

Supplementary Materials for

**Occurrence frequency of Kelvin Helmholtz instability
assessed by global high-resolution radiosonde and ERA5
reanalysis**

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This supplementary file contains Figures S1-5

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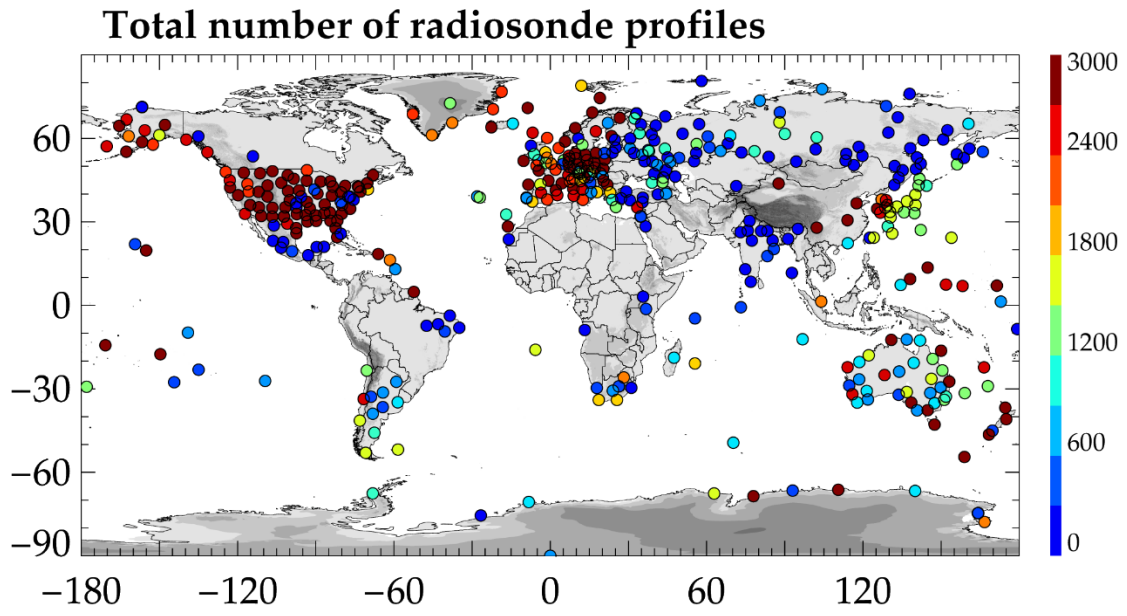


Figure S1. Total released soundings over each station.

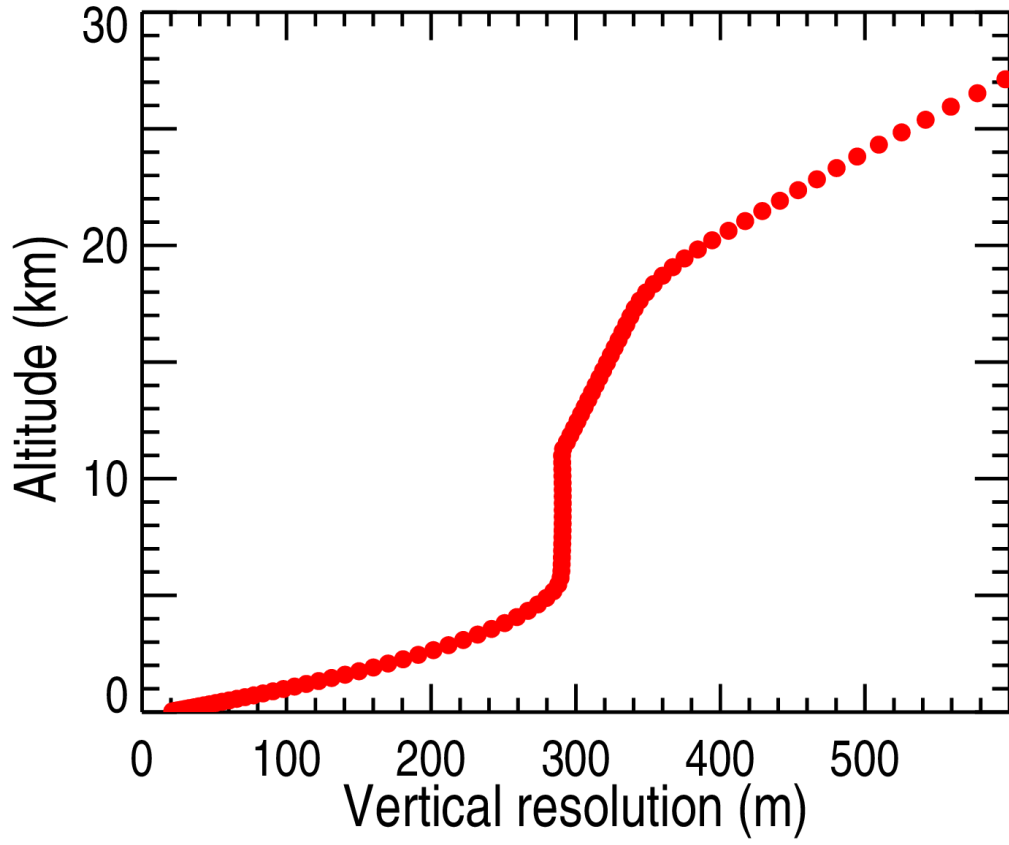


Figure S2. Vertical resolution of ERA5 at different heights.

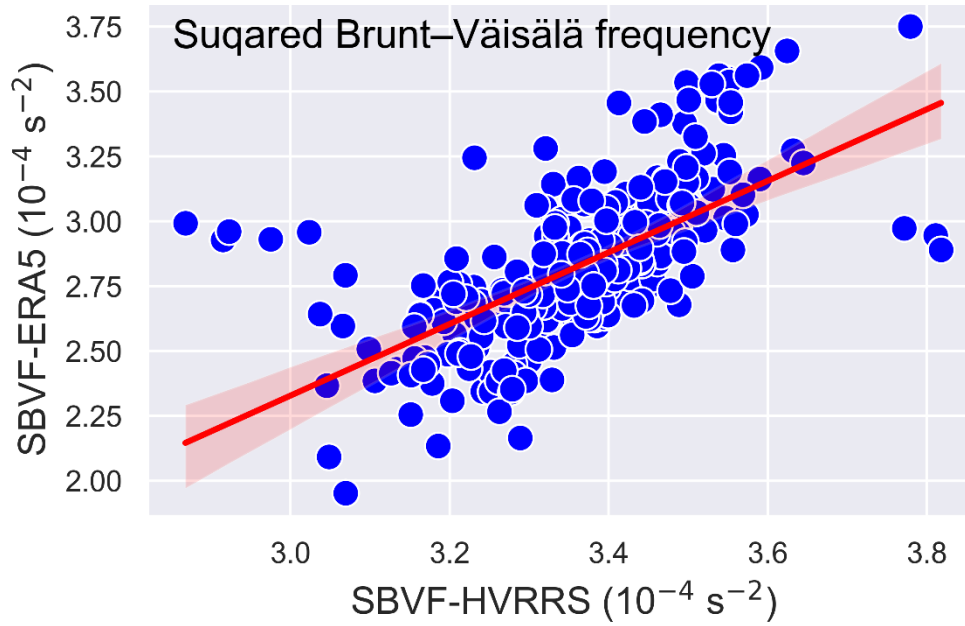


Figure S3. The joint distributions of HVRRS-retrieved and ERA5-determined squared Brunt-väisälä frequency together with the linear regression (red line). The light red shadow denotes a significance of 95%. The Brunt-väisälä frequency is averaged from the ground to 30 km a.g.l during the whole study period. The ERA5 derived N^2 is spatially and temporally collocated with that of HVRRS.

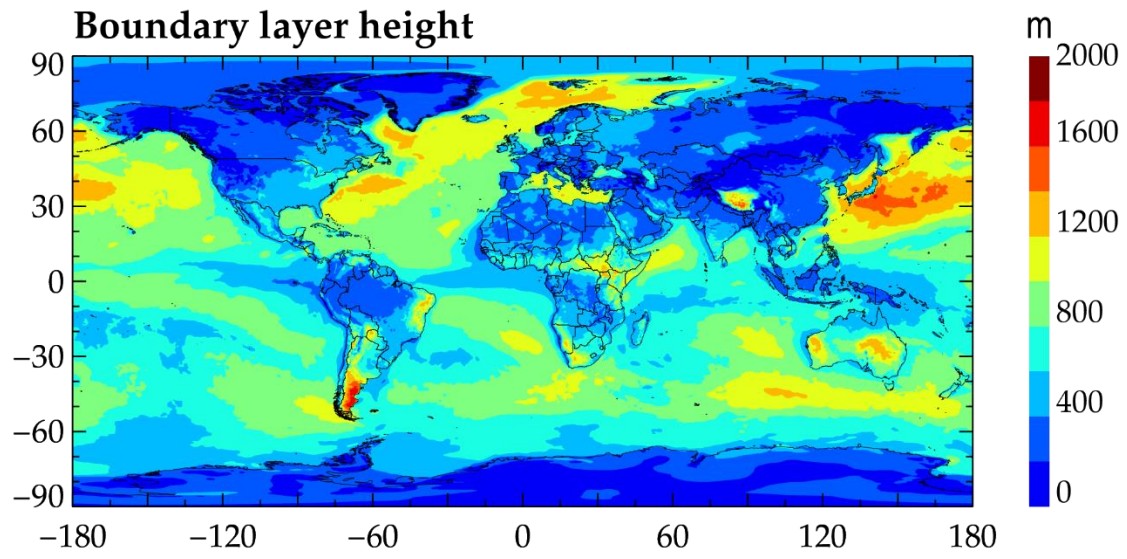


Figure S4. The averaged planetary boundary layer height during years 2017 to 2022.

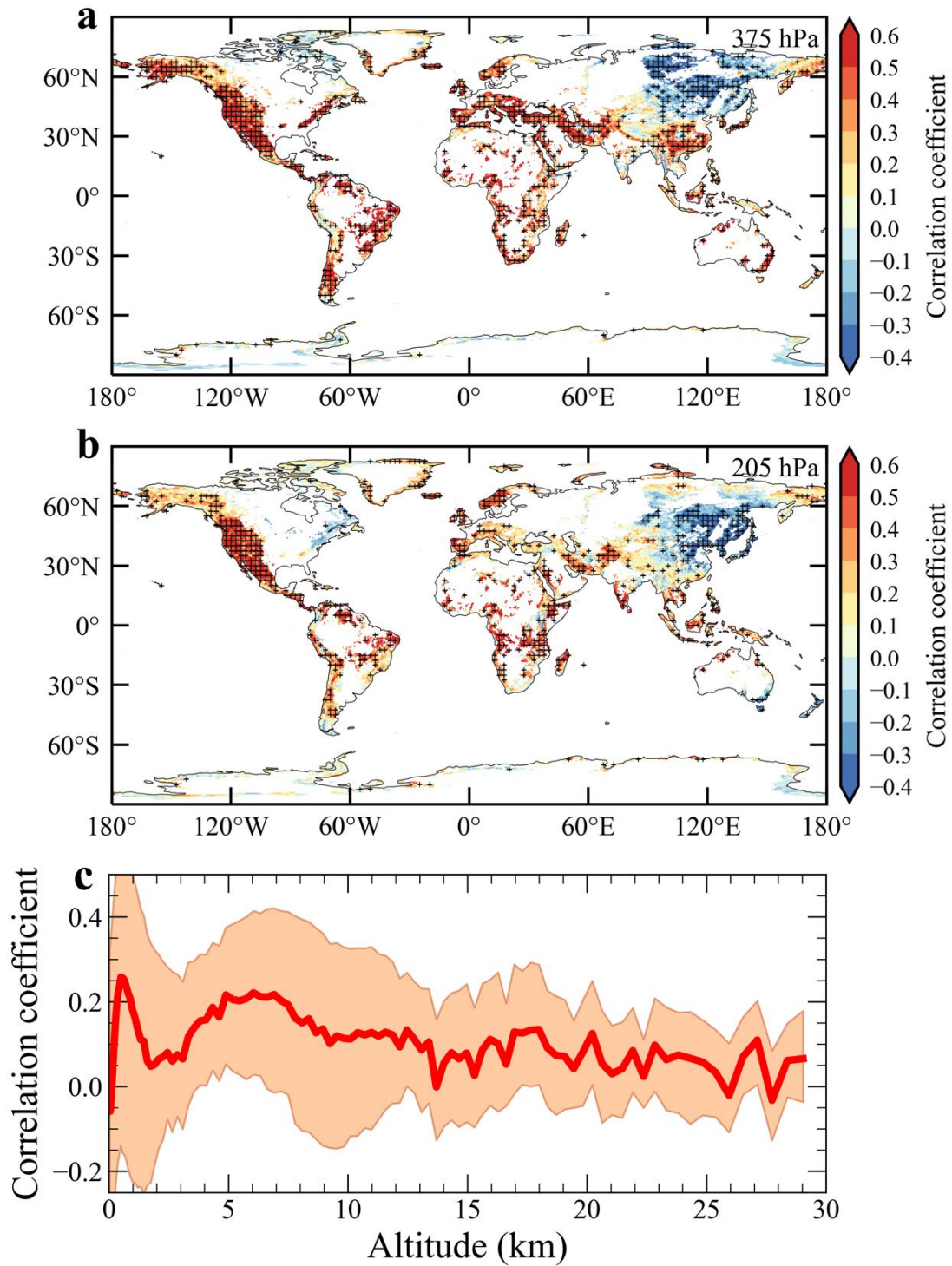


Figure S5. The correlation coefficient between ERA5-based orographic GW dissipation and ERA5-based KHI occurrence frequency at pressure levels of 375 hPa (a) and 205 hPa (b), where plus signs indicate that the values are statistically significant ($p < 0.05$). The coefficient at continuous heights from the ground up to 30 km is further displayed in (c), where the light red shadow denotes a significance of 95%.