Supplementary Information for

Improved estimation of diurnal variations in near-global PBLH through a hybrid WCT and transfer learning approach

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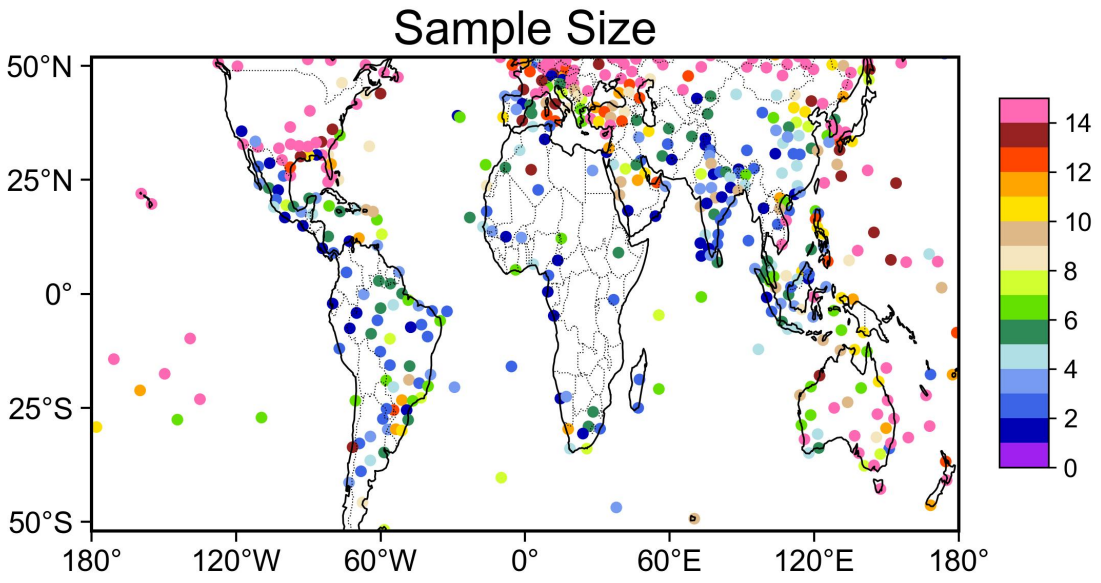

Fig. S1. Numbers of matched samples between CATS orbits and radiosonde sites.

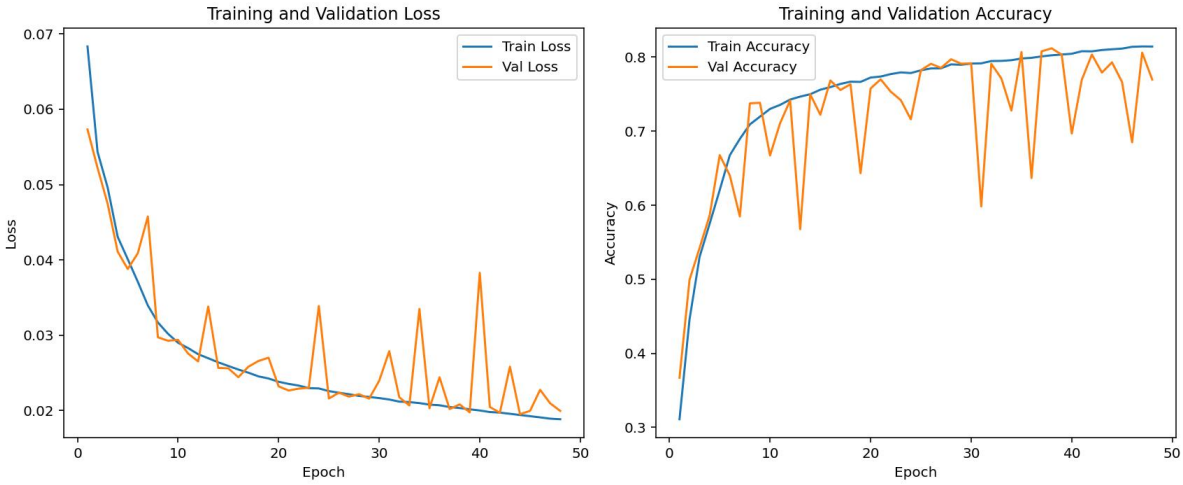

Fig. S2. Training curves for pre-trained model.

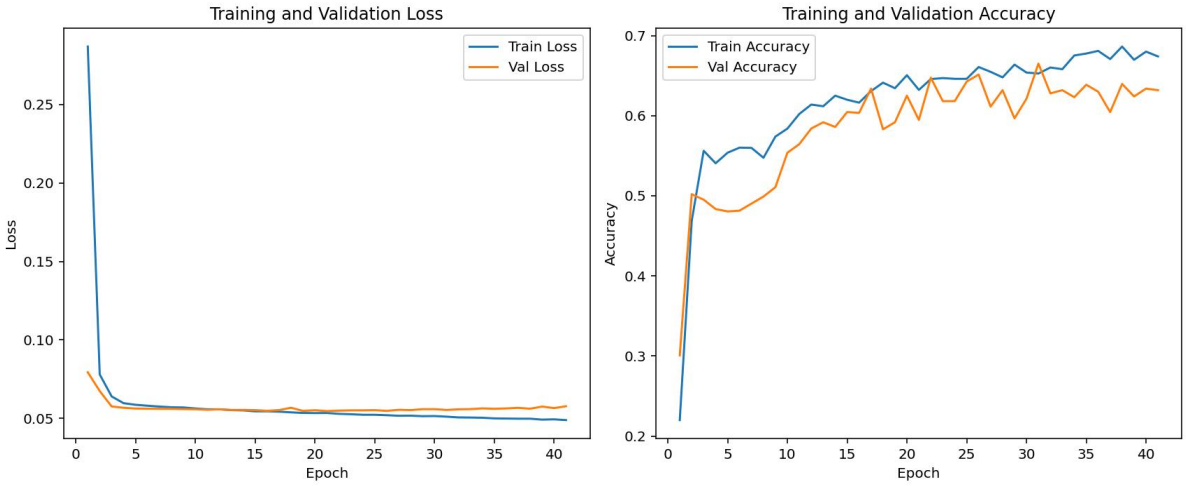

Fig. S3. Same as Fig. S2, but for curves of non-transfer model, that is training the model across the dataset with target labels only constrained by radiosonde.

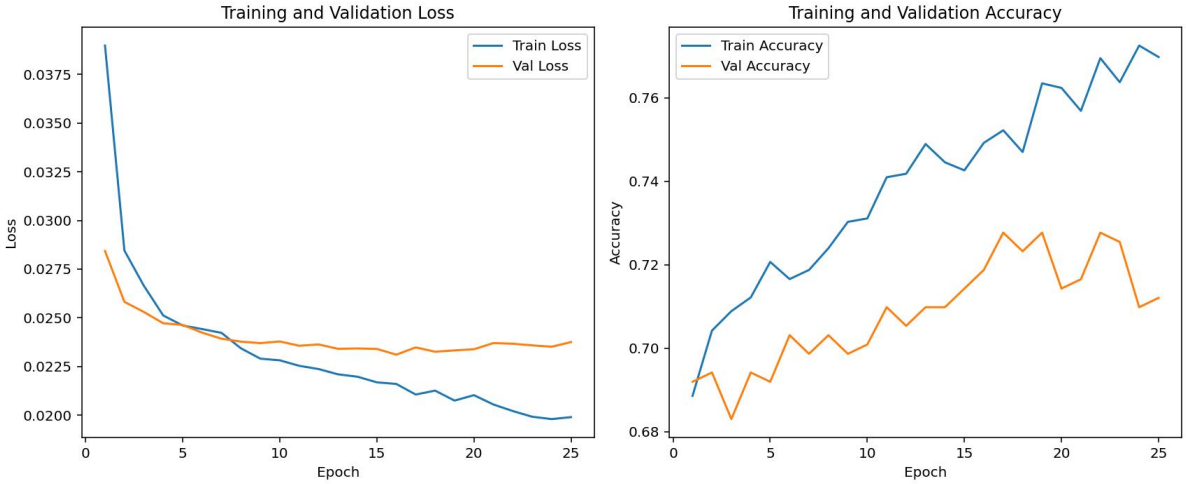

Fig. S4. Same as Fig. S2, but for curves when training the transfer model.

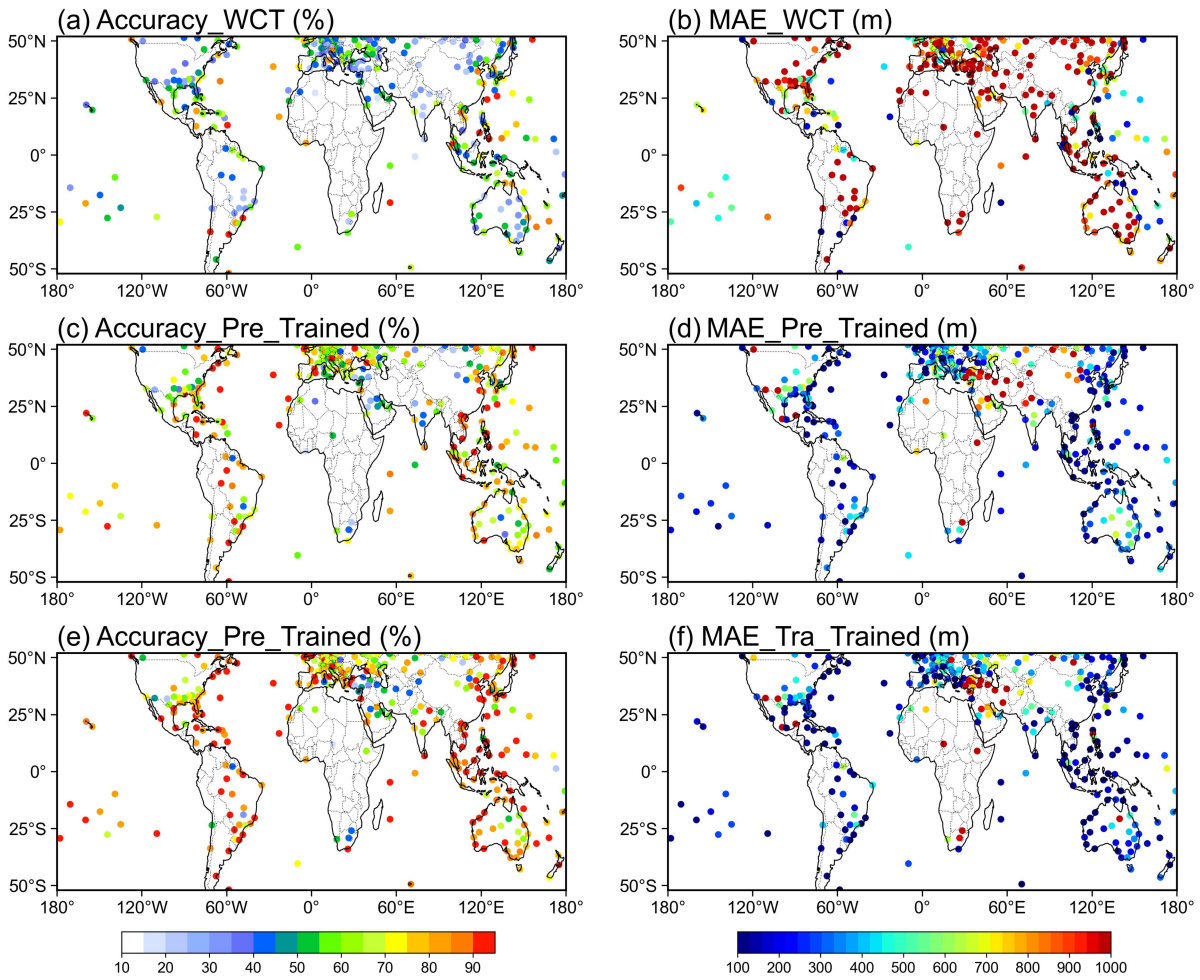

Fig. S5. Accuracy and MAE of the WCT (a-b), pre-trained model (c-d), transfer-trained model (e-f) when comparing against the radiosonde constrained PBLH labels.

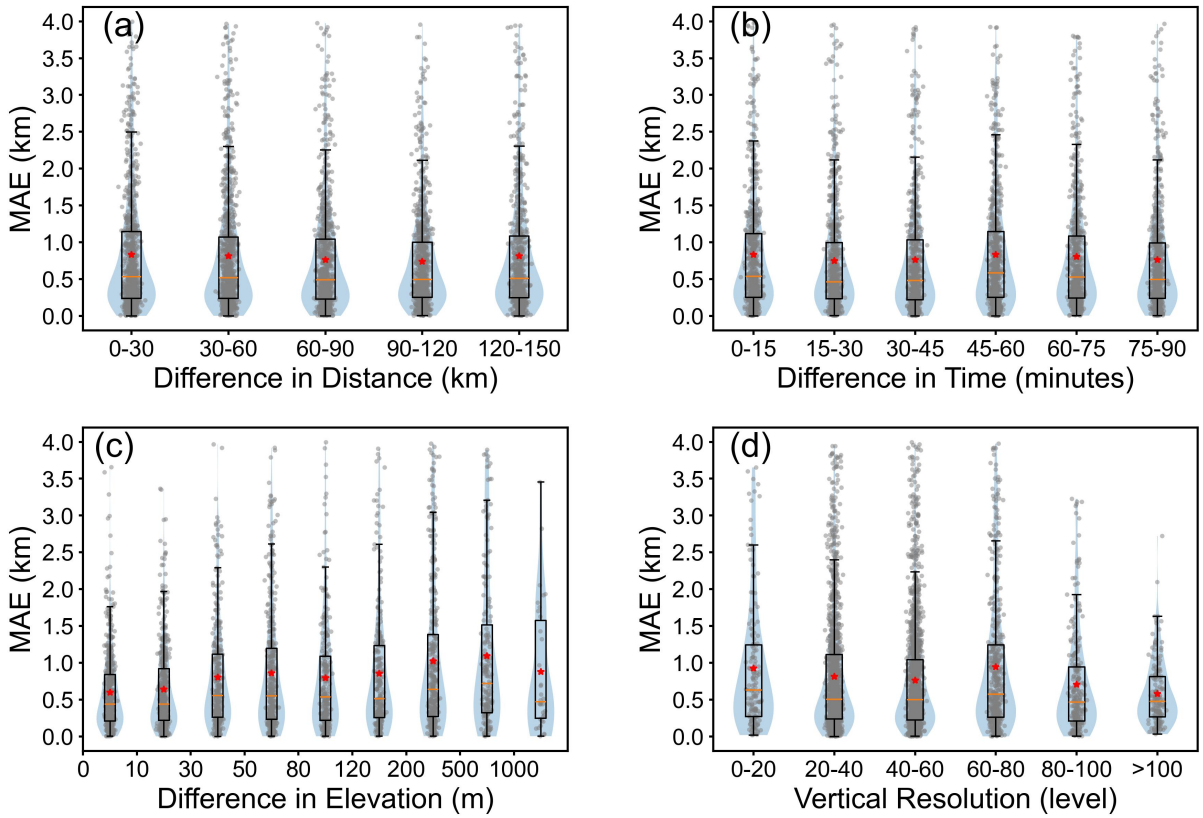

Fig. S6. Dependence of PBLH differences between the WCT and radiosonde on differences in distance (a), time (b), elevation (c), and vertical resolution of radiosonde (d).

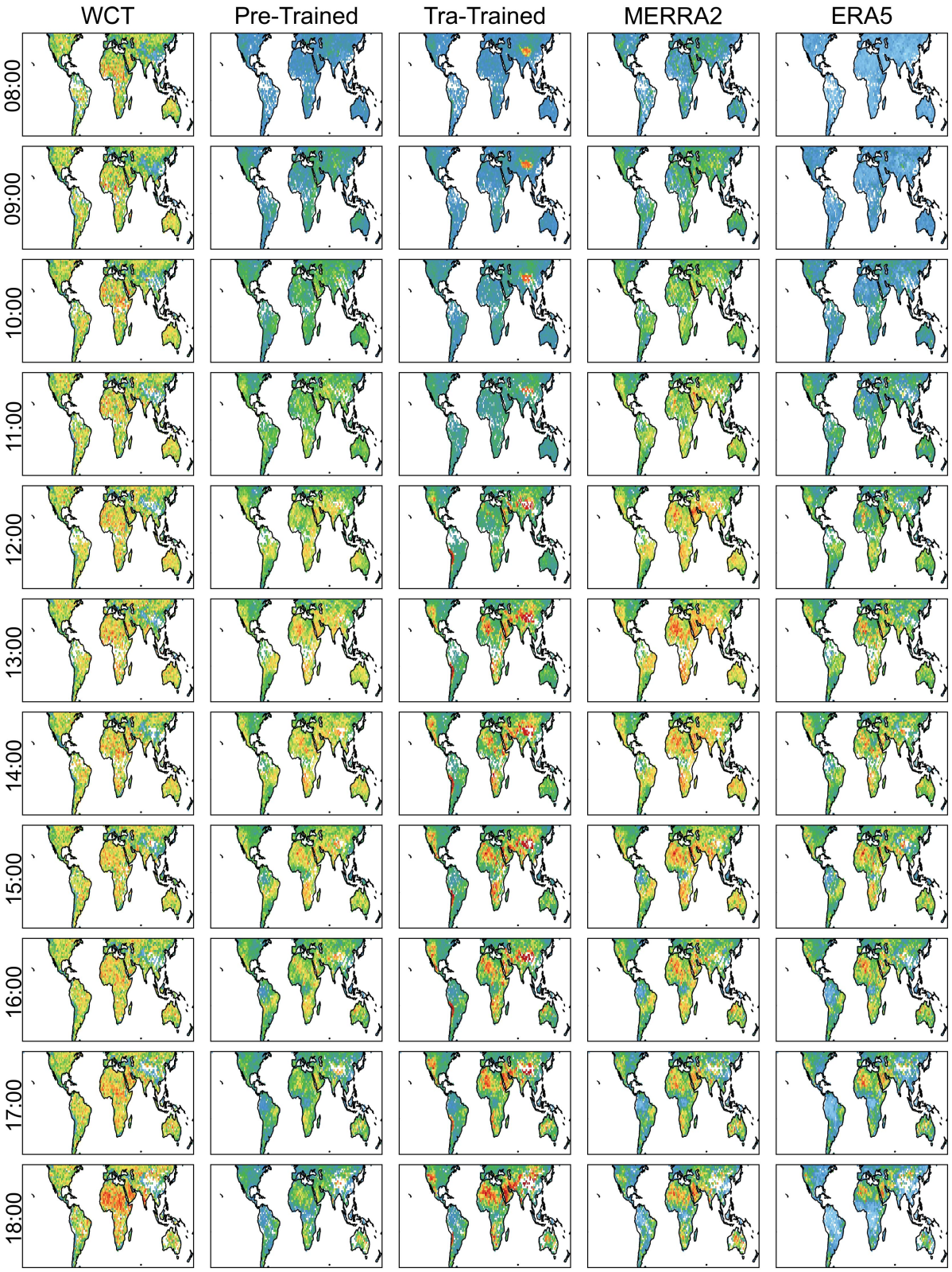

Fig. S7. Spatial distribution of PBLH derived from the WCT, pre-trained model, transfer-trained model, MERRA2, and ERA5 at each daily hour.

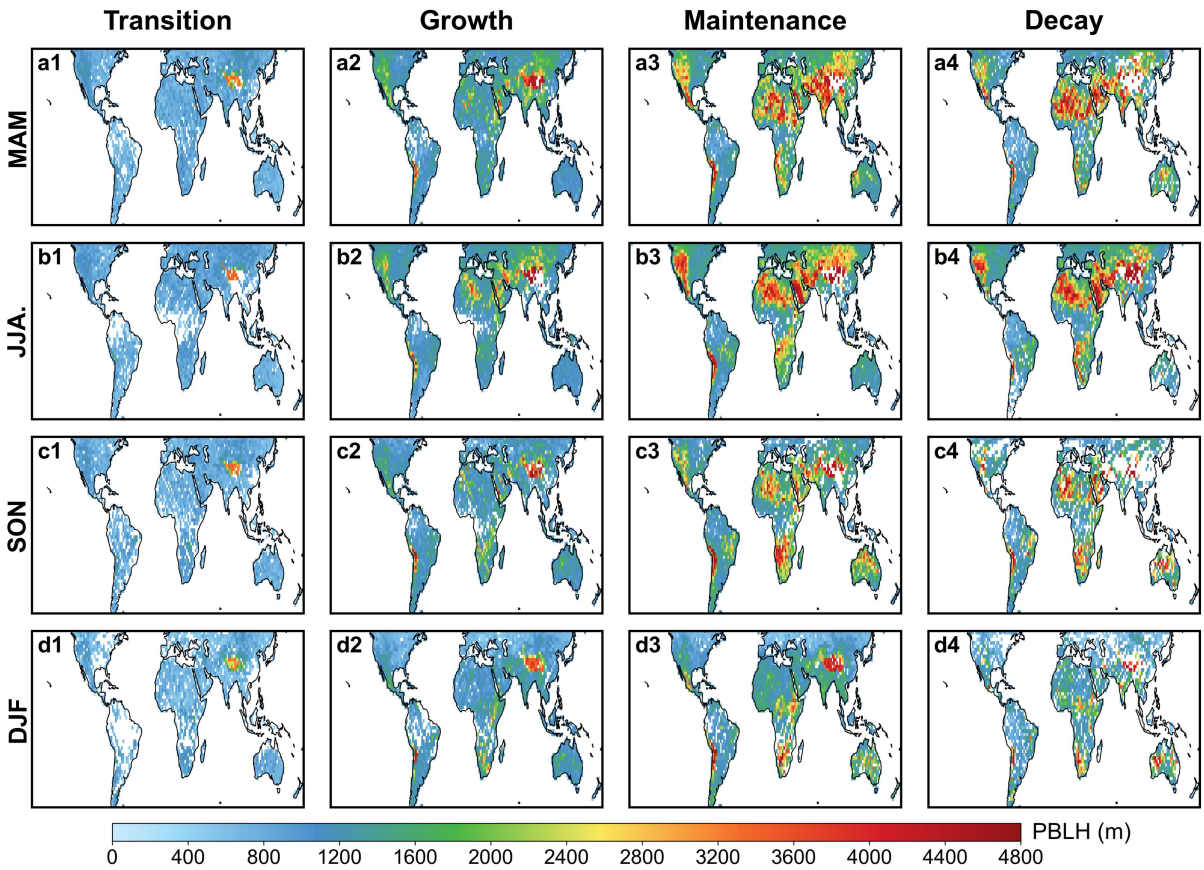

Fig. S8. Seasonal variation for the four evolution stages of PBLH derived from transfer-trained model.