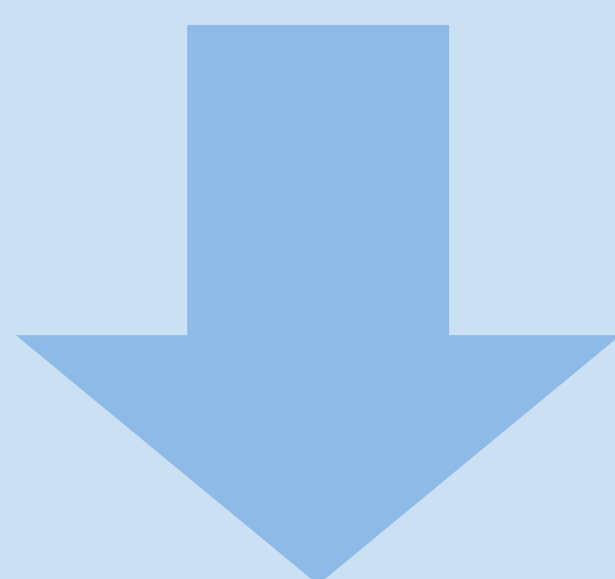


INTRODUCTION

- Planetary boundary layer height (PBLH) and its cycles are key parameters for air pollution and for climate modelling
- Lidar systems are a good tool by applying STRAT+ but with poor spatial resolution



OBJECTIVE

STRAT+ application to
ceilometer measurements

INSTRUMENTATION AND METHODOLOGY

CHM-15k Nimbus:

- Wavelength: 1064 nm
- Energy/pulse: 8 μ J
- Pulse frequency: 6,5 kHz

CL51:

- Wavelength: 910 nm
- Energy/pulse: 3 μ J
- Pulse frequency: 6,5 kHz

STRAT+ algorithm:

- 10-min PBLH candidates (Canny's algorithm)
- 1-hour PBLH reference (variance profile)

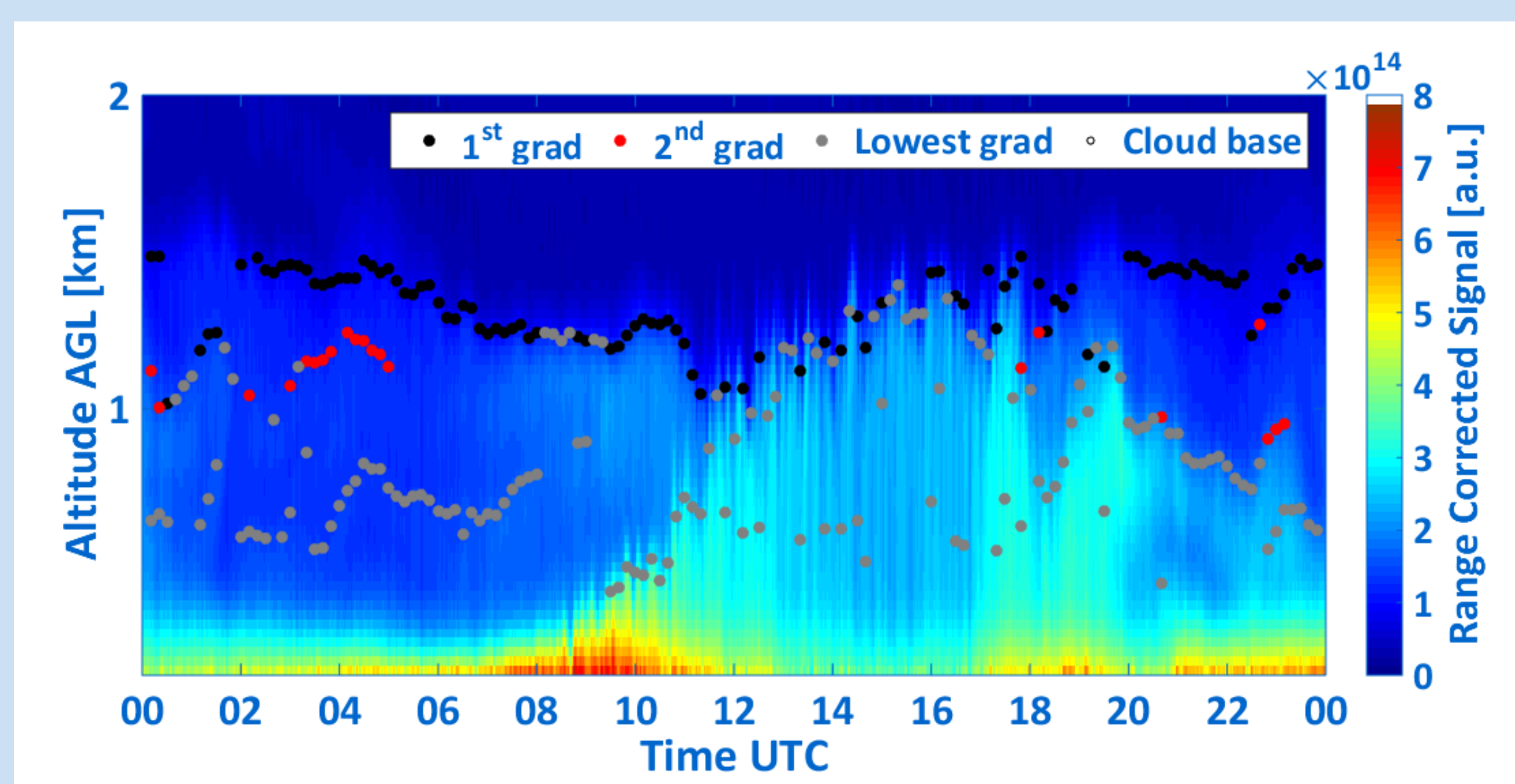
- 3) Final attribution: {
Nighttime: 10-min splined
variance PBLH
Daytime: Nearest candidate
to the 10-min splined
variance PBLH



STATION	Ceilometer
Payerne (py)	Jenoptik CHM15k
Granada (gr)	
SIRTA (st)	Lufft CHM15k
Belgium (bl)	Vaisala CL51

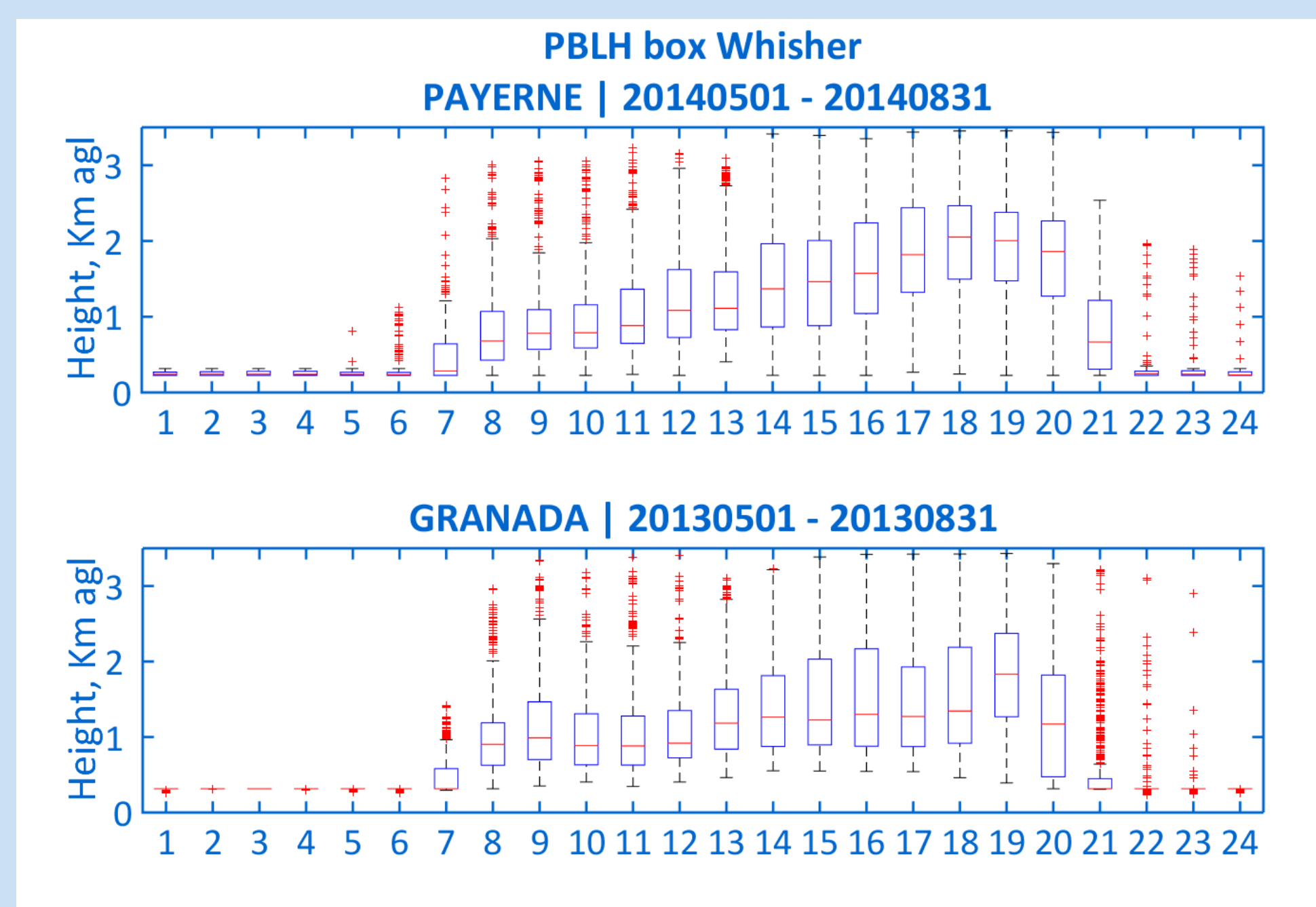
RESULTS

1) PBLH candidates by STRAT



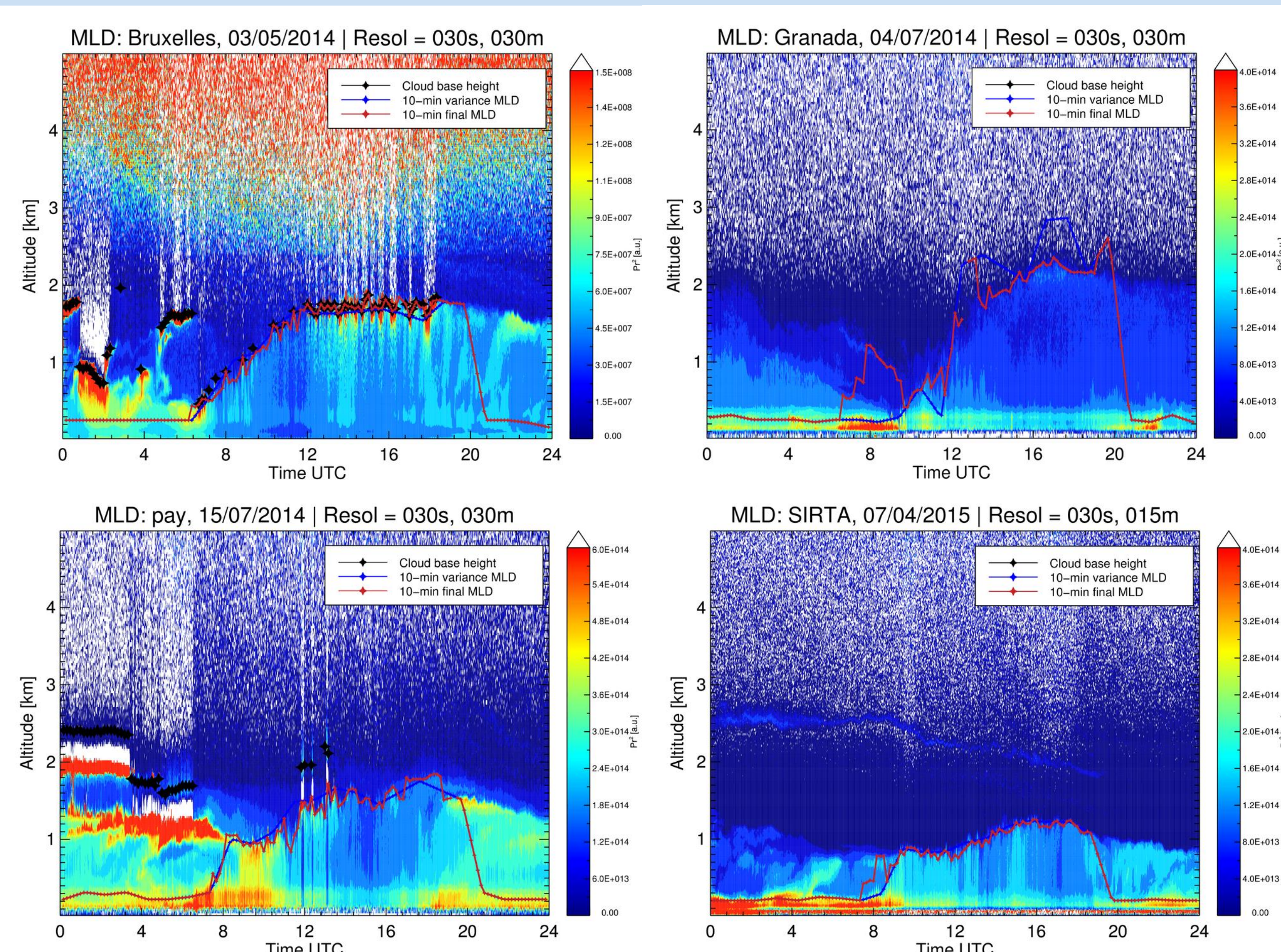
During nighttime, instead of the stable layer,
the residual layer is usually detected

Statistical results: PBLH daily cycle



Daily cycle is well determined although low residual layer
height is found probably due to overlap effects

2 and 3) PBLH reference and final attribution



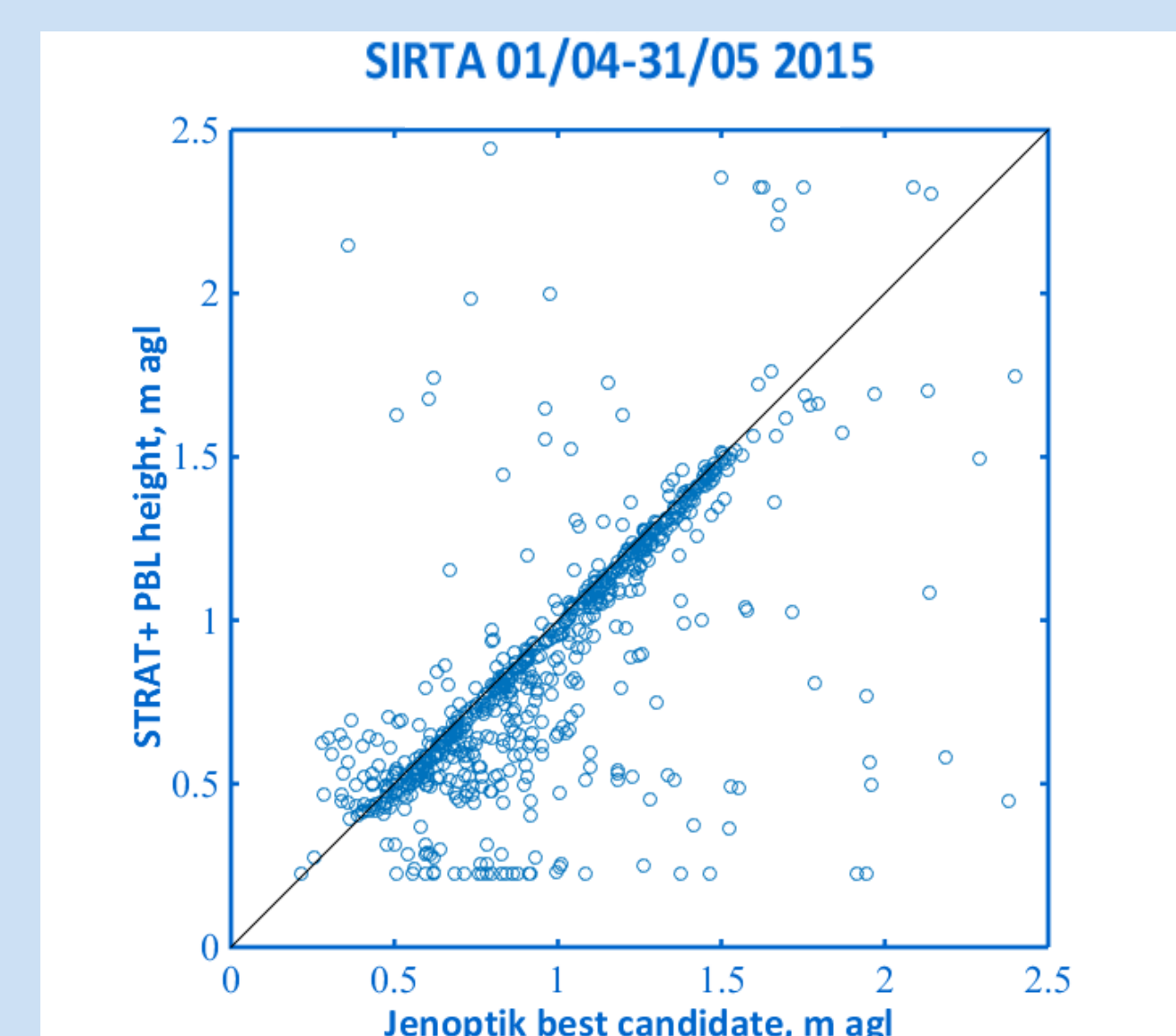
Daytime: PBLH and its daily
evolution generally well
detected

Nighttime: the stable layer
height is successfully detected
using the variance

Intercomparision

Jenoptik Vs STRAT+

Nearest Jenoptik candidate
and STRAT+ PBLH show a
good agreement, pointing to
a correct edge detection.
However, **only STRAT+**
performs a final attribution



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