Supplementary material to “Boundary layer height and surface stability at SMEAR II, Hyytiälä, Finland in ERA5 and observations”

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References

- CLU. Cloud profiling product classification; 2018-10-01, 2018a. URL <https://hdl.handle.net/21.12132/1.4515948370b94375>. Generated by the cloud profiling unit of the ACTRIS Data Centre.
- CLU. Cloud profiling product classification; 2018-10-28, 2018b. URL <https://hdl.handle.net/21.12132/1.e87b5b355e634f6e>. Generated by the cloud profiling unit of the ACTRIS Data Centre.

Figure S1: Normalised histograms of the diagnosed boundary layer depth in ERA5 at the grid point closest to Hyytiälä in December-January-February (blue, $N=3700$), March-April-May (purple, $N=3772$), June-July-August (red, $N=3772$) and September-October-November (green, $N=3731$) at 00, 06, 12 and 18 UTC. Data from January 1979 to December 2019 is included.

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Figure S5: Monthly correlations between ERA5 BL height series from the grid cell closest to the location of the Hyttiälä station and the neighbouring ERA5 grid cells calculated over the time period from January 1979 to December 2019 computed using only data at 18 UTC. Values of the correlation coefficient less than 0.75 are masked out. Position of the Hyttiälä station is marked with a red dot.

Figure S6: (a) Temperature profiles from MWR measurements and (b) ERA5, (c) a cloud profiling product and (d) the stability regimes for 1 October 2018. Panels (a-b) have the MWR unstable BL height (filled circle), MWR stable BL height (empty circle), and ERA5 BL height (cross) plotted. The grey lines in panels (a-b) denote isotherms in 5°C intervals. z_{AGL} stands for height above ground level. The cloud classification product is taken from CLU [2018a].

Figure S7: Same as Fig. S6, but for 28 October 2018. The cloud classification product is taken from CLU [2018b].