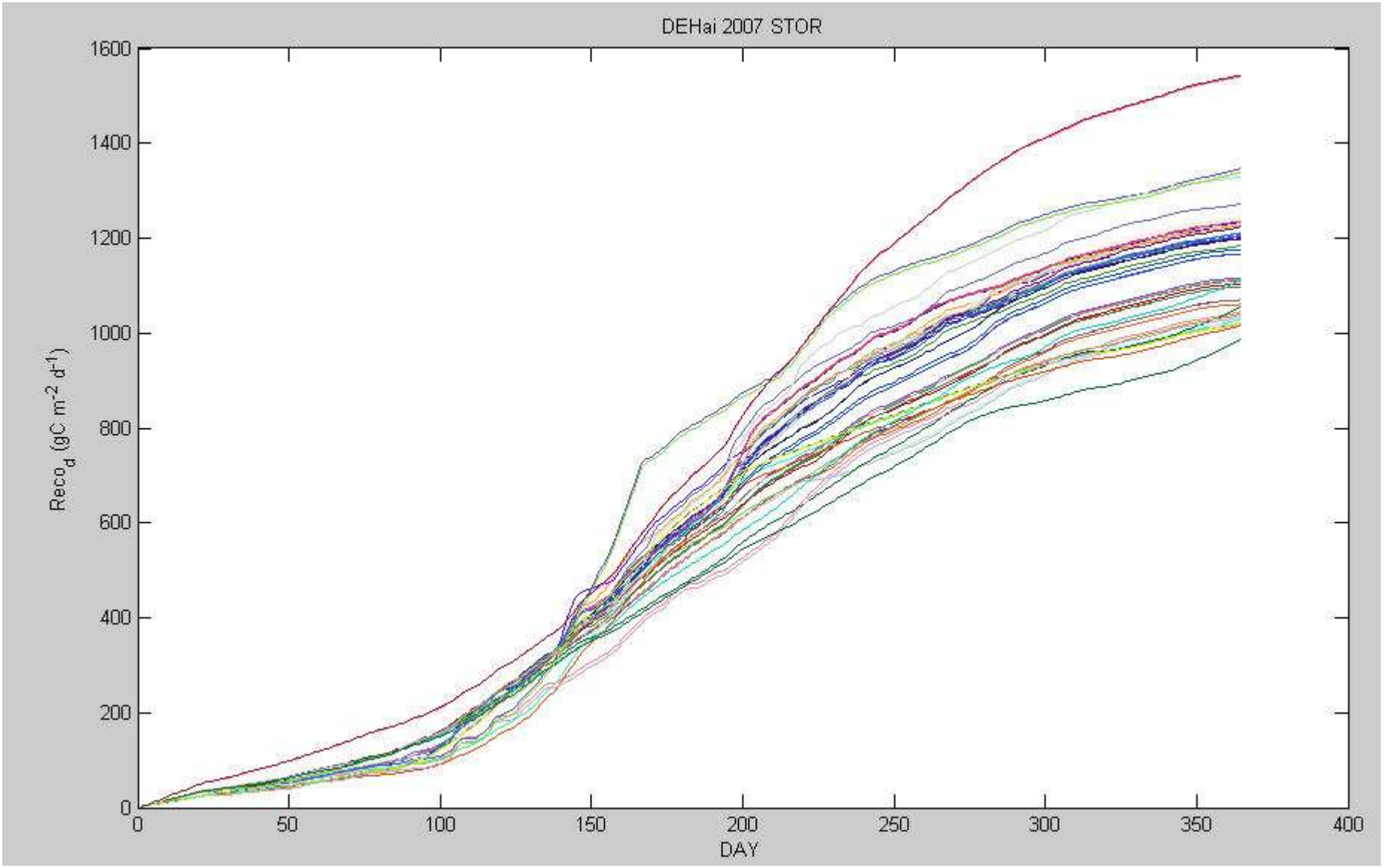
Trotta et al in prep.

Annual cumulative plots – NEE – full factorial



Preliminar, Trotta et al in prep.

Annual cumulative plots – GPP – full factorial



Preliminar, Trotta et al in prep.

Data processing

Half hourly data

1 dataset

u* threshold selection
- 3/5 different methods

3 methods, bootstraping…

3/5 datasets

u* filtering
- 3/4 possibility

Also daytime, also data after low turb., …

9/20 datasets

Gapfilling
- 2 methods

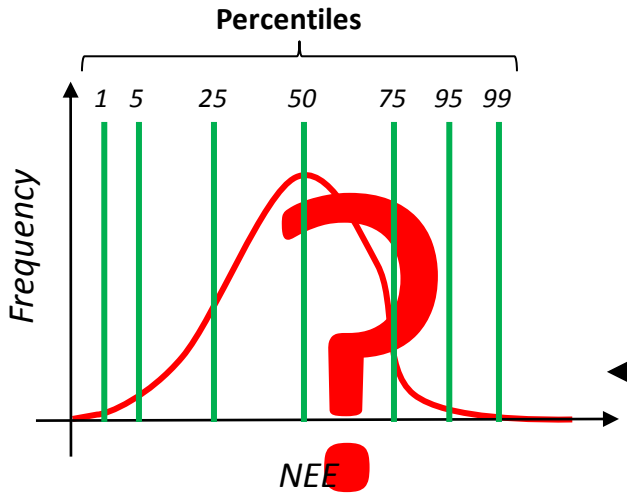
MDS and ANN

18/40 datasets

Partitioning
- 3 methods

Reichstein, Lasslop, van Gorsel

Between 54 and 120 different "versions" of the same dataset, all valid, it is uncertainty.



Ok for the uncertainy, but we need also a "reference value" and using the median would affect the variability.
Suggestion from you NEEDED!!

What do we distribute?

Meteo data QAQC and others feedbacks

There are a lot of tests that can be implemented to identify potential problems with the meteo data that would lead to an accurate check. Examples are:

- Check that the diffuse radiation is not greater than total radiation
- Check that the relation between global incoming radiation and incoming PAR is stable in time
- Check that below canopy PAR is not greater than incoming PAR
- Check that after rain (> of a threshold) there is a change in SWC and the other way round
- Check that the relations between air temperature and different soil temperatures are stable (monthly because phenology would affect this)

Your contribution and ideas are fundamental. Antje Moffat created a site where you can suggest tests or comment proposed tests.

http://fluxnet.betaboard.ca/f1-ideas-for-meteo-checks

You should register, it if fast and easy, in this way we can better identify who proposed what. However, if the registration is the limiting factor for you, use my account:

USER ID: **fluxnet** PASSWORD: **meteo_tests**

Ancillary data and metadata

Ancillary data are very important and their availability would permit new studies and synthesis activities. At the moment these data are not available for most of the sites.

In addition, information about the tower building, sensors setup, raw data processing, PI version of fluxes calculation methods, are important to correctly interpret the data.

These info are sometimes collected at regional level using different formats and schemes and not continuously updated.

The BADM is now an international standard, it is used also in EU projects and it will be used also in ICOS. A new version, with a different organization for an easier filling will be released soon.

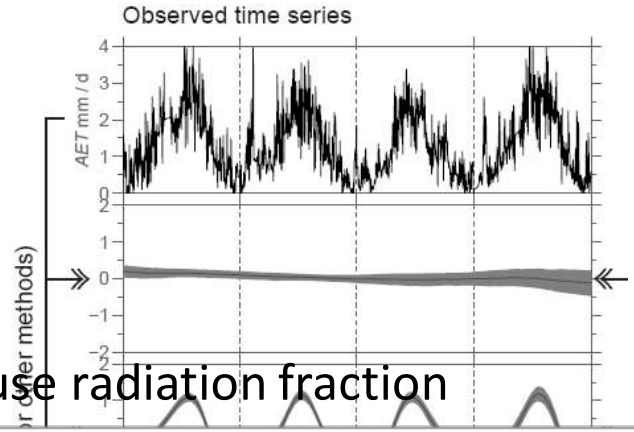
A metadata template, with the same BADM structure, has been prepared and it is under test. It will be used to transmit and register all the info about the site setup and data processing in a standard and structured way.

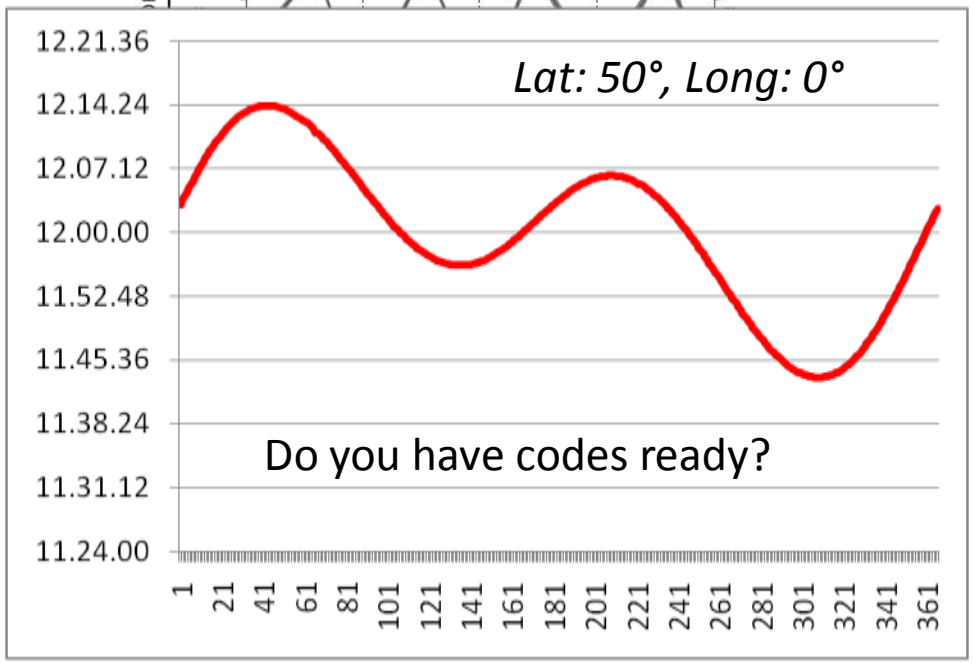
First tests at some sites show that although at the beginning it looks a lot of work, it is not difficult and help to store info that otherwise would be lost. Do you remember all about your site?

Additional products

Together with the processed fluxes and meteo data, the ancillary data and the metadata, a number of additional derived products will be released for each site. These could include for example:

- Derived variables (ecosystem parame
- Footprint calculation (Kljun model, but
- Long term daily meteorology at site lev
- Time-scale separation of variables
- Solar time, Sun position, modelled diffuse radiation fraction
- Remote sensing products cutout
  - Modis cutouts
  - Stöckli fPAR/LAI
  - MERIS
  - Parasol/Polder
- Meteorogical cutouts
  - ECMWF
  - WATCH
  - SHEFFIELD NCEP





New data policies

The community is quite heterogeneous in terms of data sharing and data use policy to be applied. For this reason three different data policies have been created:

LaThuile policy: sharing only with data contributors

- Data are shared only with others data contributors

Full policies texts available on www.fluxdata.org

Different years of the same site can have different policies

Login in the fluxdata.org system and do your selection for your sites

Today, 965 site/years, 496 LaThuile policy, 86 Open and 383 Free

- Group coauthorship and site paper citation when possible,

Free Fair-use policy: simply sharing openly

New collection plan, how to contribute

Deadline for new data submission passed and we are preparing the processing. Last chance to participate is submitting the data before the end of the month.

The objective is to have the new data collection ready this year, possibly before summer.

Fluxes and meteo data submission:

Ameriflux sites and sites in US in general: Tom Boden

Canadian sites: CCP database

European sites and sites managed by EU institutions: Dario Papale

African and Russian sites: Dario Papale

All others sites: Bob Cook

BADM and Metadata

All sites directly to fluxdata.org

Fluxes, meteo, BADM and metadata processing

All sites will be processed by the fluxdata.org team between Europe and US