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*Supplement of*

**Analyzing the turbulent planetary boundary layer by remote sensing systems: the Doppler wind lidar, aerosol elastic lidar and microwave radiometer**

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In the figure S1 is demonstrated the integral time scale obtained from different time intervals: 1 hour (black line), 30 minutes (red line) and 15 minutes (blue line).

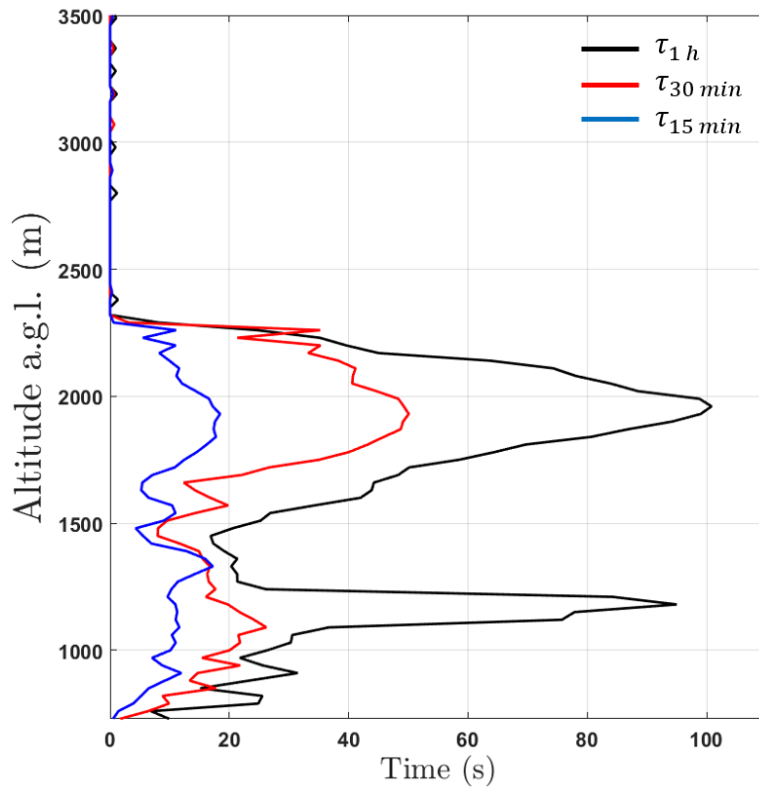


Figure S1 – Integral Time Scale obtained from different time intervals.

In order to demonstrate the quality of Doppler lidar data, the Intensity (SNR+1) and the vertical wind speed obtained during the case studies 1 (05/19) and 2 (07/08) are presented in the time-height plot below:

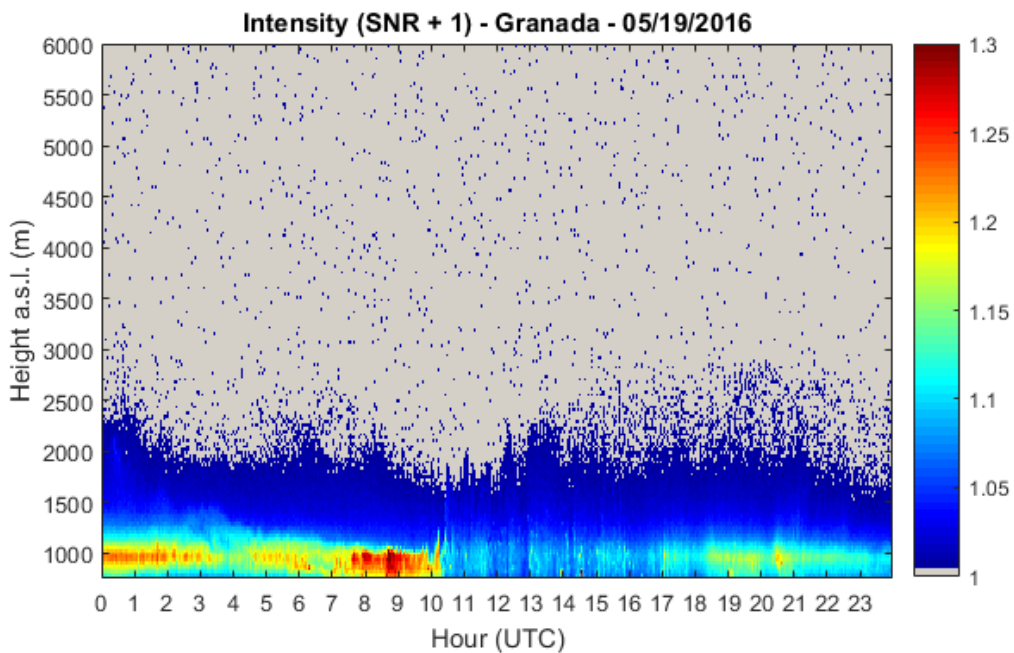


Figure S2 – Doppler lidar SNR+1 Intensity

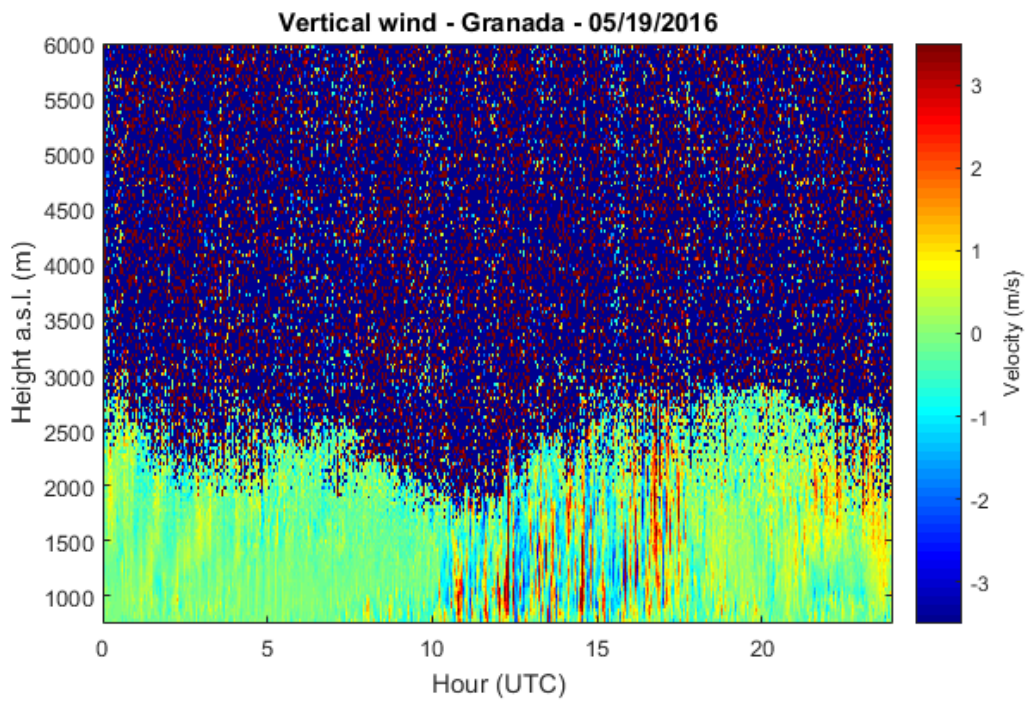


Figure S3 – Vertical wind Speed obtained from Doppler lidar

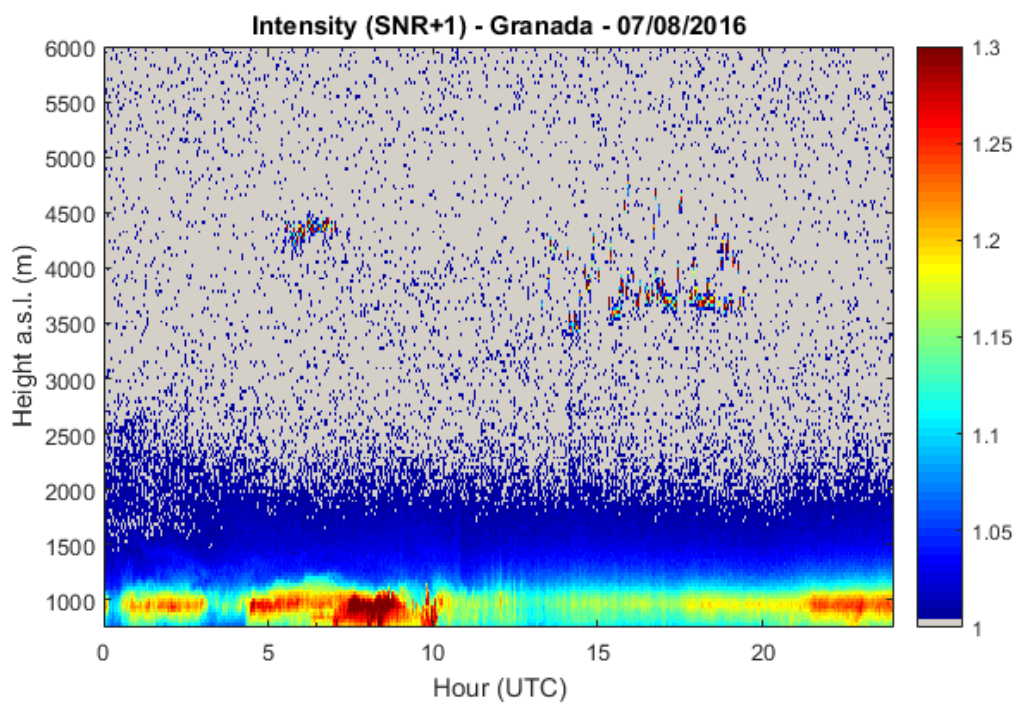


Figure S4 – Doppler lidar SNR+1 Intensity

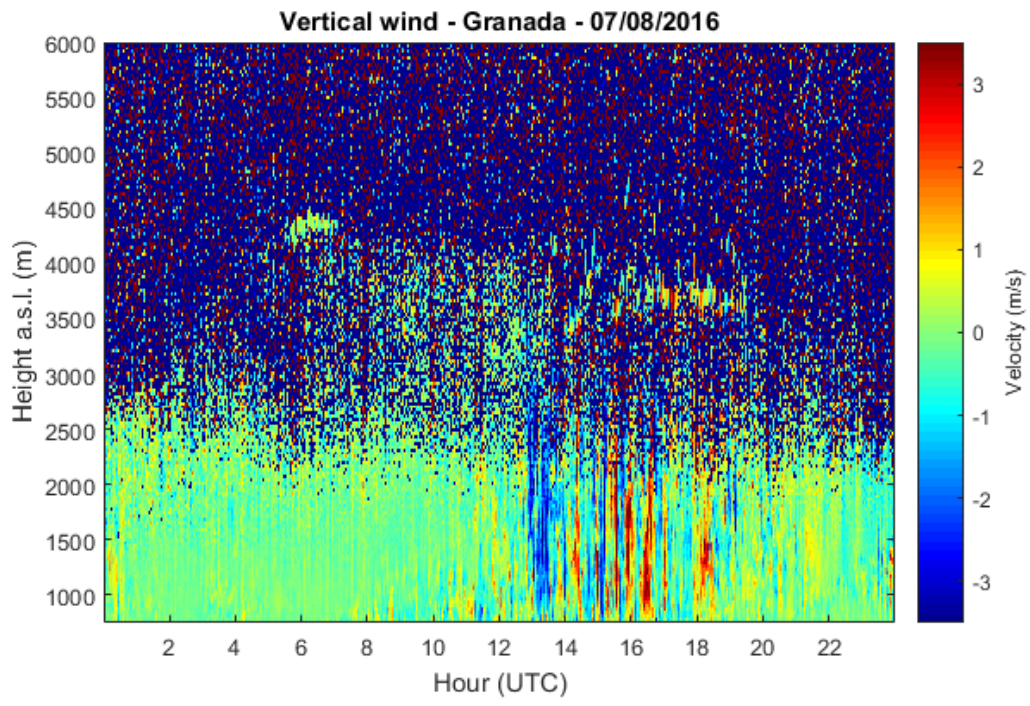
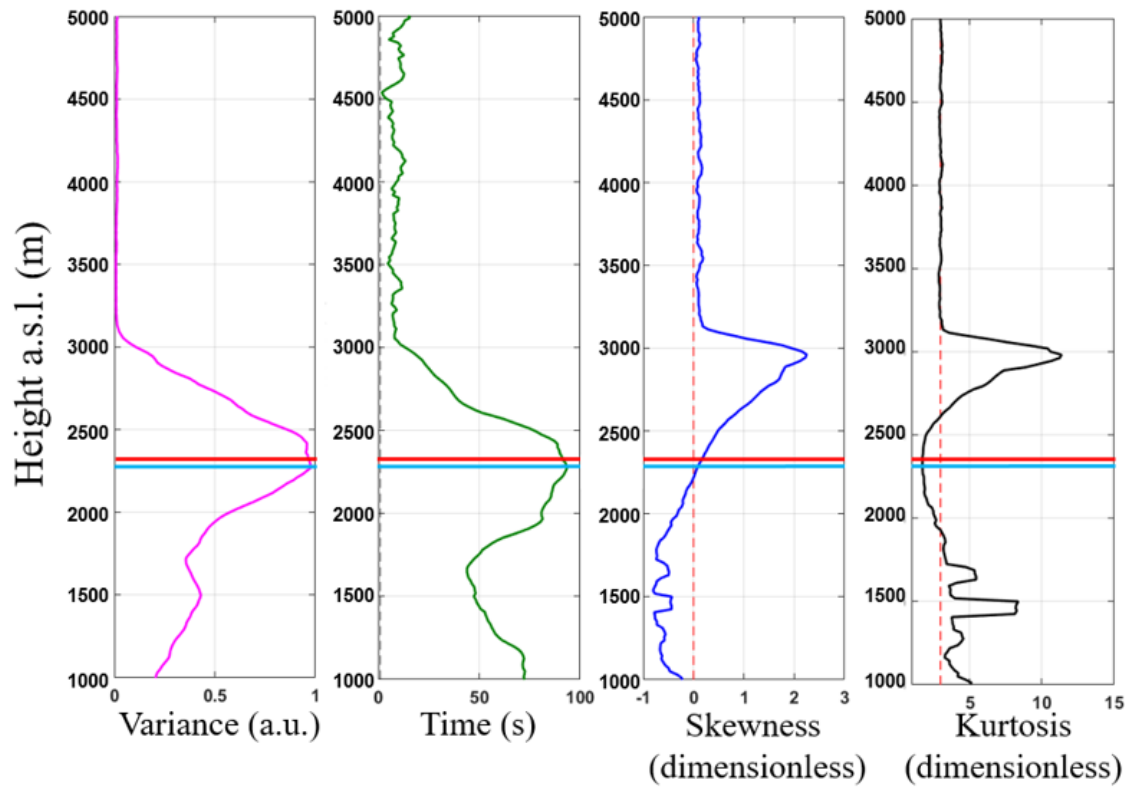


Figure S5 - Vertical wind speed obtained from Doppler lidar

The figures S6, S7, S8 of this document and the figure 13 of main document demonstrate the temporal evolution (4 hours) of the PBL and of the statistical parameters presented in paper (case study 1).



— PBLH<sub>Elastic</sub> — PBLH<sub>MWR</sub>

Figure S6 - Statistical moments obtained from elastic lidar data at 12 to 13 UTC - 19 May 2016. From left to right: variance [ $\sigma_{RCS'}^2$ ], integral time scale [ $\tau_{RCS'}$ ], skewness [ $S_{RCS'}$ ] and kurtosis [ $K_{RCS'}$ ].

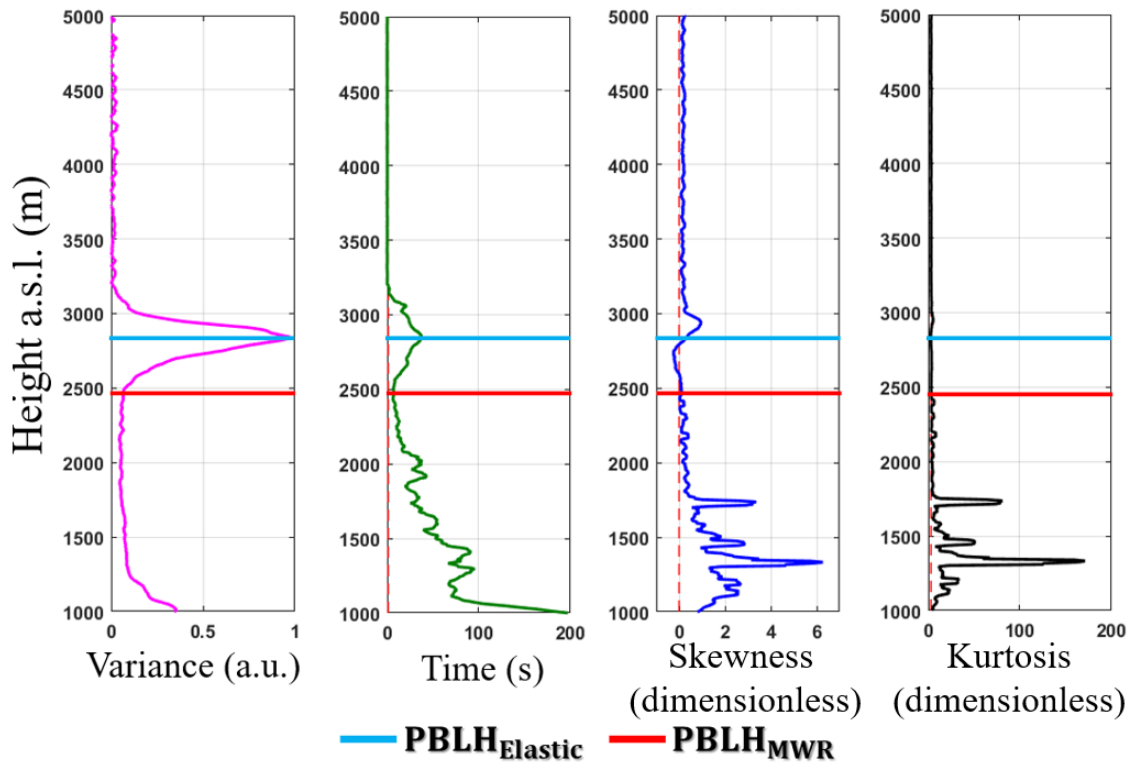


Figure S7 - Statistical moments obtained from elastic lidar data at 14 to 15 UTC - 19 May 2016. From left to right: variance [ $\sigma_{RCS'}^2$ ], integral time scale [ $\tau_{RCS'}$ ], skewness [ $S_{RCS'}$ ] and kurtosis [ $K_{RCS'}$ ].

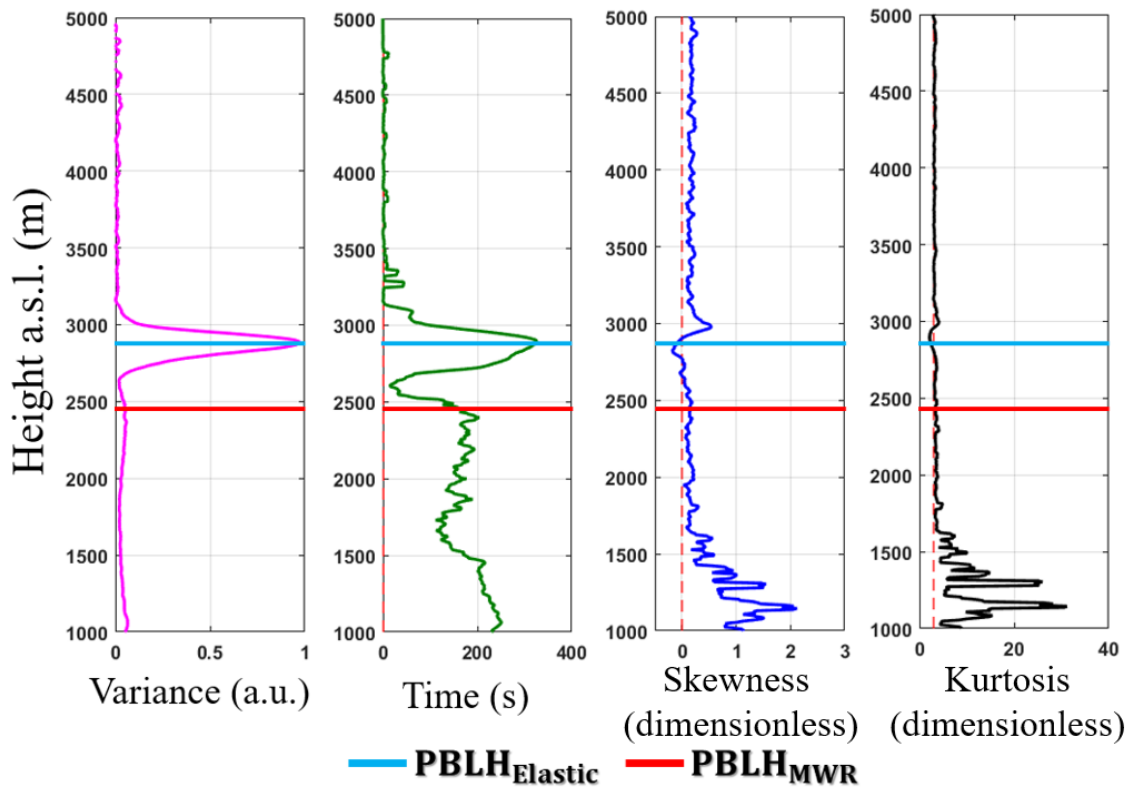


Figure S8 - Statistical moments obtained from elastic lidar data at 15 to 16 UTC - 19 May 2016. From left to right: variance [ $\sigma_{RCS'}^2$ ], integral time scale [ $\tau_{RCS'}$ ], skewness [ $S_{RCS'}$ ] and kurtosis [ $K_{RCS'}$ ].