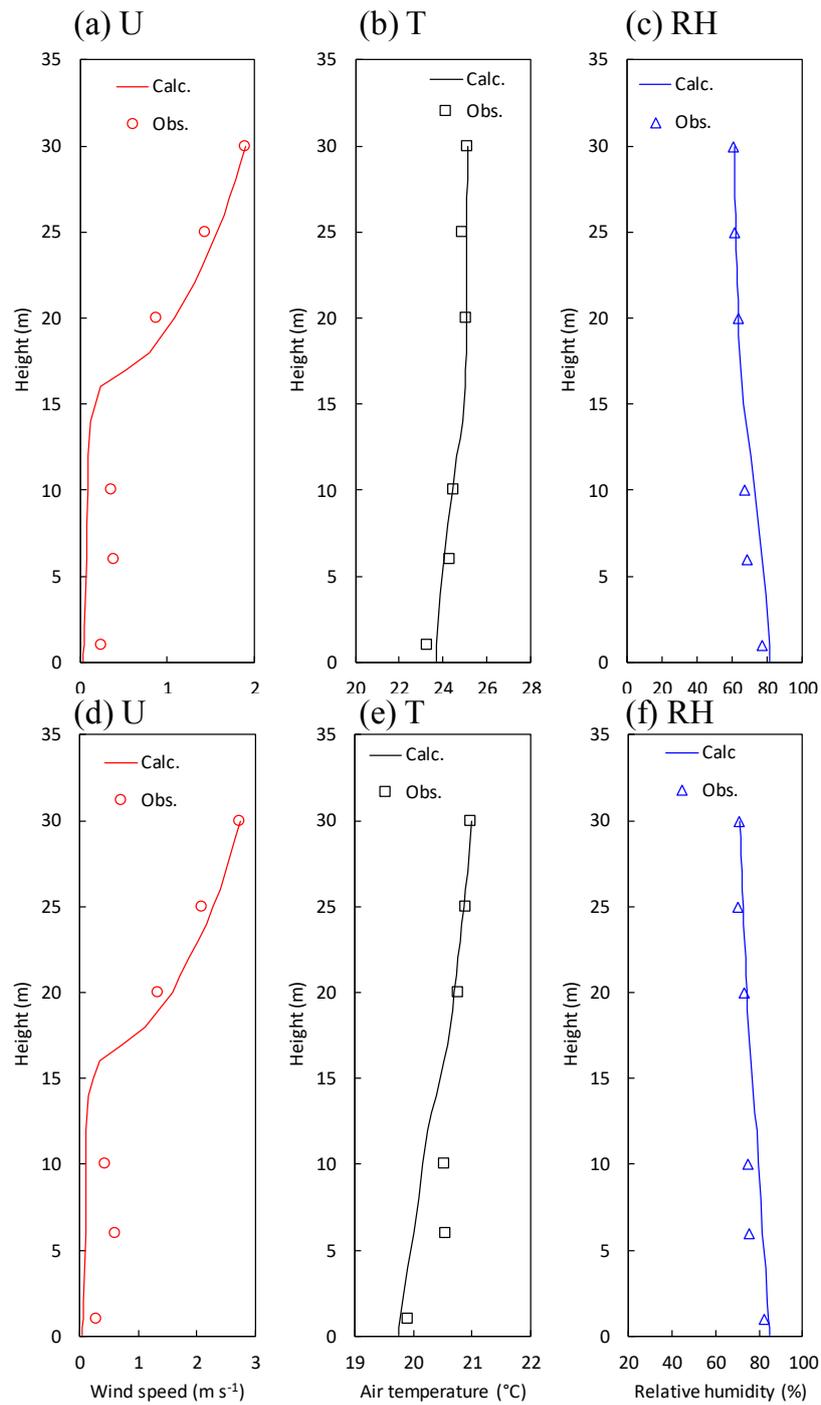


1 **Supplemental Figure**



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3 Figure S1 Mean vertical profiles in observed and calculated (a) wind speed, (b) air temperature,  
4 and (c) relative humidity (a–c) during the daytime and (d–f) nighttime from 27 September to  
5 11 October 2016.

6 **Supplemental Table**

7

8 Table S1 Simulation settings for the multi-layer atmosphere–SOiL–VEGetation model,  
9 SOLVEG.

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Item	Value
Simulation periods	Early autumn (26 September to 11 October 2016); Late autumn: 7 November to 7 December
Time step	6 s
Vegetation species	Broad-leaved forest ( <i>Quercus spp.</i> )
Numbers of layers	29, 20, and 7 for atmosphere, vegetation, and soil, respectively
Soil layer boundaries	0.02, 0.05, 0.1, 0.2, 0.5, 1.0, and 2.0 m depth
Vegetation layer boundaries	0.05, 0.1, 0.2, 0.3, and 0.5 m (understory vegetation), and from 1 to 20 m (forest canopy) with an increment of 1 m
Atmospheric layer boundaries	At the vegetation layers and from heights of 21 to 29 m in increments of 0.1 m
Root fraction distribution	Constant from the surface to 0.5 m depth
Characteristics length for leaf, $d_{leaf}$	10 mm
Number of particle size bins	30 bins from 0.003 to 3.5 $\mu\text{m}$ in diameter
Porosity (saturated water content)	0.43 $\text{m}^3 \text{m}^{-3}$
Soil texture	Loam
Initial soil water content	0.5 $\text{m}^3 \text{m}^{-3}$
Leaf area index (LAI) of trees	4.3 (early autumn) and 3.6 $\text{m}^2 \text{m}^{-3}$ (late autumn)
Other parameters	Same as Katata et al. (2014)

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13 **References**

- 14 Katata G., Kajino M., Matsuda K., Takahashi A., Nakaya K. (2014). A numerical study of the  
15 effects of aerosol hygroscopic properties to dry deposition on a broad-leaved forest.  
16 *Atmospheric Environment*, 97, 501-510.

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