Wind cube data and Tethered Balloon during the SOP

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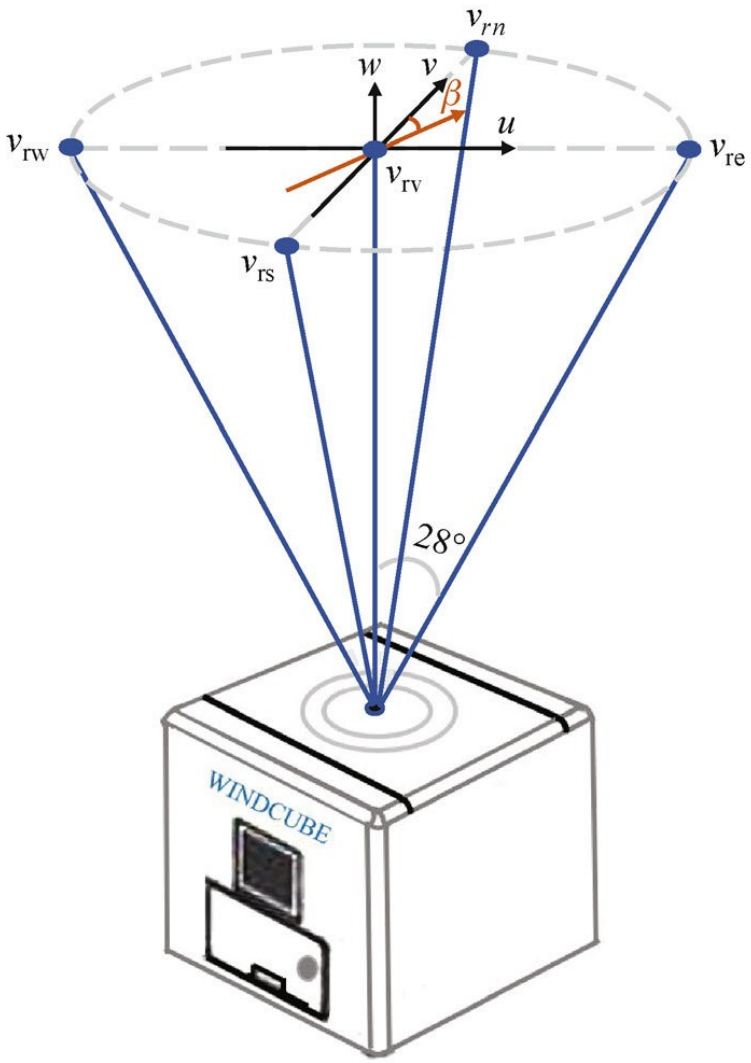
Overview of Windcube data



WLS7 Windcube V2

Wind doppler lidar from 40 m to 220 m

3 types of data :

- 4-second data
- 10-minute data
- 30-minute data (data processing)

Location : Maize field

Data processing

4-second processing chain

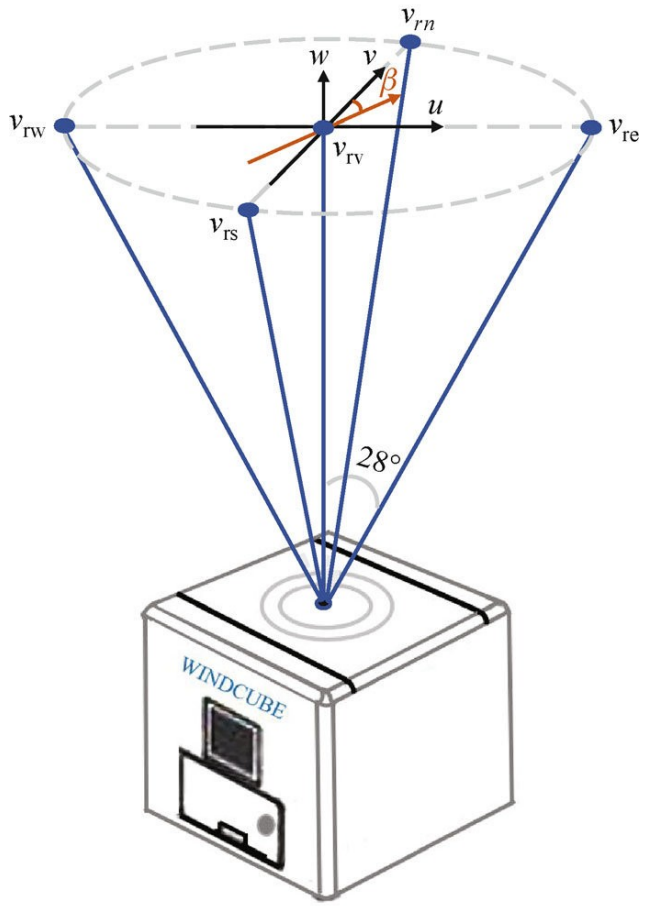
Radial wind speed

↓

Wind speed, components and direction

↓

Turbulence (TKE)
30min



WLS7 Windcube V2

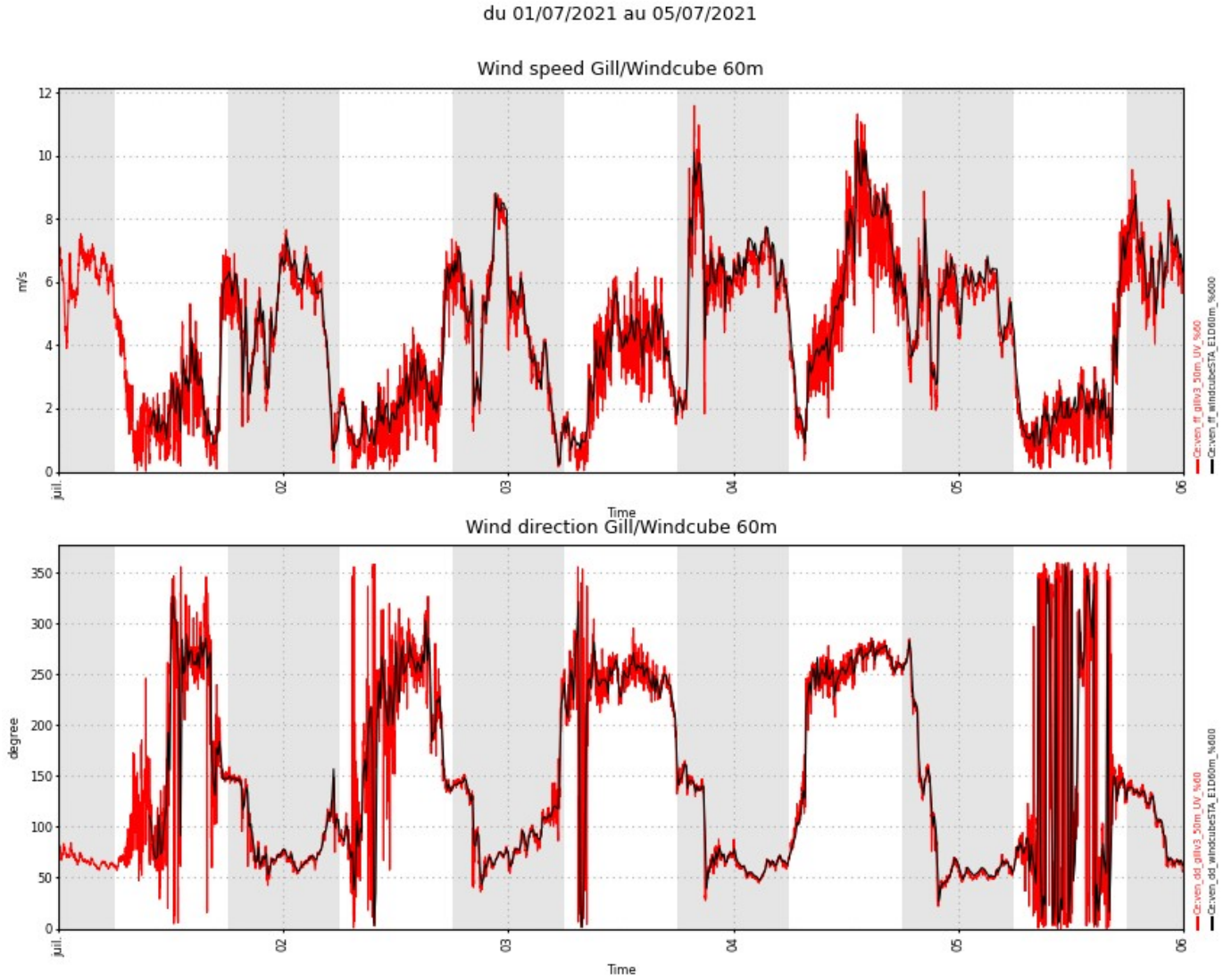
Data availability

Period of measurement : from August 10, 2023 to March 19, 2024

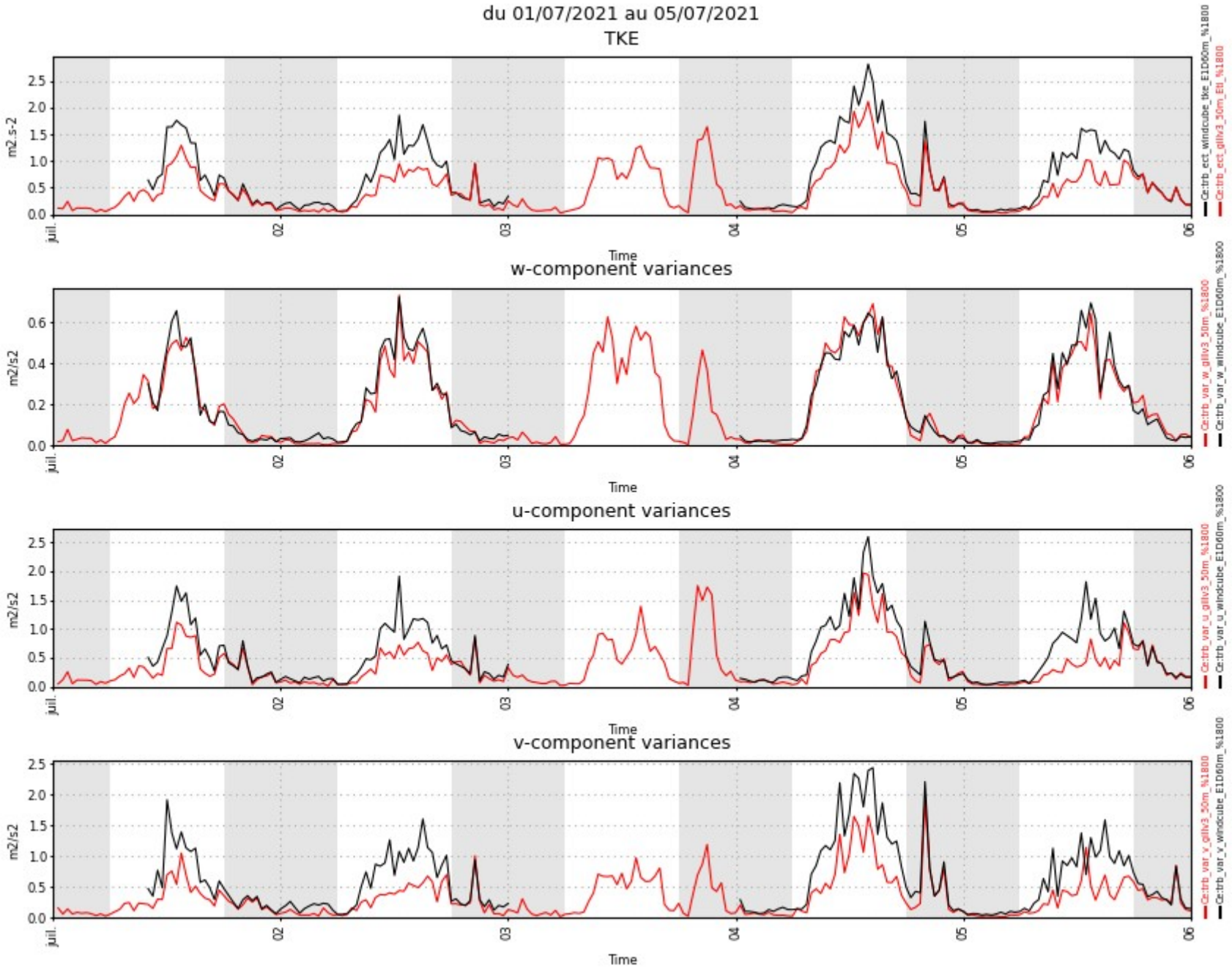
Parameter	4-second	10-minute	30-minute
Wind speed	Upon request	AERIS	Upon request
Wind direction			
u, v, w components of wind			
Variance of u, v, w components	/	/	AERIS
TKE	/	/	

Assessment of wind data

LIAISE measurement campaign : 2021



Comparison of TKE

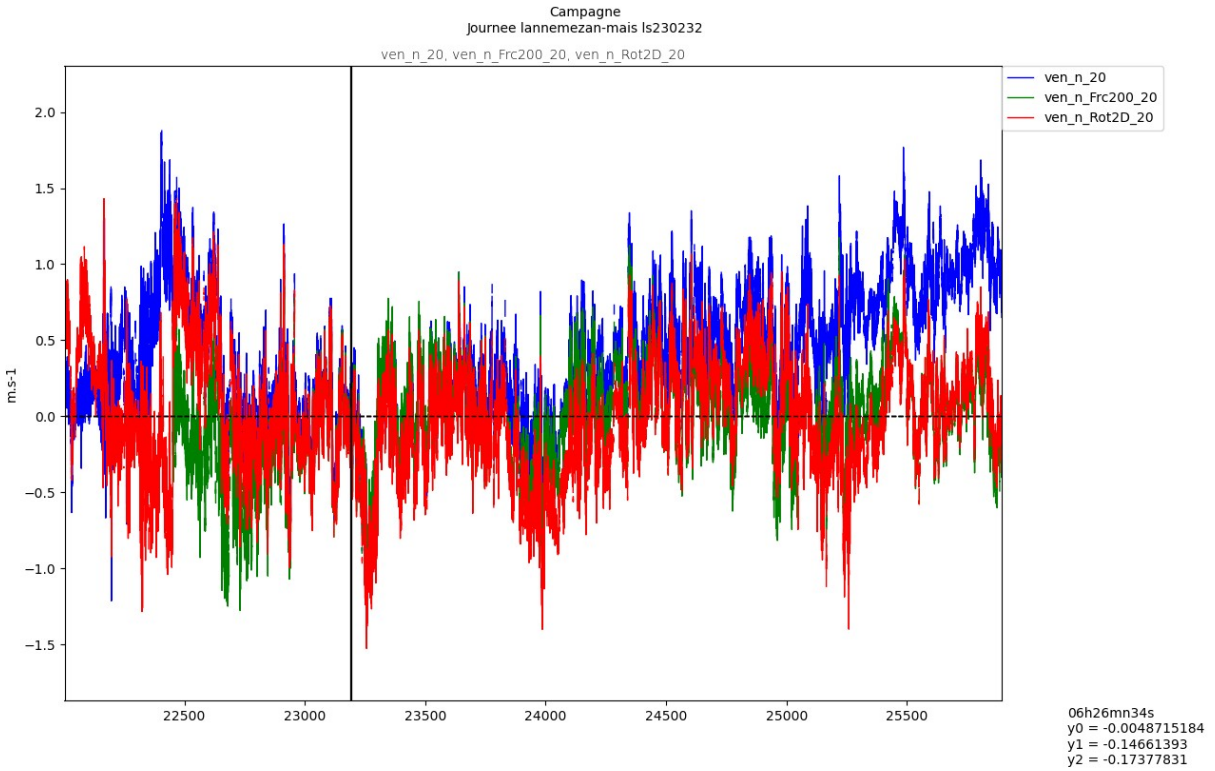


w-component variance OK

Overestimation of TKE during daytime due to u and u variances

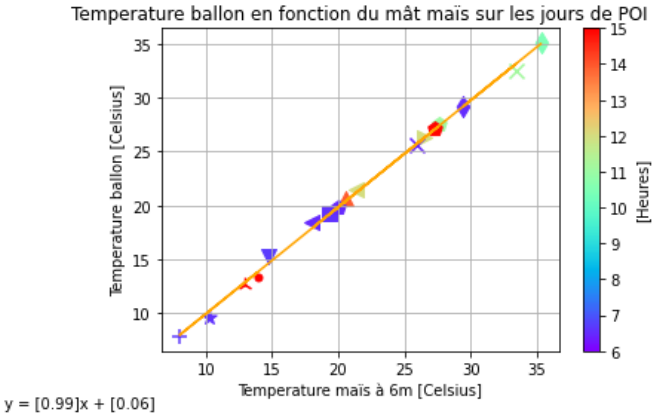
Overview of tethered ballon

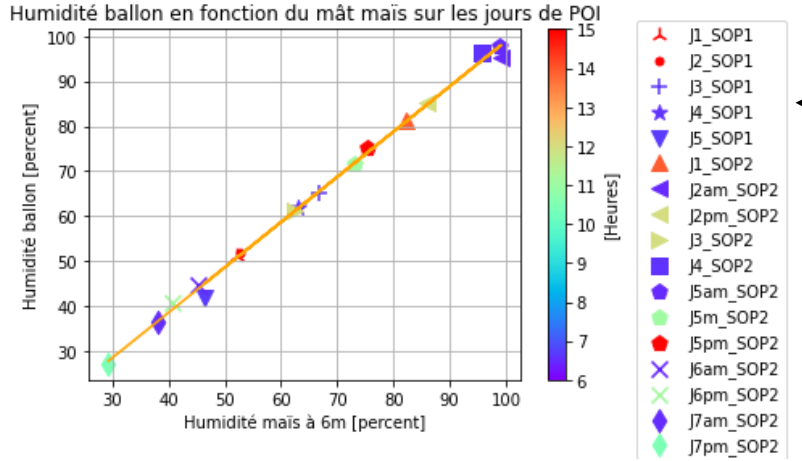
1- MOTION CORRECTION
2 – EDDY COVARIANCE method
2d rotation, runningmean, spectral correction



Overview of tethered ballon

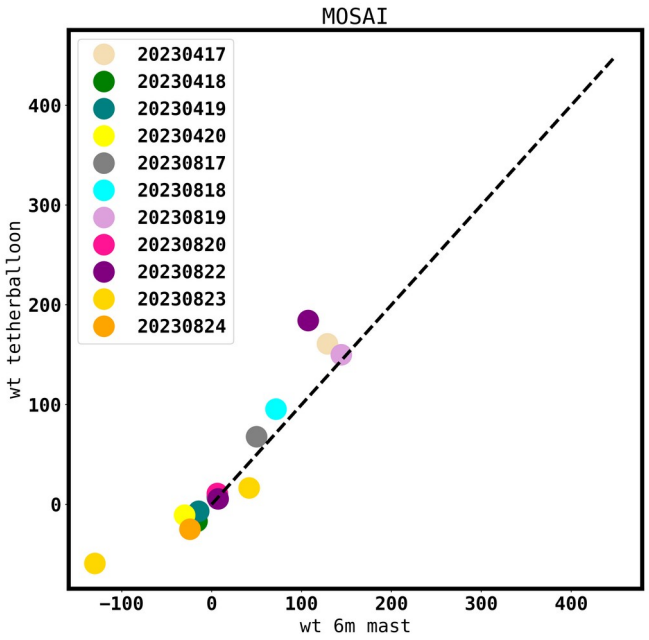
Validation of the system close a fixed system (6m mast on MAIZE)

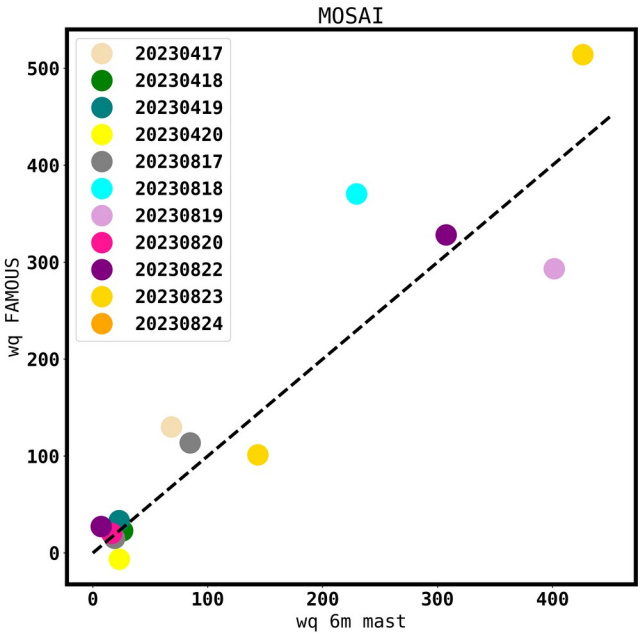


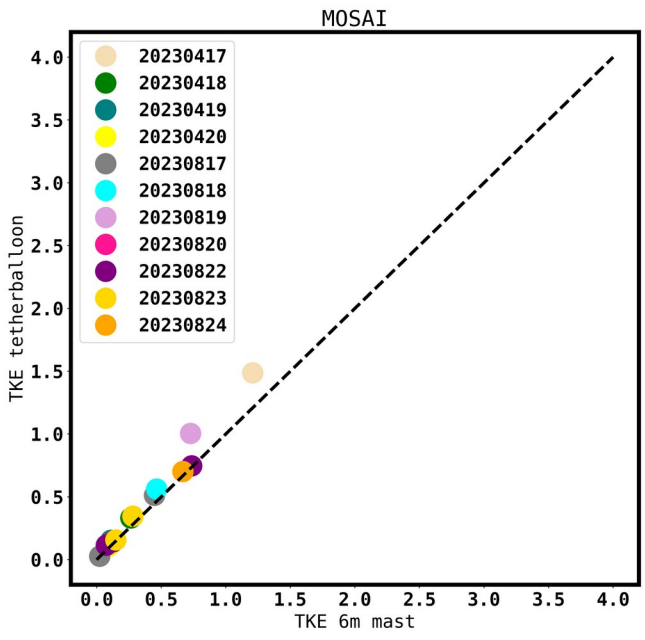


Mean parameters

Turbulent parameters

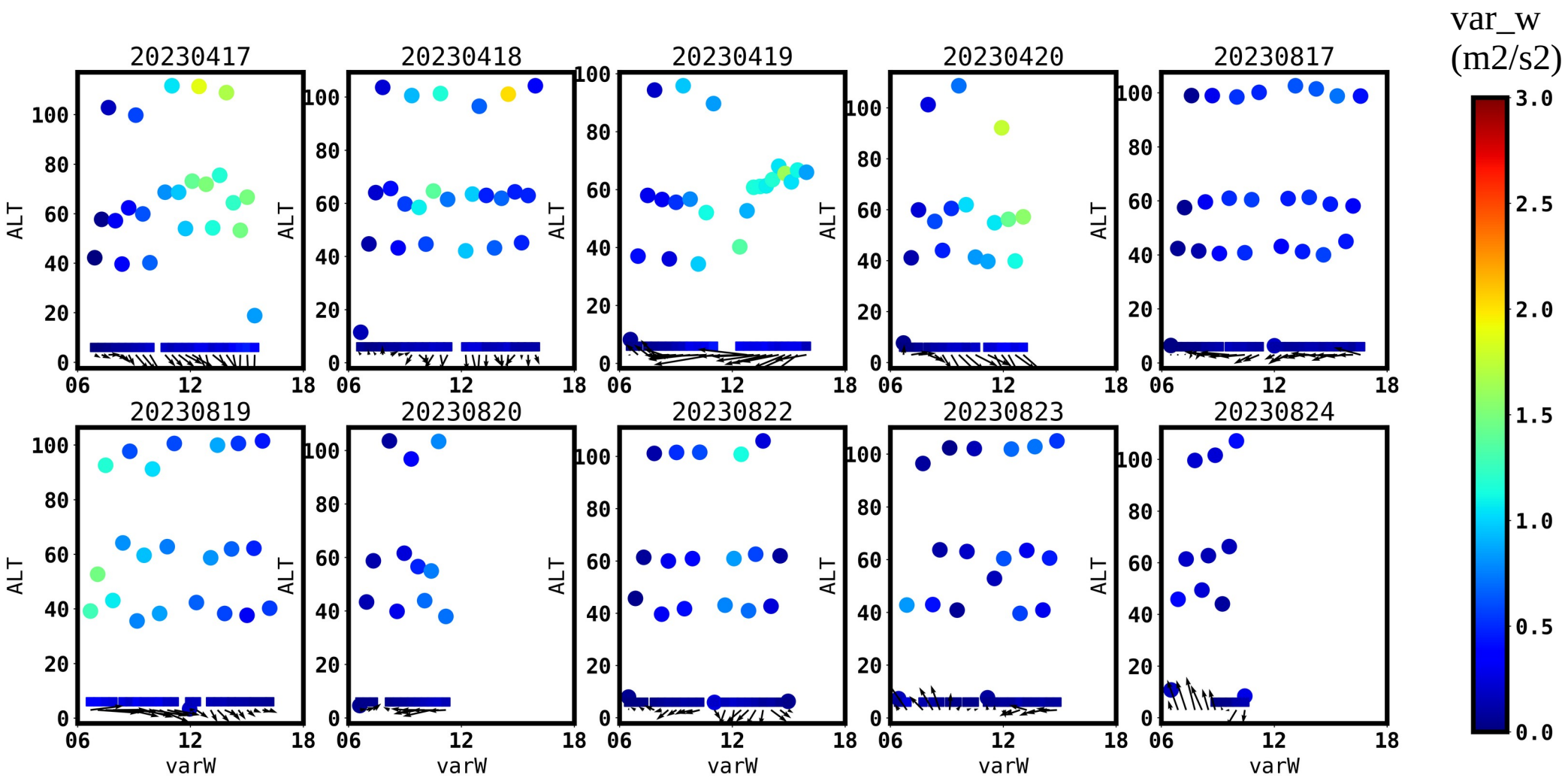




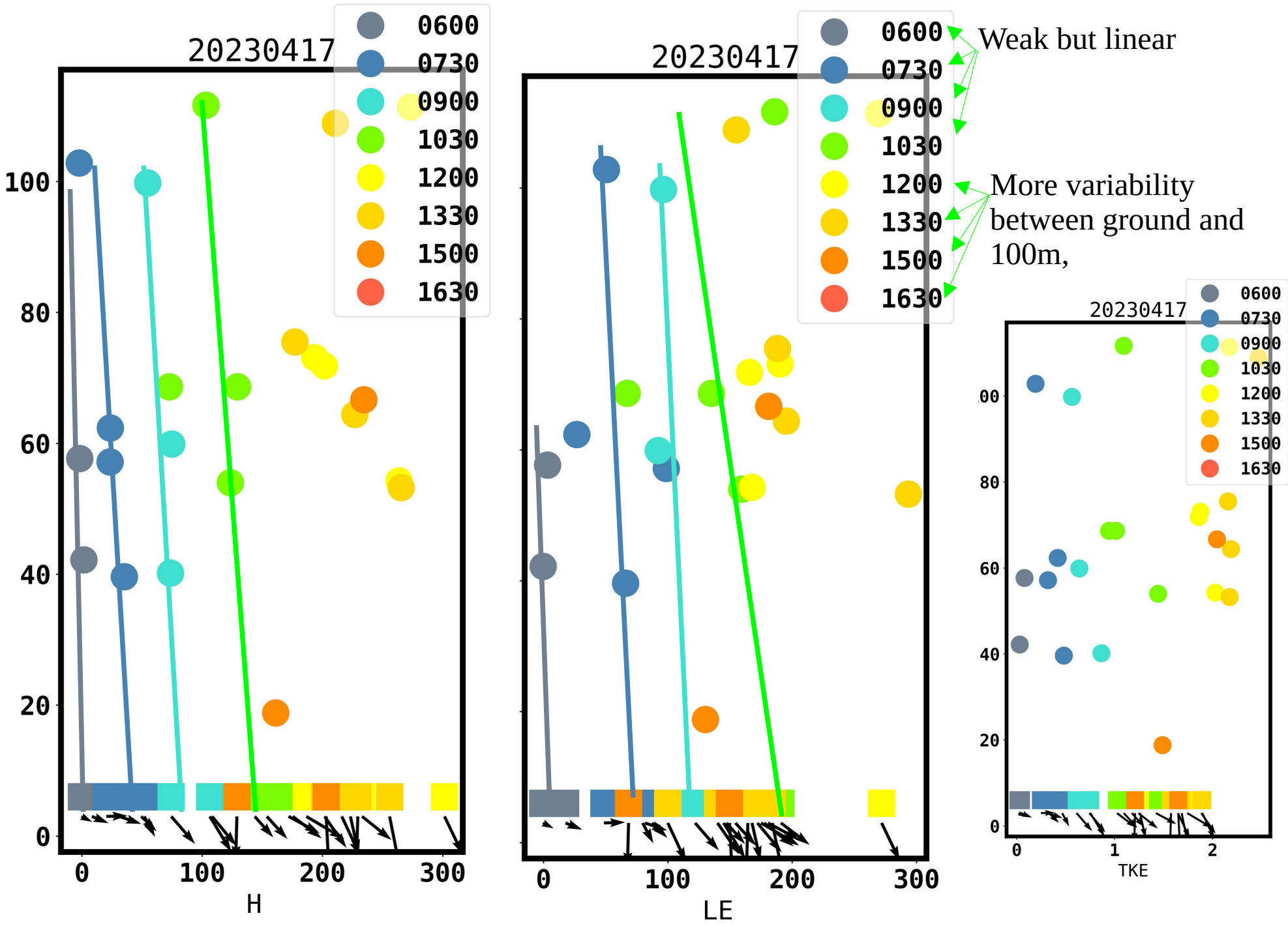


L

Overview of tethered ballon



Parameters available on the file on the AERIS Database:
Temperature, humidity, H, LE, variance of w,u,v and t, skewness, tke


20230417
0600
0730
0900
1030
1200
1330
1500
1630
H
LE
TKE
Weak but linear
More variability between ground and 100m,

CONCLUSION

- The data are in the database
- It's by using the data that we can discover errors, so don't hesitate to come back to us
- TKE and wind variances data from the doppler lidar and tethered balloon are complementary to the study of processes at the deciduous/maize interface.
- we've started to look at integral w scales between forest and balloon à 42m, few little difference