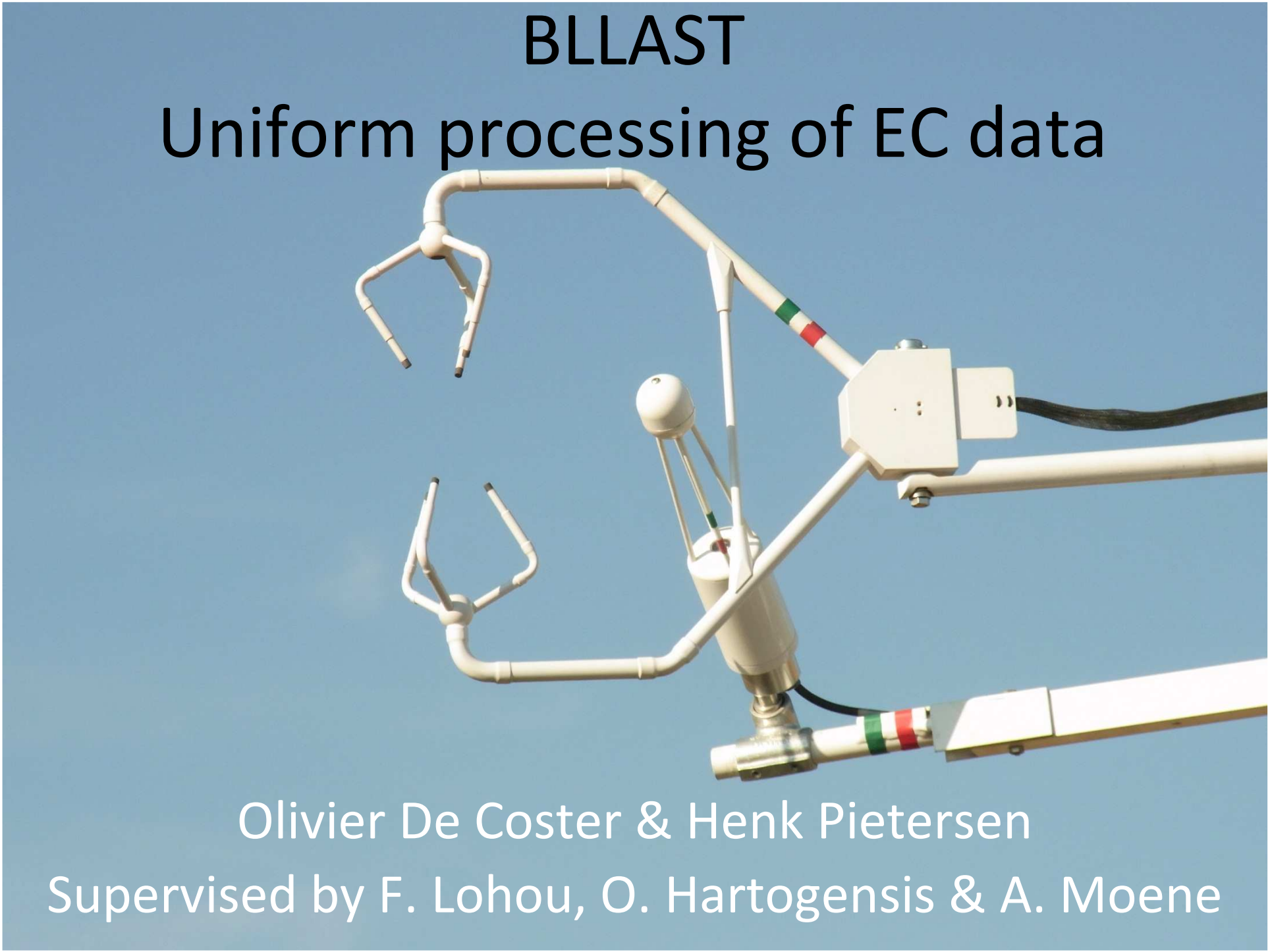

Campagne
BLLAST
MESURES
METEOROLOGIQUES
Centre de Recherches
Atmosphériques
— Campistrous —

BLLAST
Uniform processing of EC data



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Content

INTERNSHIP

- Experimental Set-up EC-stations
- Data Processing

- Scintillometer Analysis THESIS

INTERNSHIP

- **Experimental Set-up EC-stations**
- Data Processing

- Scintillometer Analysis THESIS

Super Site 1

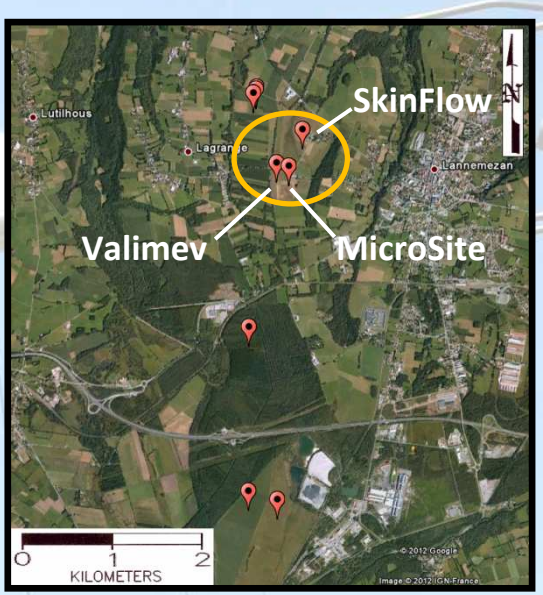
WAGENINGEN UR
METEOROLOGY AND AIR QUALITY

Overview

MicroSite *(20 Hz)*
- 2m: CSAT & LICOR

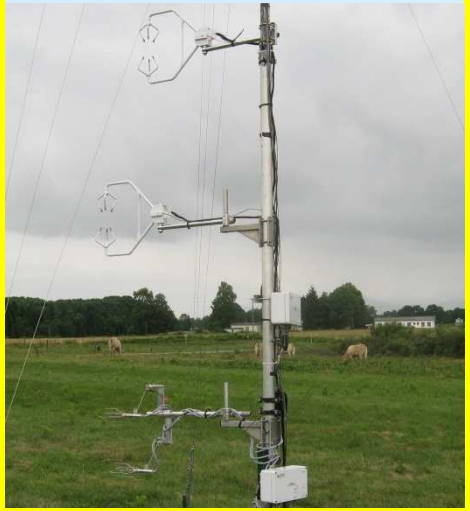
Valimev tower *(10 Hz)*
- 30m: CSAT & LICOR
- 45m: Gill
- 60m: CSAT & Krypton

SkinFlow mast *(20 Hz)*
- 0.9,1.1m: Kaijo Denki & T-couple
- 2,3,5,8m: CSAT & T-couple



Valimev tower
Laboratoire d'Aérologie

SkinFlow mast
University of Utah & Wageningen University



MicroSite
University of Bergen

Super Site 2

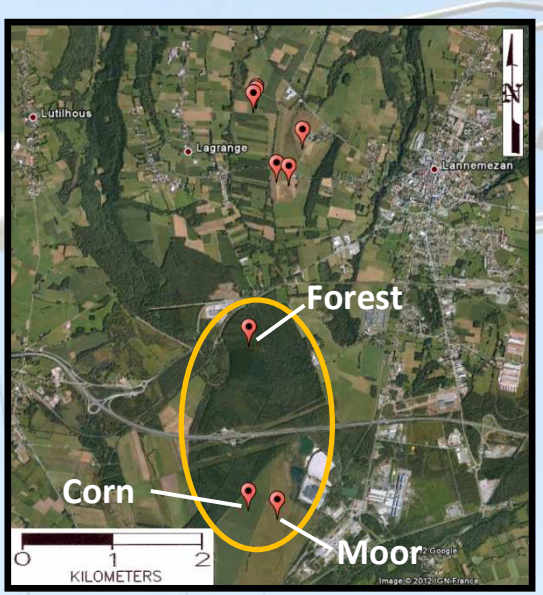
WAGENINGEN UR
METEOROLOGY AND AIR QUALITY

Overview

Forest mast *(10 Hz)*
- 20m: CSAT & T-couple
- 30m: CSAT & LICOR

Corn *(20 Hz)*
- 5m: CSAT & LICOR

Moor *(20 Hz)*
- 3m: CSAT & LICOR



Forest mast
University of Utah &
Wageningen University

Corn
Météo-France

Moor
Météo-France

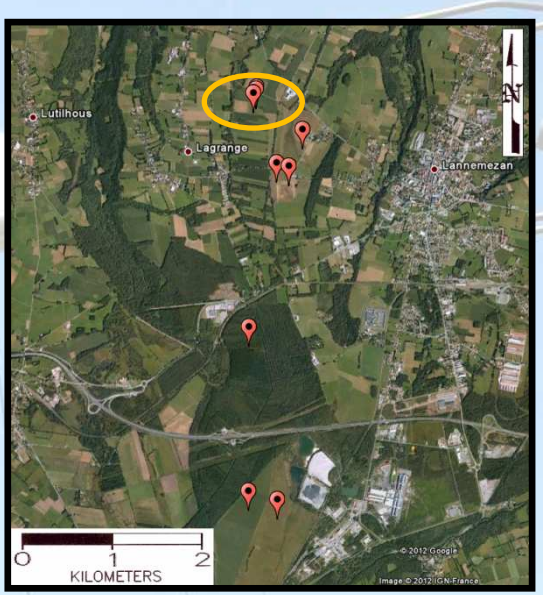
Edge Site

EDGE SITE

Grass *(20 Hz)*
- 2½m: CSAT & LICOR

Edge *(20 Hz)*
- 2½m: CSAT & LICOR

Wheat *(20 Hz)*
- 3m: CSAT & LICOR



Wheat
University of Bonn

Edge
Wageningen University

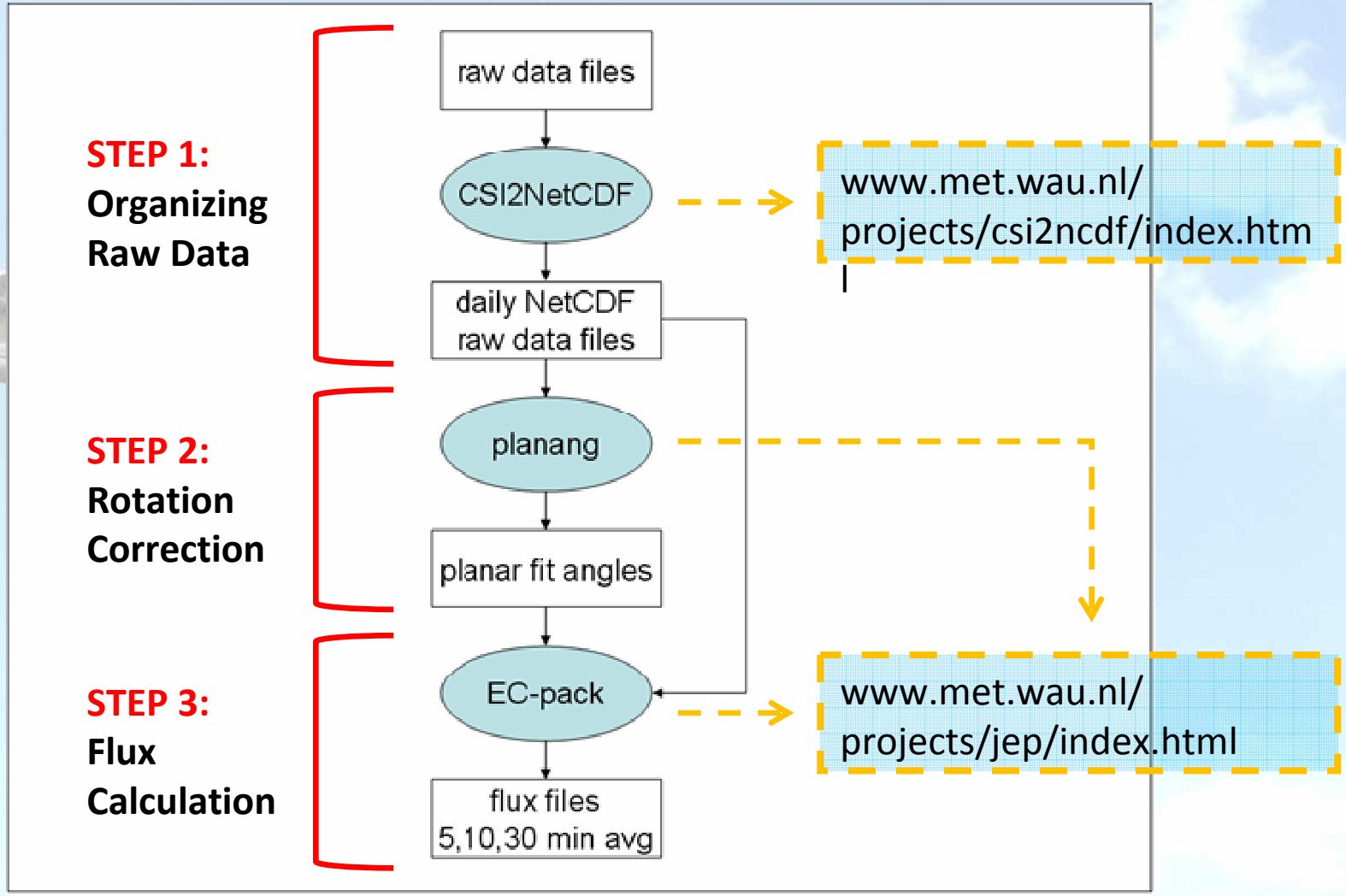
Grass
Forschungszentrum
Jülich & Bonn University

INTERNSHIP

- Experimental Set-up EC-stations
- **Data Processing**

- Scintillometer Analysis THESIS

Processing


STEP 1:
Organizing
Raw Data
STEP 2:
Rotation
Correction
STEP 3:
Flux
Calculation
raw data files
CSI2NetCDF
daily NetCDF
raw data files
planang
planar fit angles
EC-pack
flux files
5,10,30 min avg
www.met.wau.nl/
projects/csi2ncdf/index.htm
l
www.met.wau.nl/
projects/jep/index.html

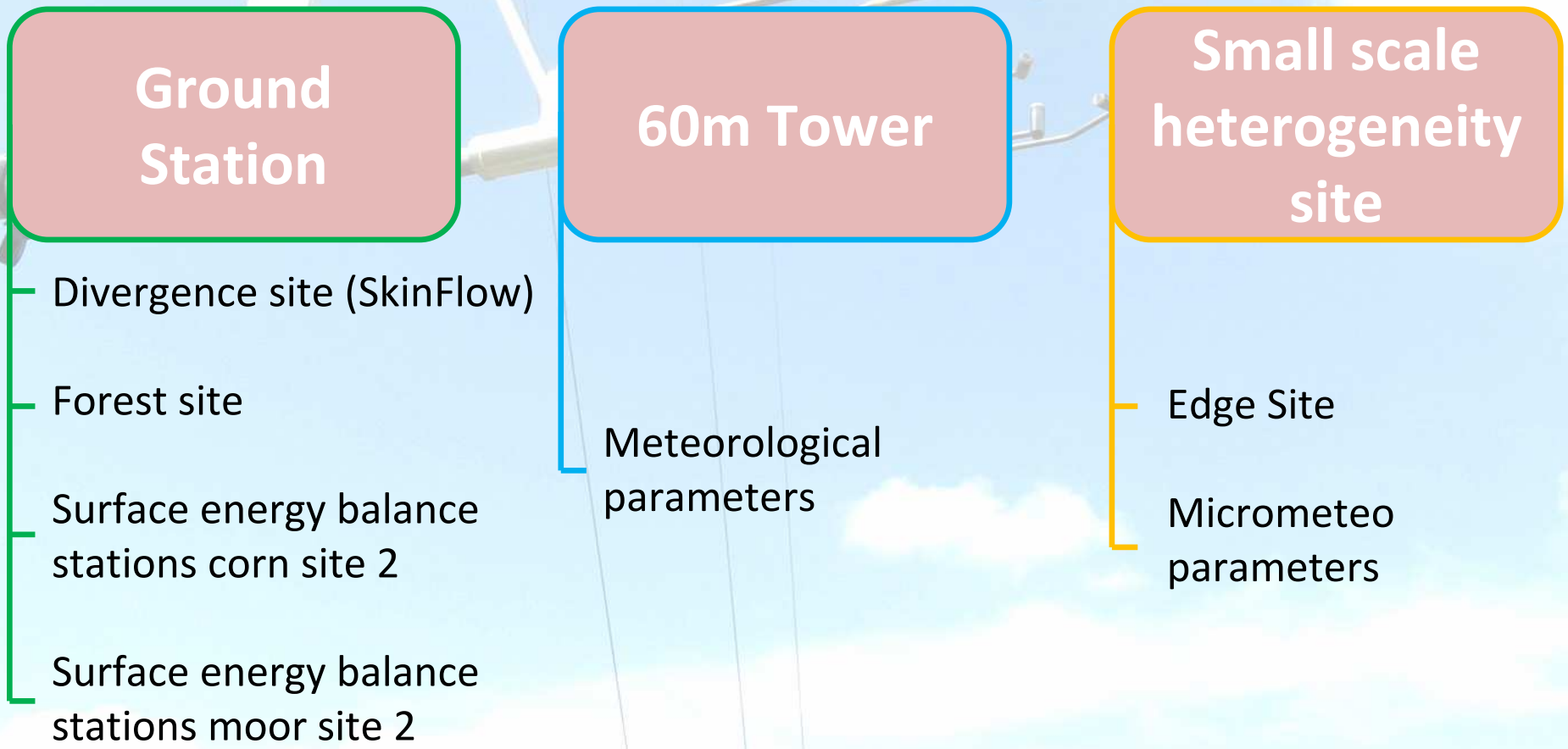
STEP 1: Organizing Raw Data

- Original raw data formats:
  - Binary (TOB1,2,3) and ASCII (TOA5, text)
- Output: raw data in uniform and daily NetCDF files per EC-station

- NetCDF variable names:
  YYYY, DOY, HHMM, sec, u, v, w, T_sonic,...
- File naming:
  BLLAST_SiteName_EC-station_Y2011DOY165.nc

NetCDF files locations

- Locations BLLAST database:

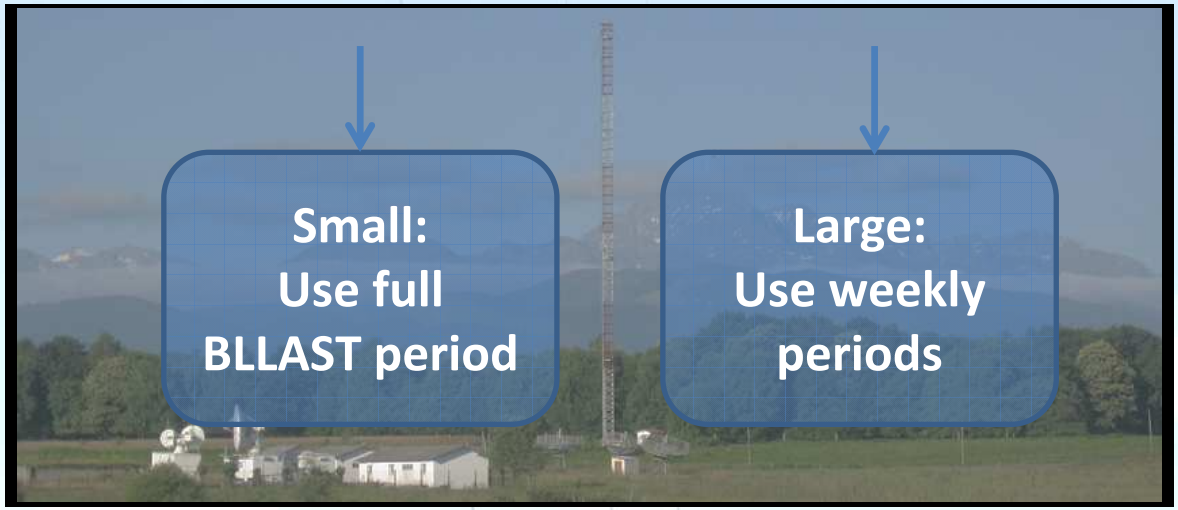


STEP 2: Rotation Correction

- Planar fit method

  Angles calculated over chosen period

- BLLAST: calculate angles first and last week, check difference



STEP 3: Flux Calculation

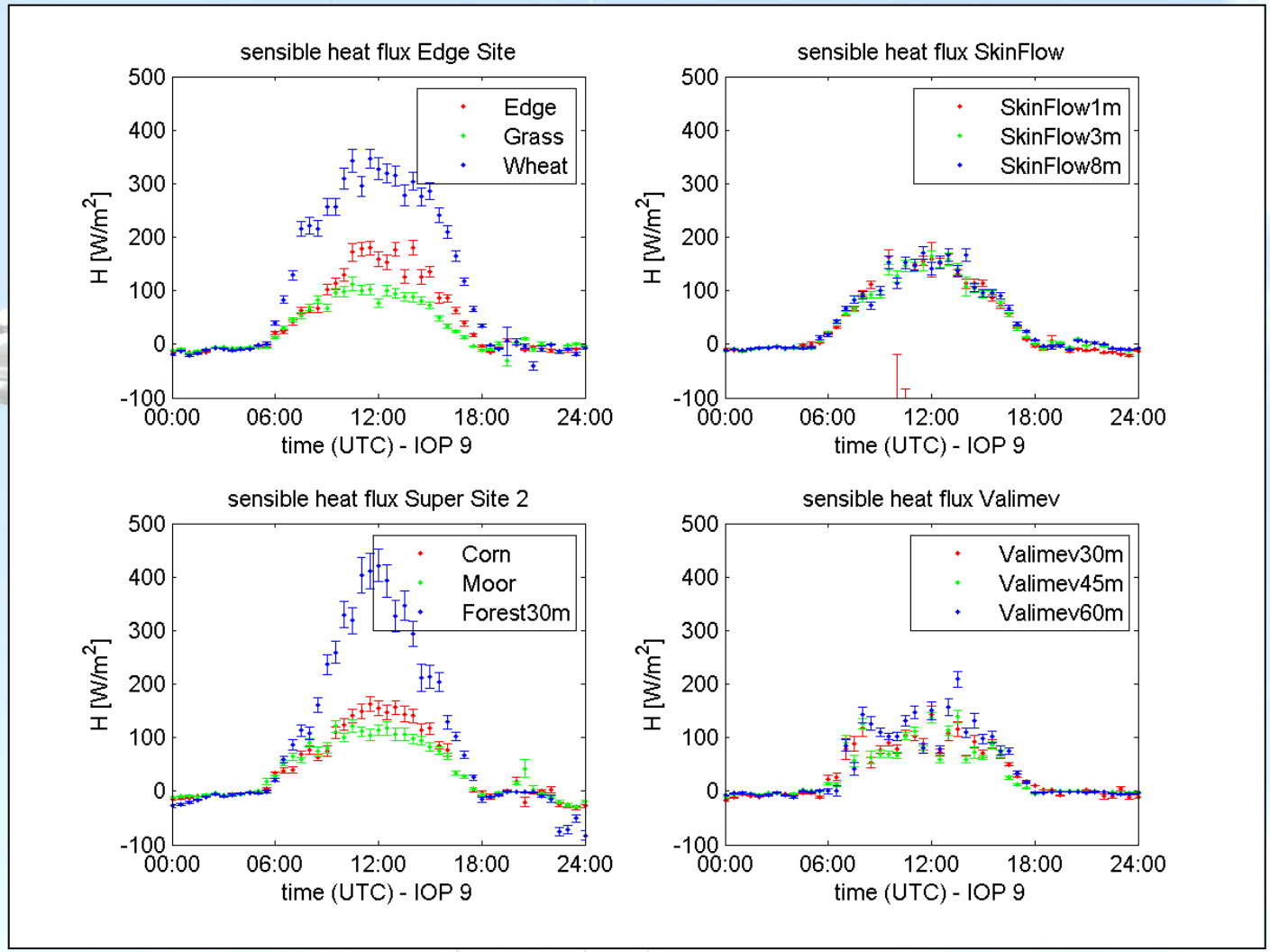
PROCES	COMMENTS
Averaging	Block averaging 5, 10, 30 minutes
Rotation	Planar fit (Wilczack et al., 2001)
Mean(V) → 0	yes
Time-lag	yes/no
Despiking	no
Rejection non-physical values	yes
Poor frequency response	yes (Moore, 1986)
Webb correction	yes (Webb et al., 1980)
O_2 correction Krypton	yes (Tanner et al., 1993)
Sonic T correction	yes (Schotanus et al., 1983)

Flux Output

- Flux text files containing:
  - No. of samples
  - Means, standard deviations & covariances
  - Structure parameters
  - Derived physical quantities (fluxes)
  - **Tolerance intervals**

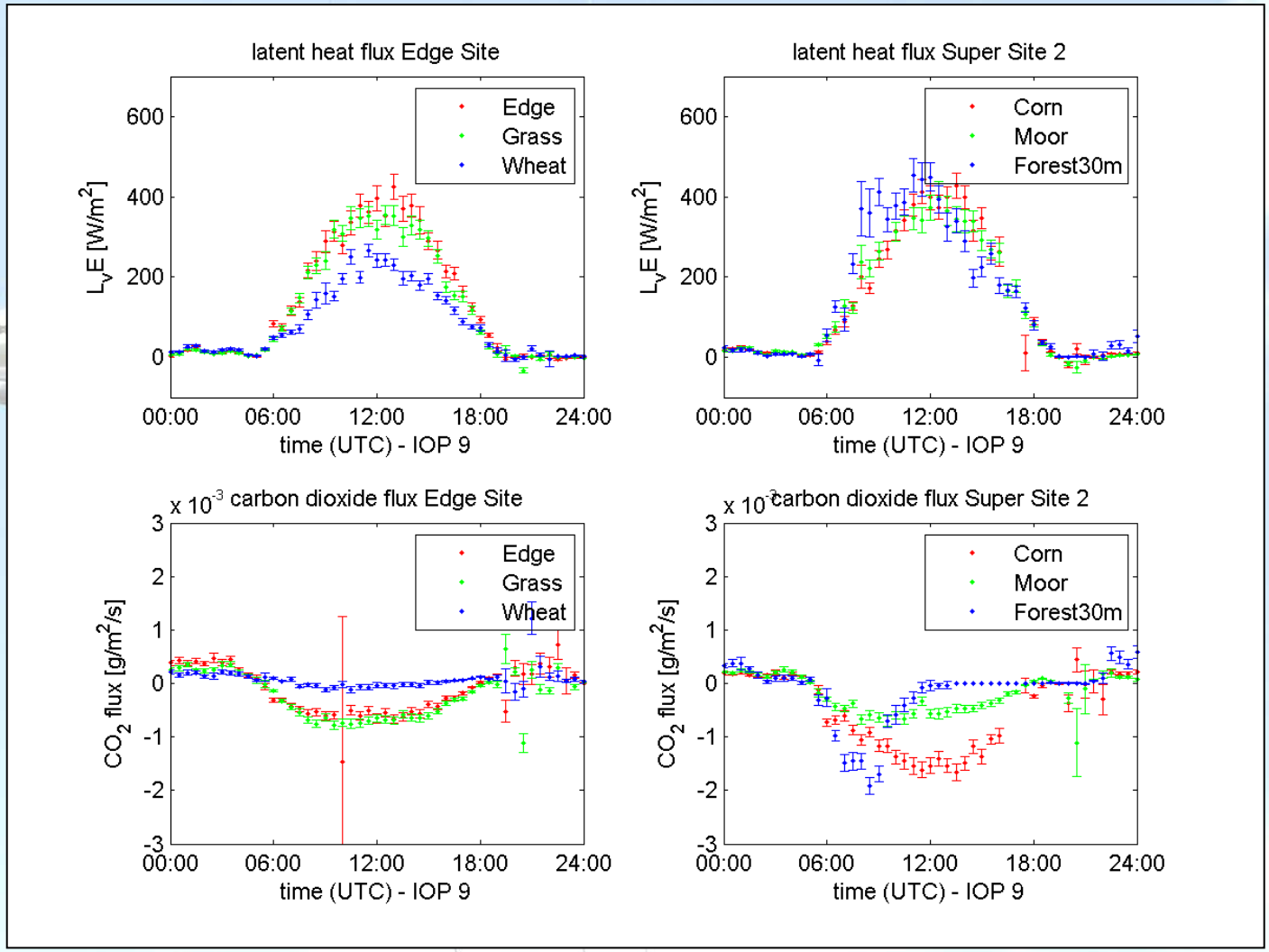
- **Flux files also available in NetCDF**

Sensible Heat Flux – IOP 9

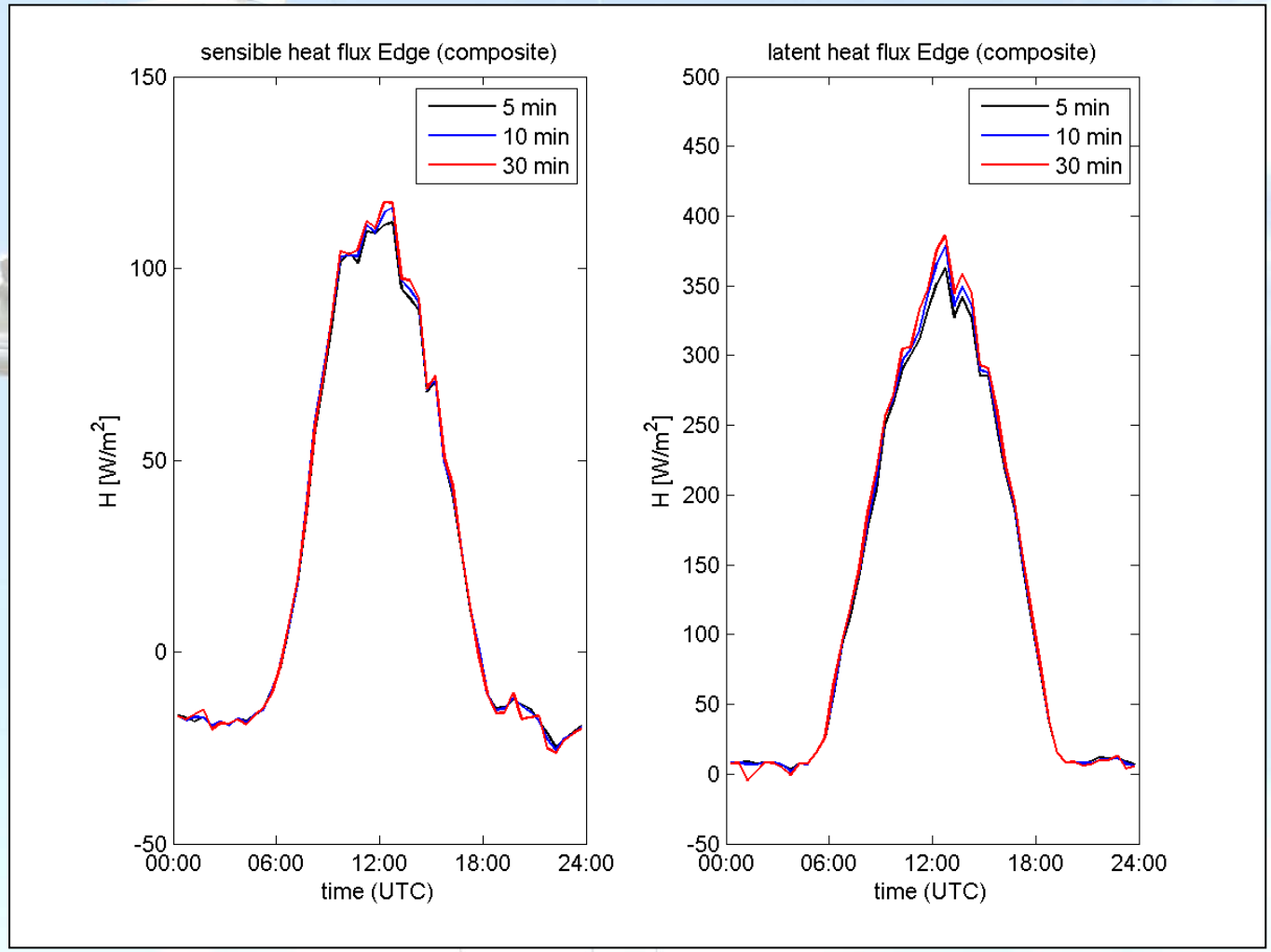


WAGENINGEN UR
METEOROLOGY AND AIR QUALITY

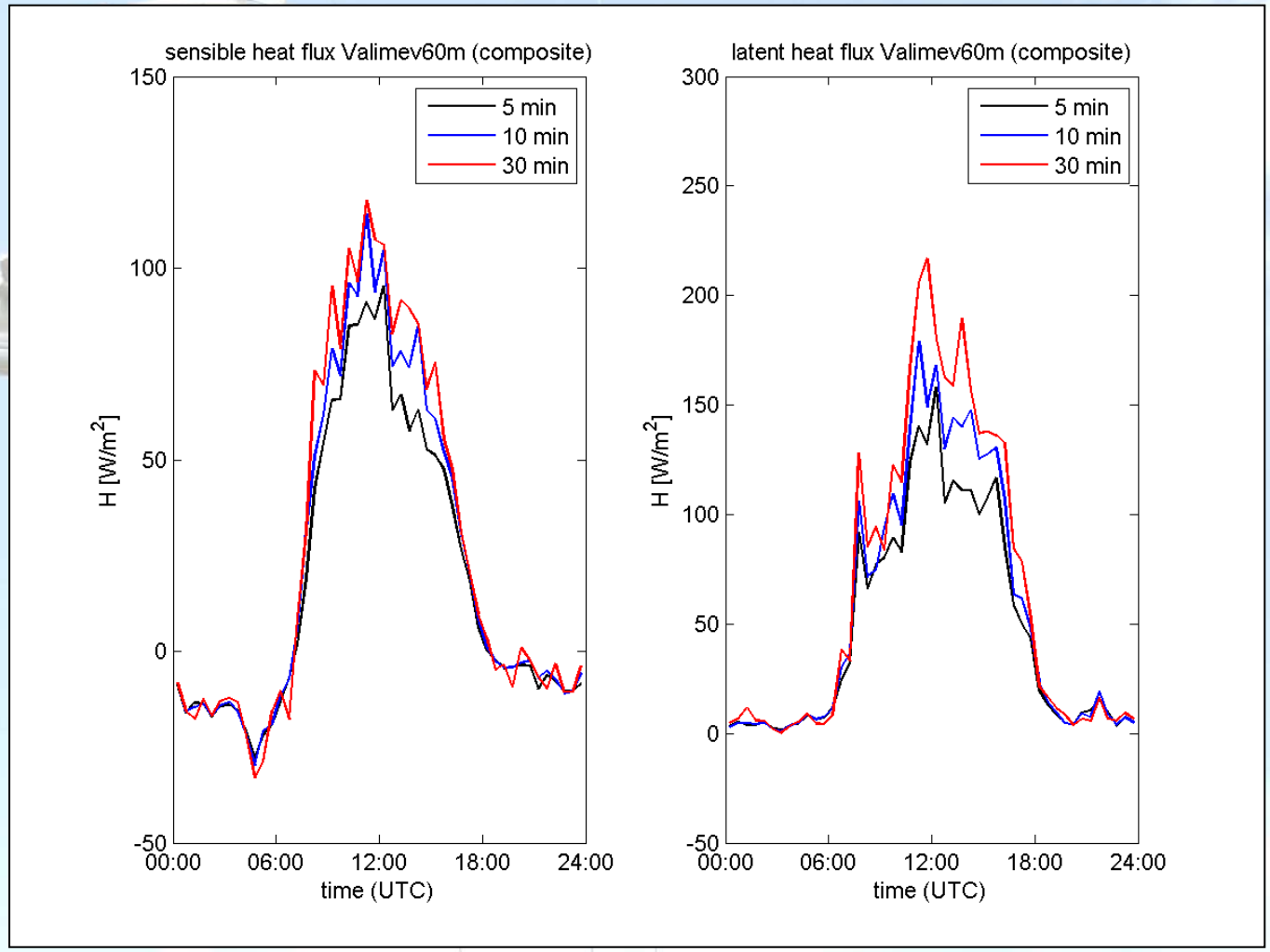
Latent Heat and CO_2 Flux – IOP 9



Composite Day – Edge



Composite Day – Valimev 60m



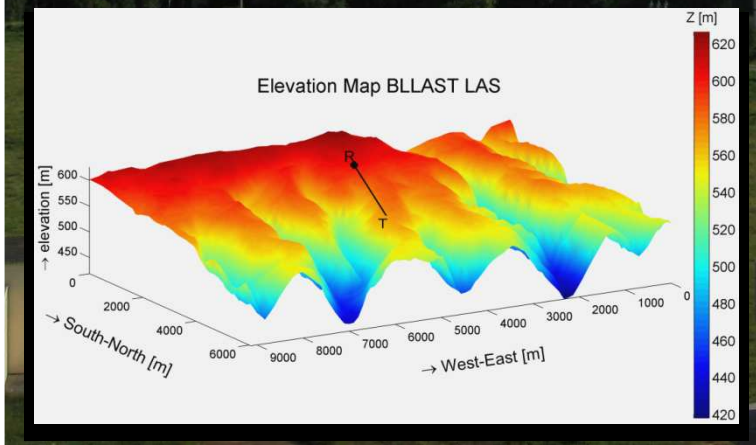
INTERNSHIP

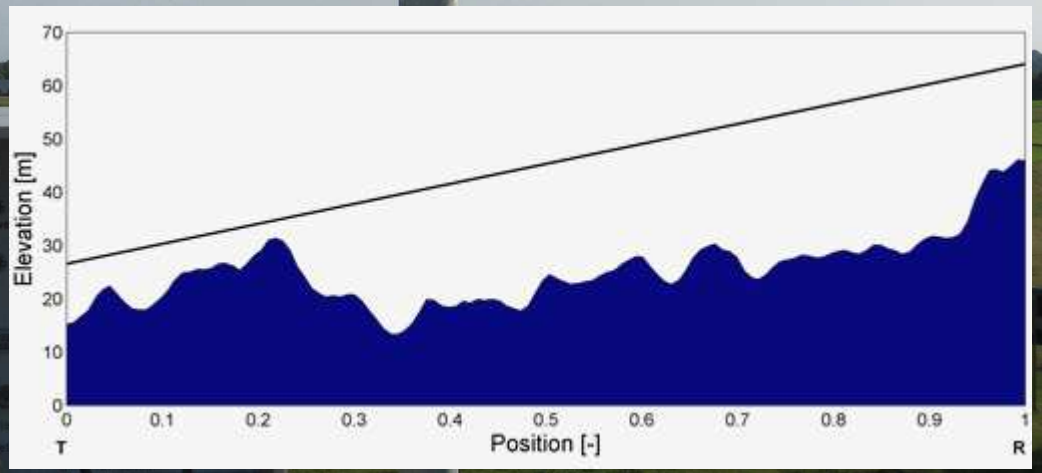
- Experimental Set-up EC-stations
- Data Processing

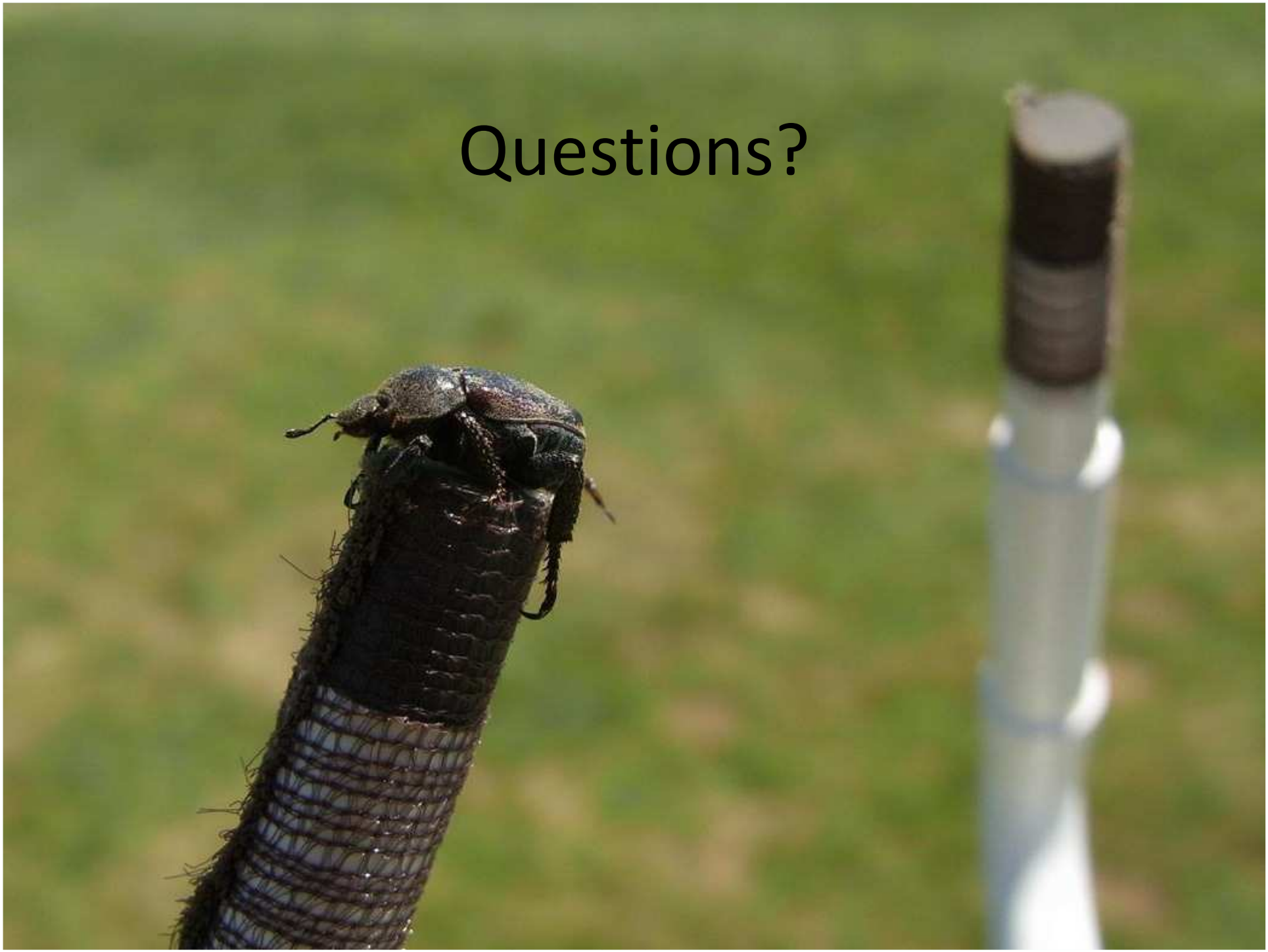
- **Scintillometer Analysis** THESIS

Thesis - scintillometry

- LAS data → calculate *H* using a single height
- Challenge: slant path and topography
- Effective height concept → 3D
- Flux footprint: wind, stability, terrain






Questions?