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Seasonal ozone vertical profiles over North America using the AQMEII3 group of air quality models: model inter-comparison and stratospheric intrusions

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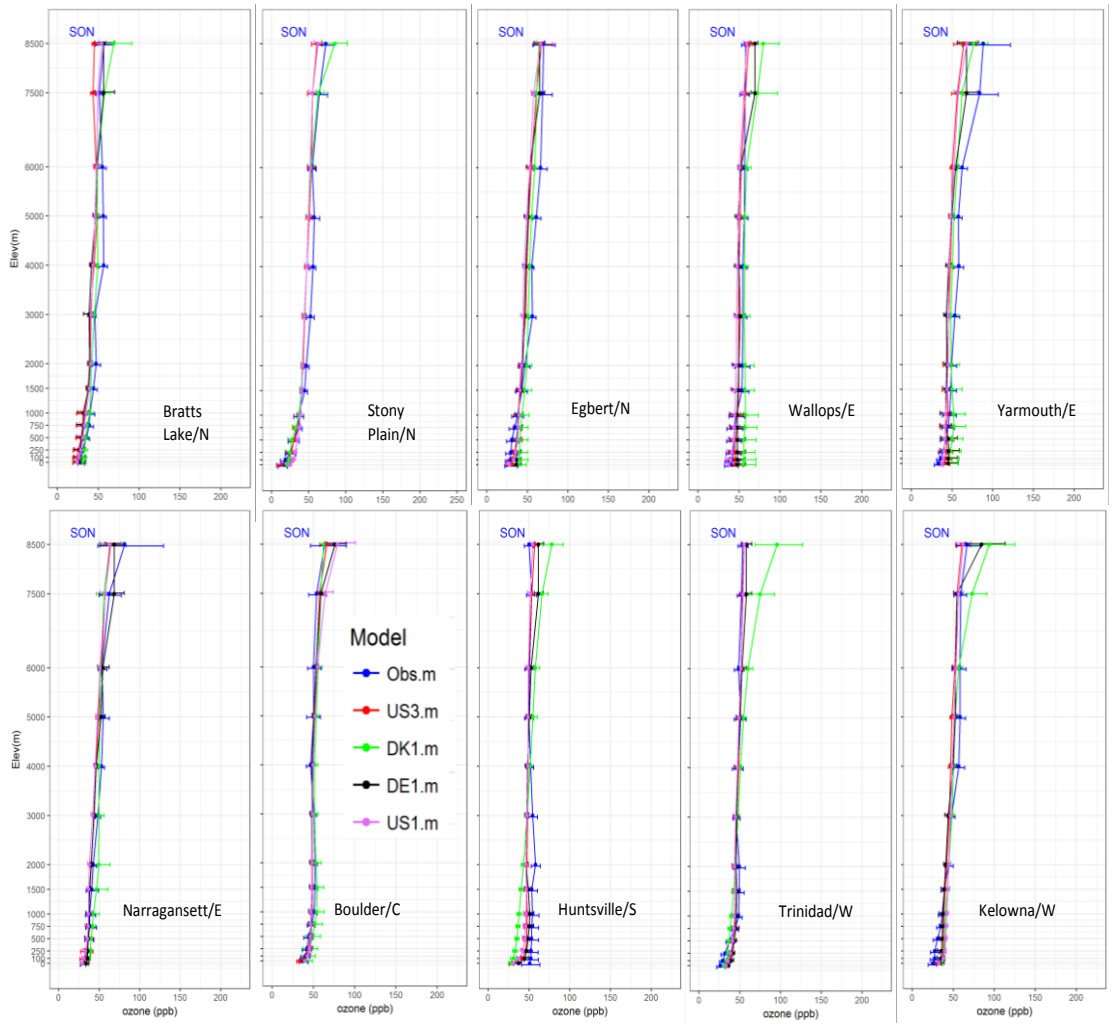

Figure S1: Vertical profiles of ozone mixing ratios during the Fall of 2010 (SON: Sep, Oct, Nov). The horizontal lines indicate the 95% bootstrapped confidence interval for each vertical layer. Note: Bratts Lake has only four ozonesondes for SON.

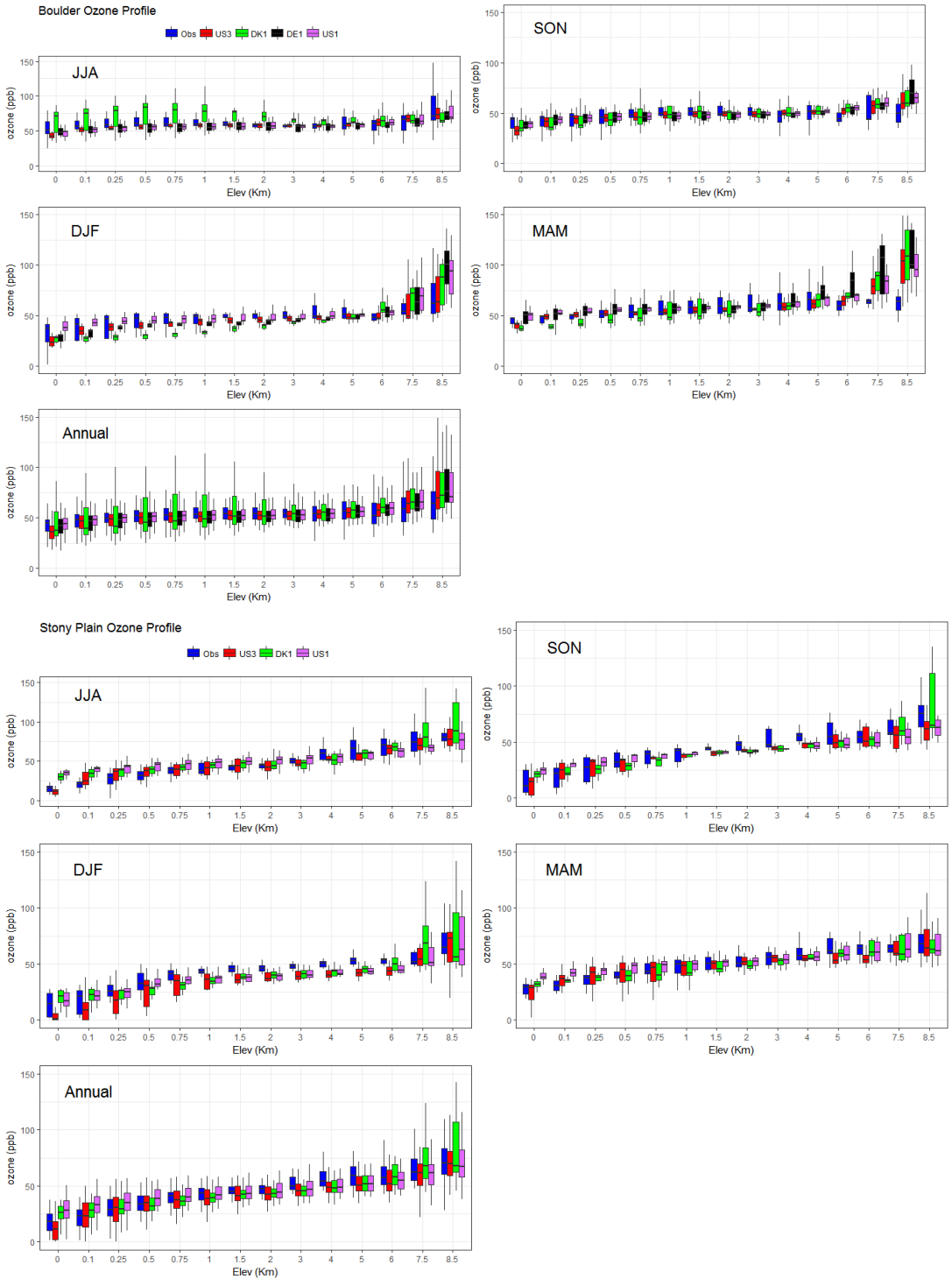

Figure S2: Box plots of seasonal and annual vertical profiles of ozone concentrations for 2010: Boulder and Stony Plain.

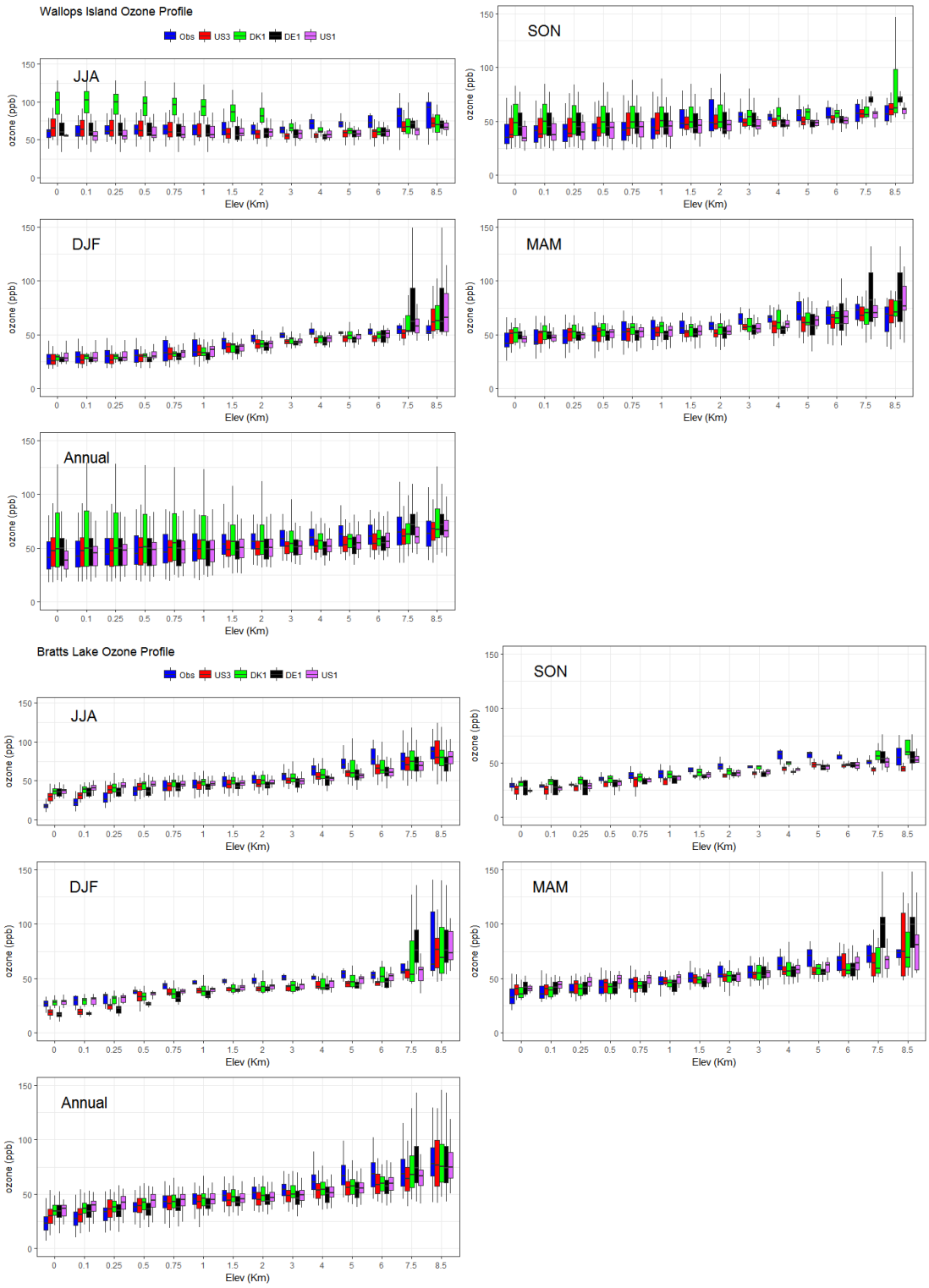

Figure S2 (cont.): Box plots of seasonal and annual vertical profiles of ozone concentrations for 2010: Wallops and Bratts Lake.

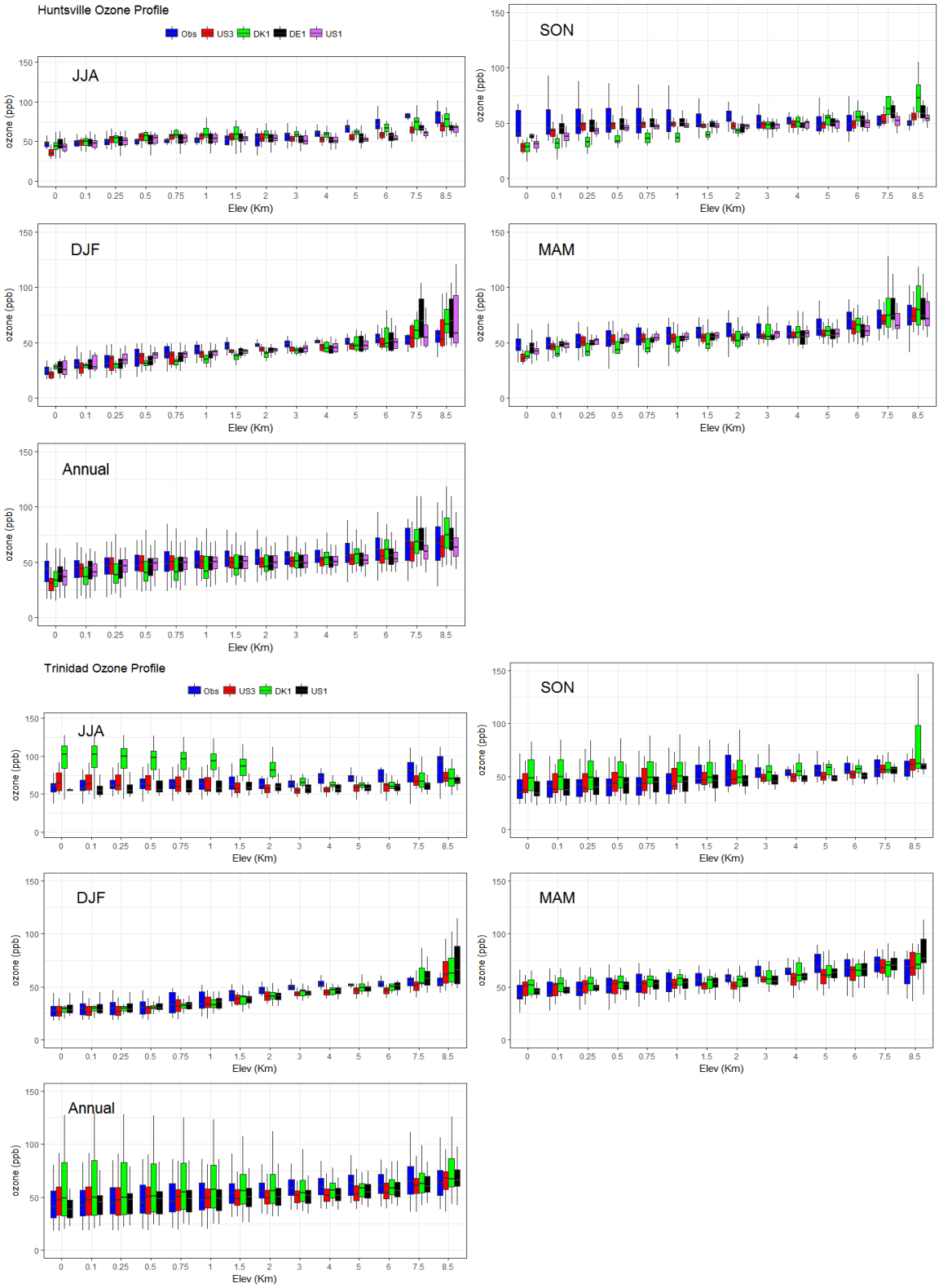

Figure S2 (cont.): Box plots of seasonal and annual vertical profiles of ozone concentrations for 2010: Huntsville and Trinidad Head.

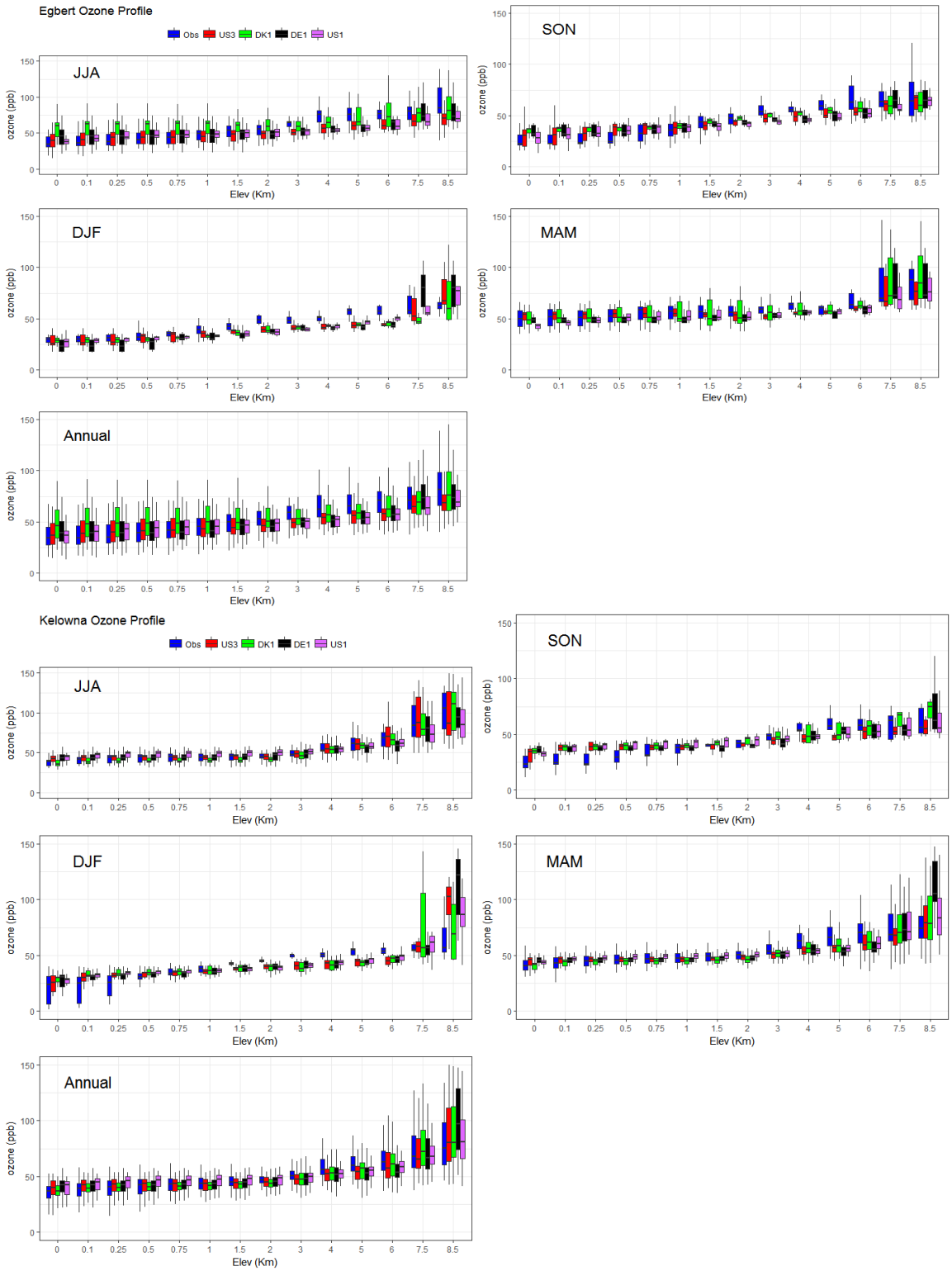

Figure S2

(cont.): Box plots of seasonal and annual vertical profiles of ozone concentrations for 2010: Egbert and Kelowna.

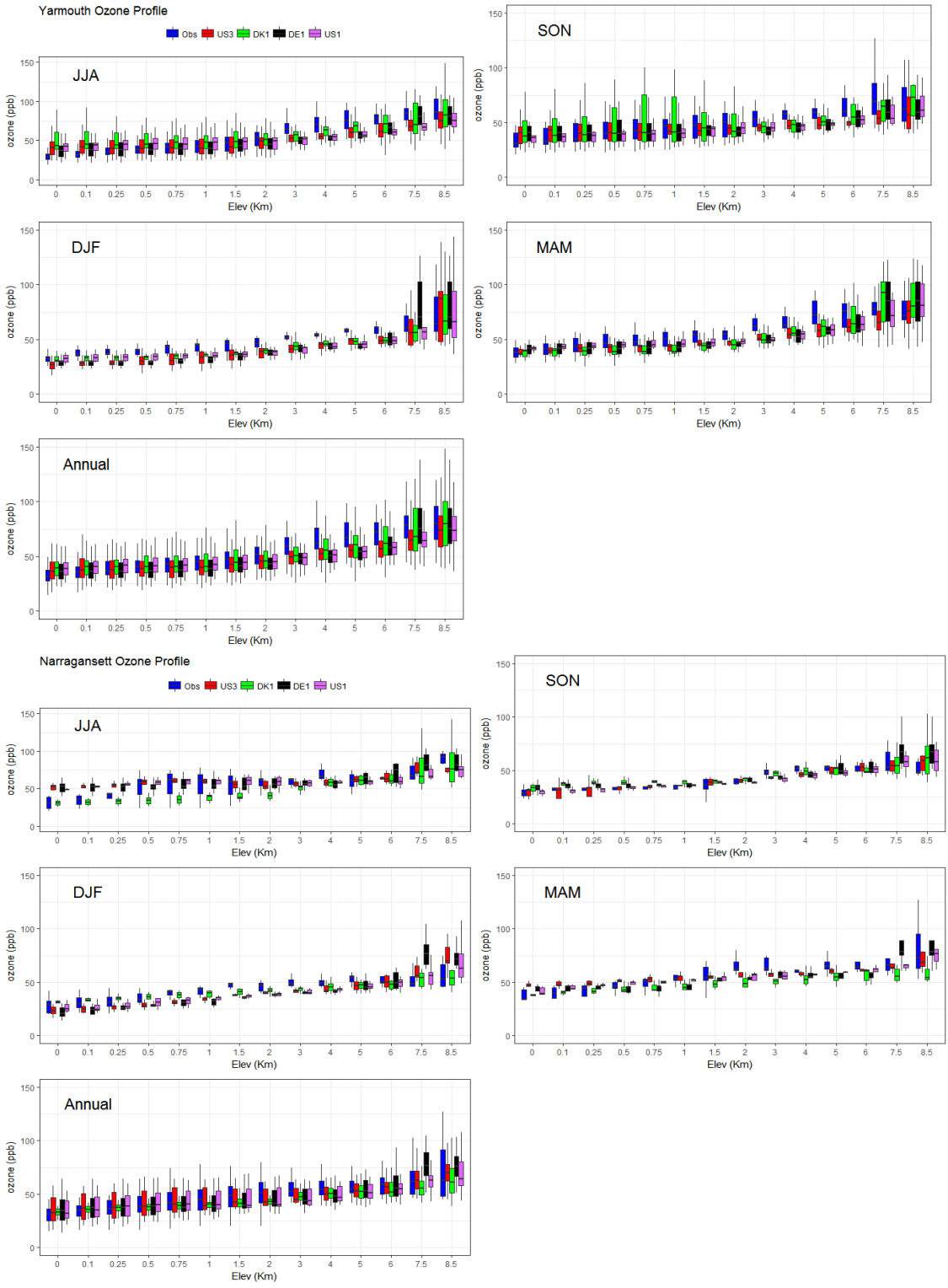

Figure S2 (cont.): Box plots of seasonal and annual vertical profiles of ozone concentrations for 2010: Yarmouth and Narrangansett.

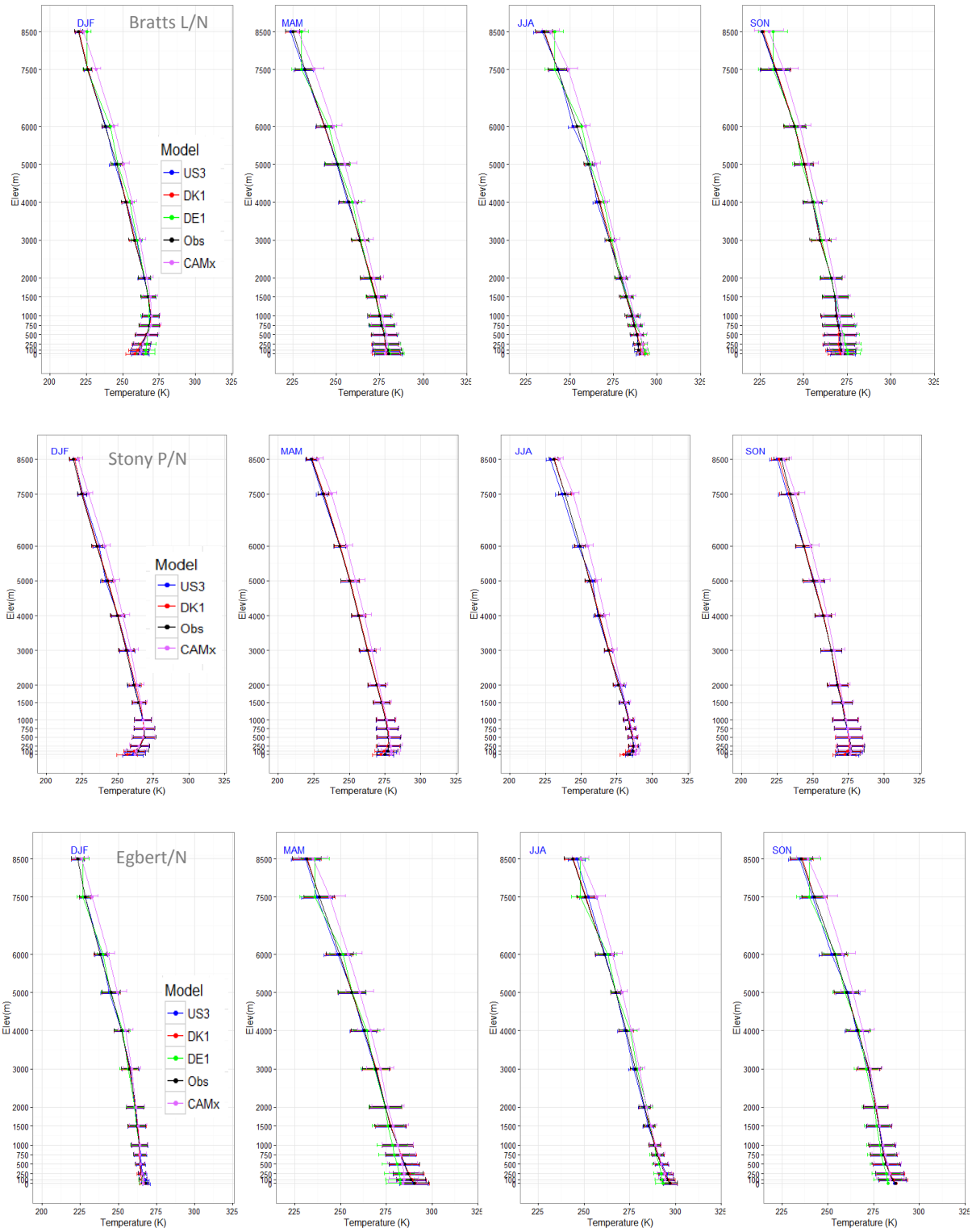

Figure S3: Vertical profiles of mean seasonal temperature for 2010 (from left to right: winter, spring, summer, fall). Standard deviation is denoted by the horizontal lines at each vertical height.

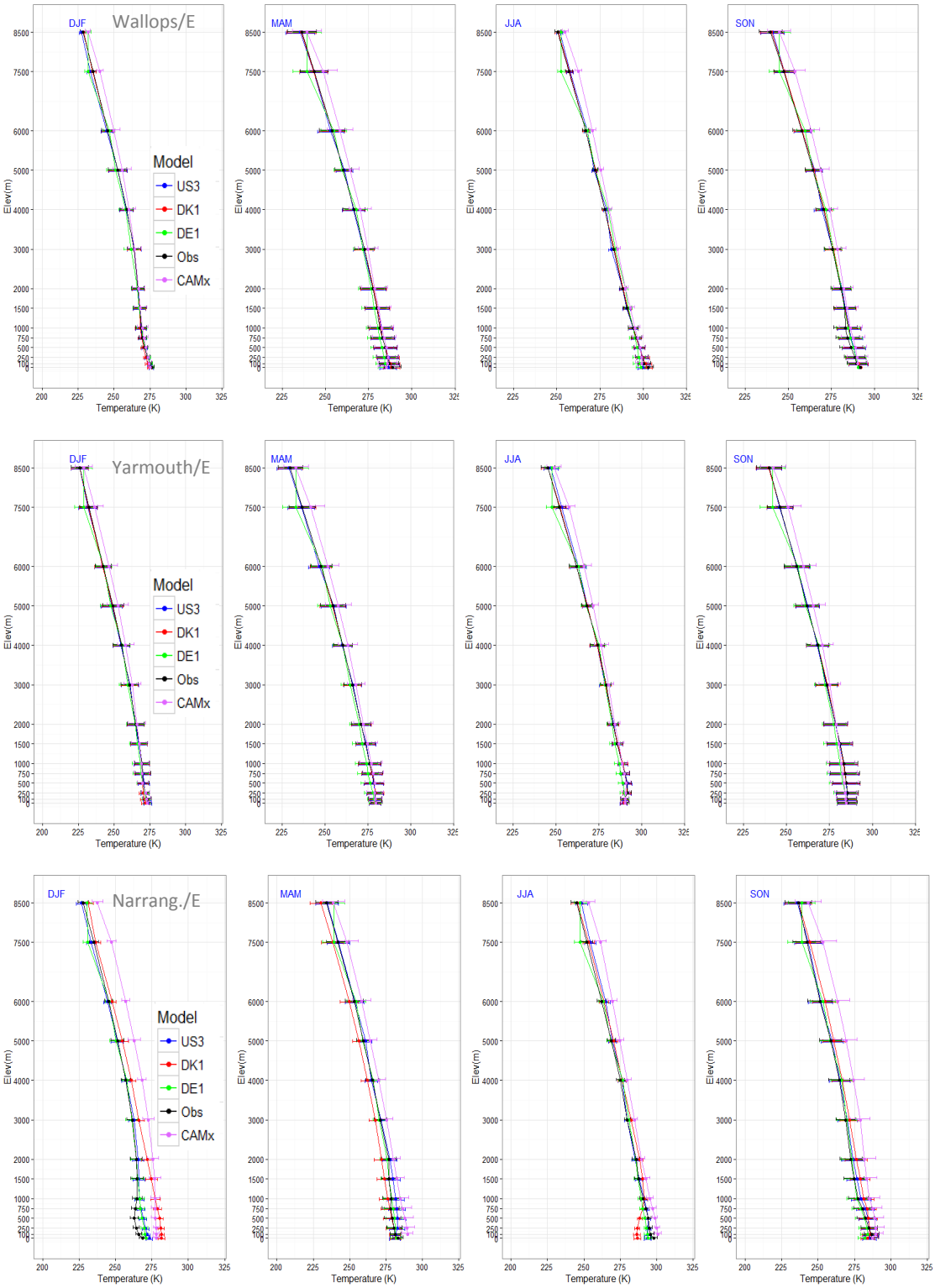

Figure S3 (cont'd): Vertical profiles of mean seasonal temperature for 2010 (from left to right: winter, spring, summer, fall). Standard deviation is denoted by the horizontal lines at each vertical height.

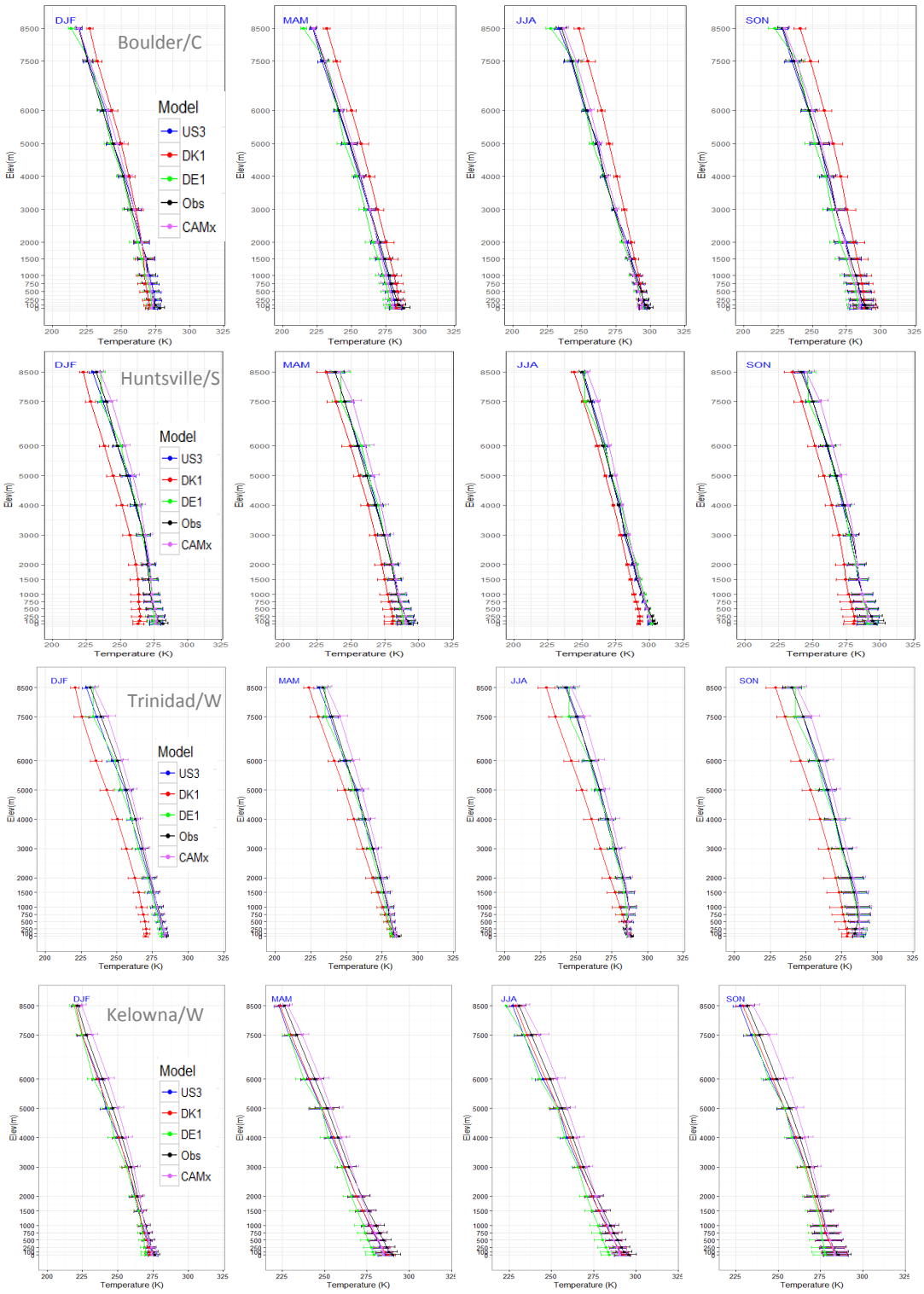

Figure S3 (cont'd): Vertical profiles of mean seasonal temperature for 2010 (from left to right: winter, spring, summer, fall). Standard deviation is denoted by the horizontal lines at each vertical height.

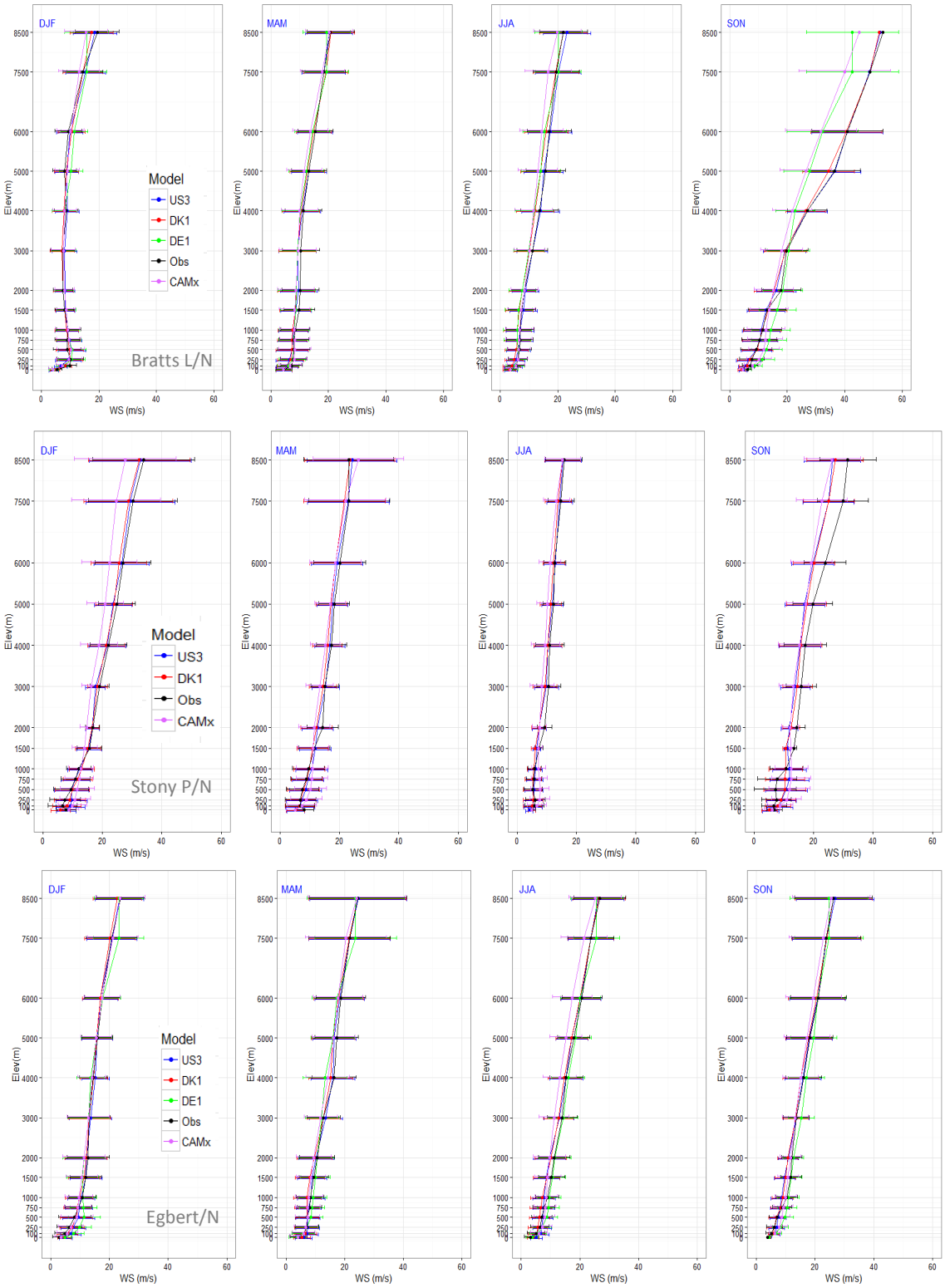

Figure S4: Vertical profiles of mean wind speed for 2010 (from left to right: winter, spring, summer, fall). Standard deviation is denoted by the horizontal lines at each vertical height.

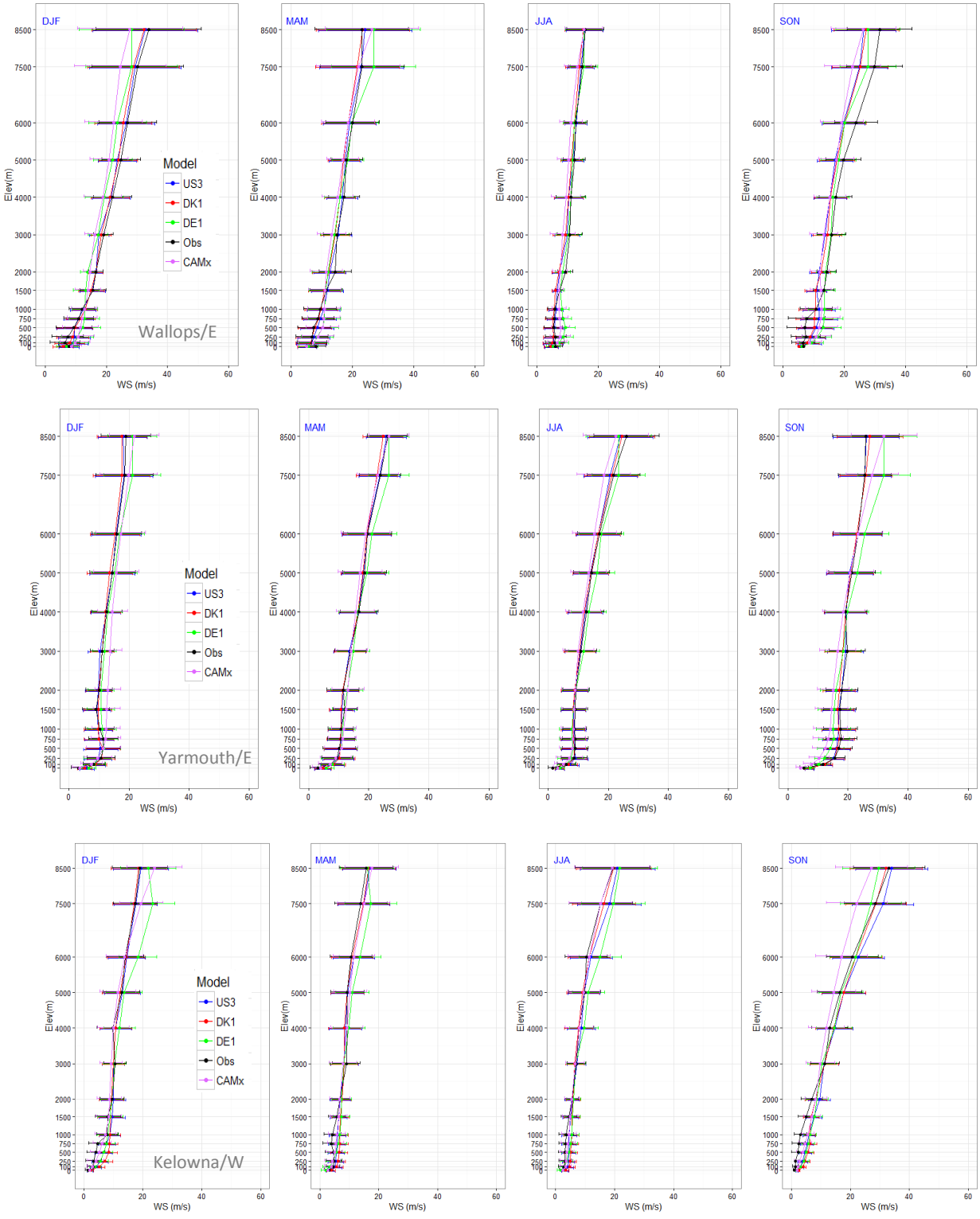

Figure S4 (cont'd): Vertical profiles of mean wind speed for 2010 (from left to right: winter, spring, summer, fall). Standard deviation is denoted by the horizontal lines at each vertical height.

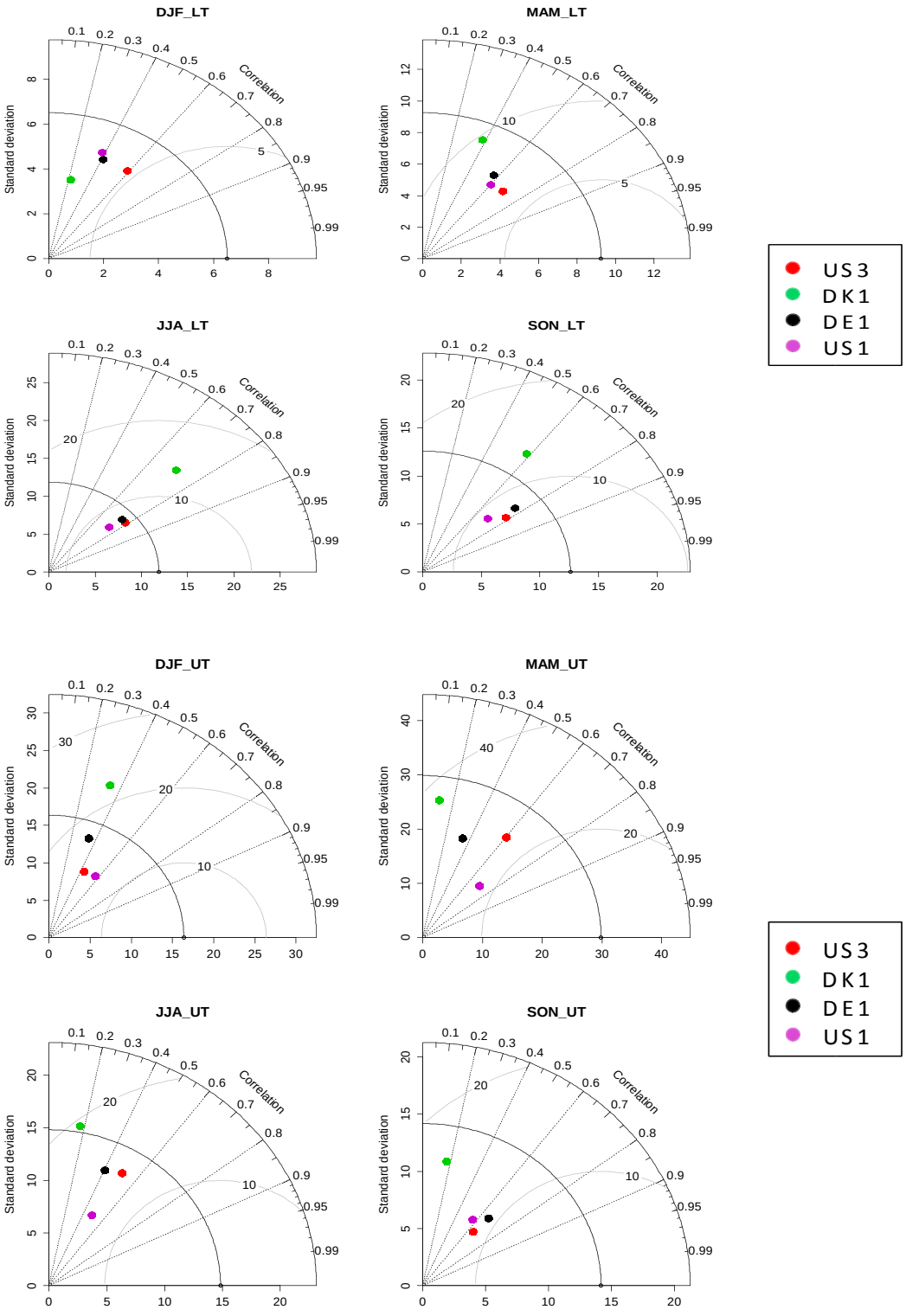

Figure S5: Seasonal Taylor diagrams using standard deviations for two height ranges: LT (lower troposphere=0-2km) and UT (upper troposphere=2-8.5km). Each point represents all stations for each modeling system.

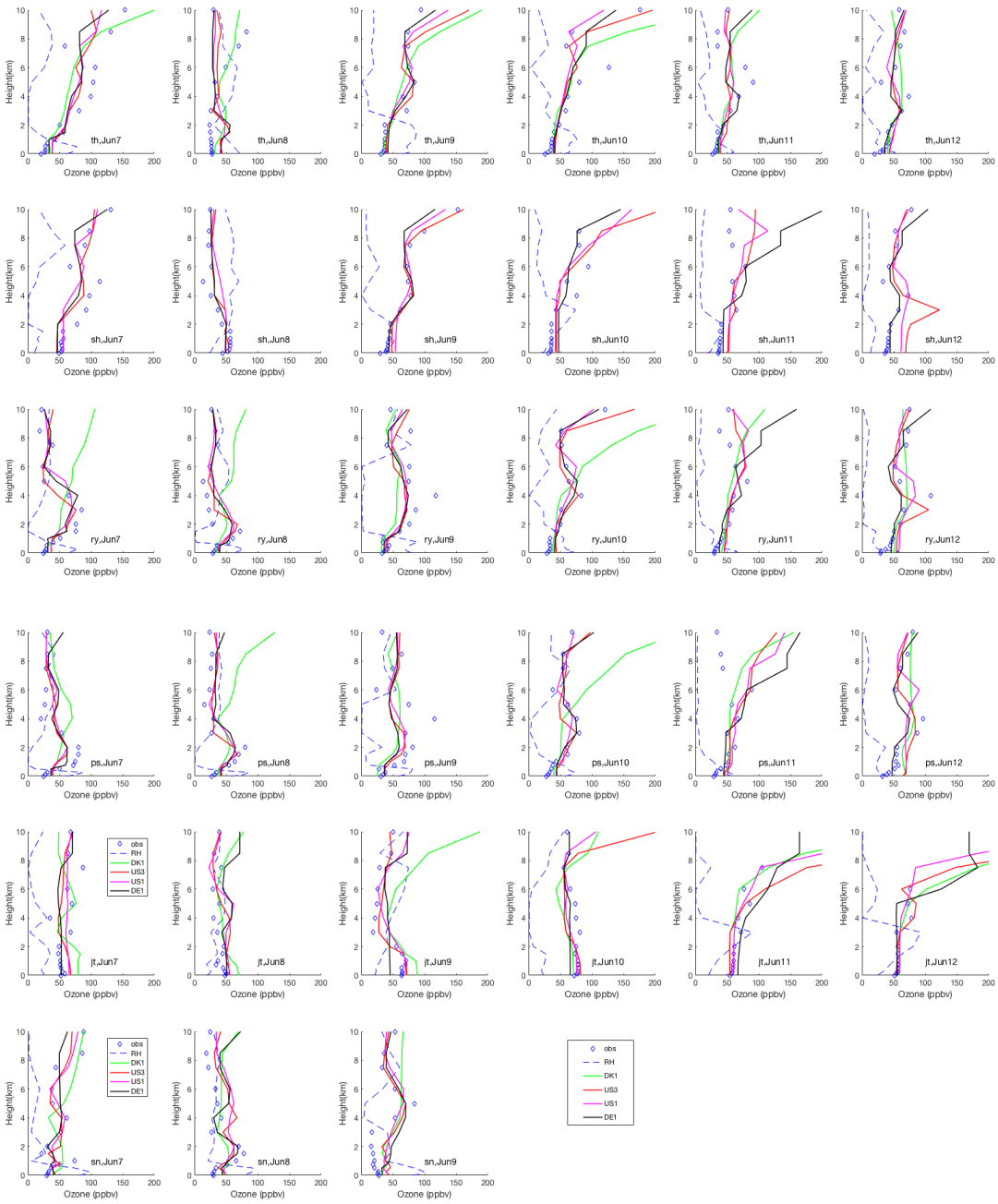

Figure S6. Ozone profiles (observed: circle; modeled: colored lines) and relative humidity (dashed line) at each IONS site during the June 7-12 intrusion.

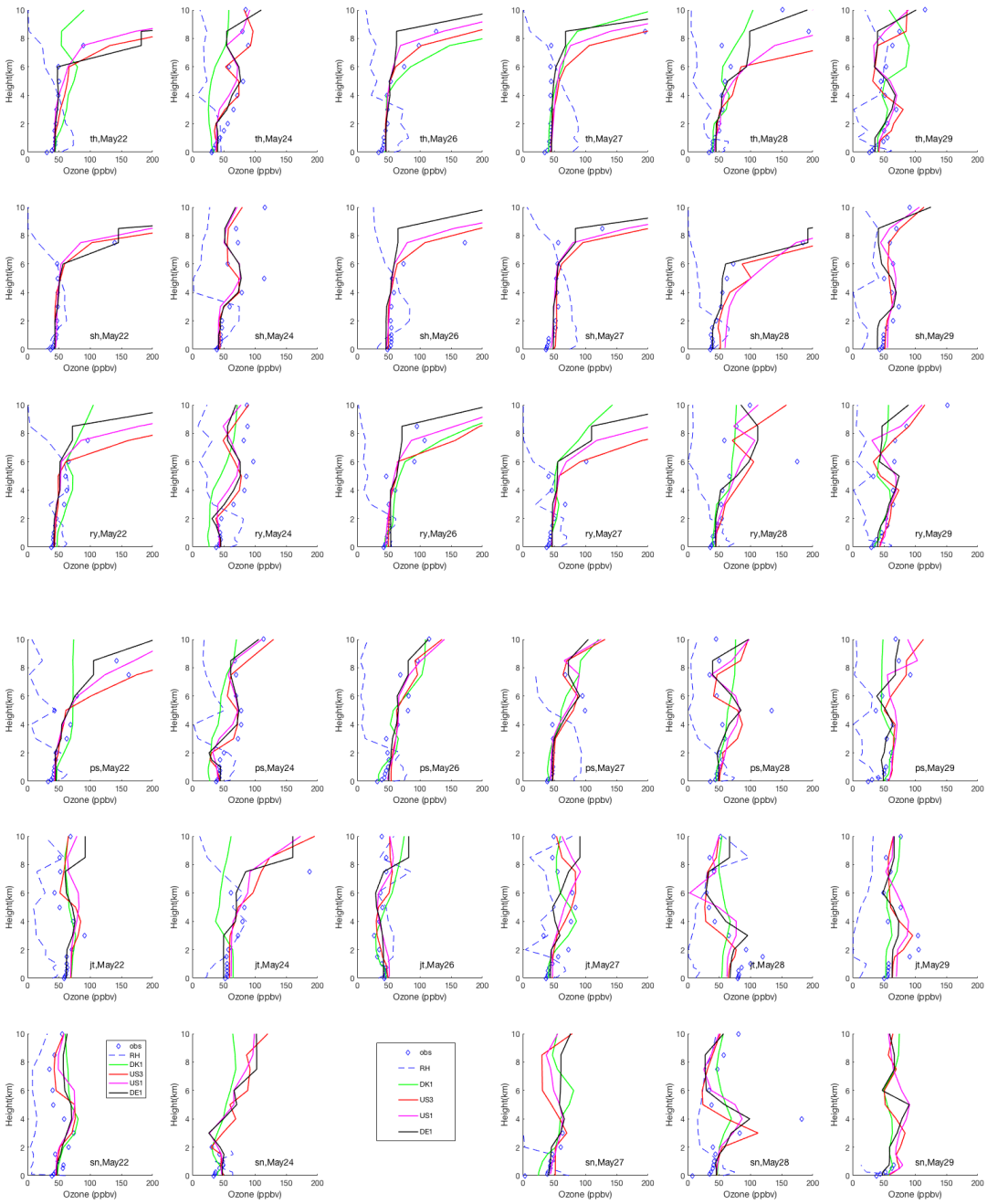

Figure S6 (continued). Ozone profiles (observed: circle; modeled: colored lines) and relative humidity (dashed line) at each IONS site during the May 22-29 intrusion.

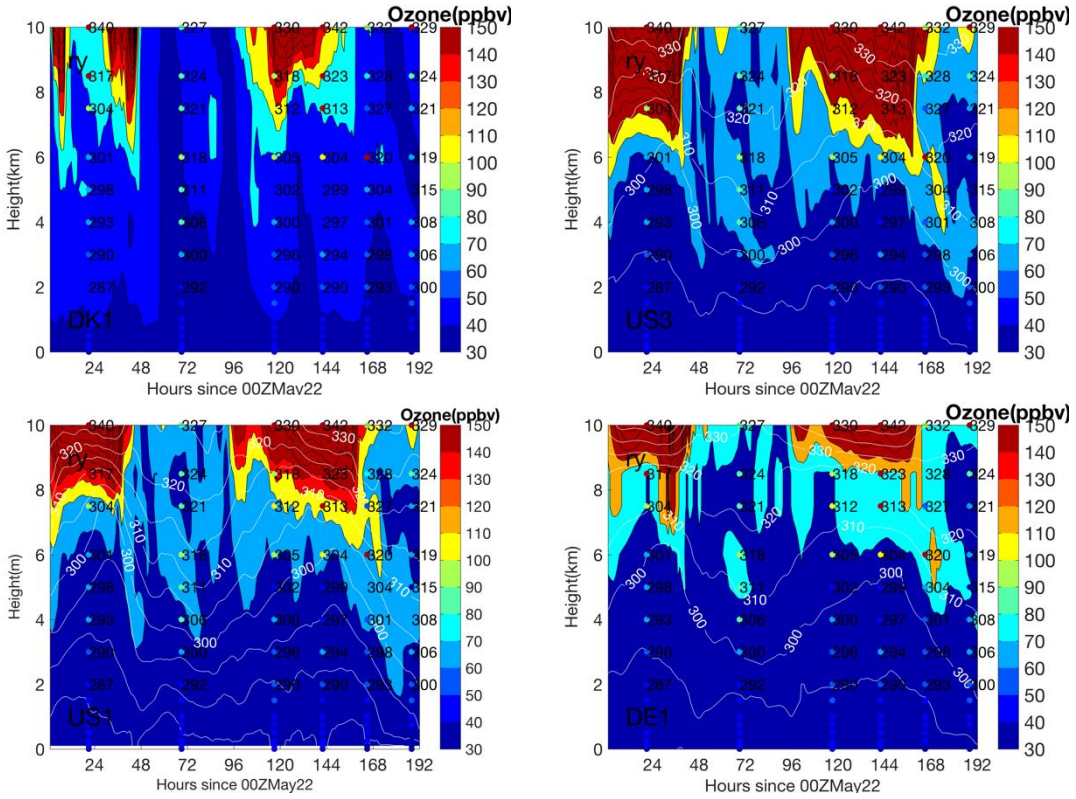

Figure S7. Z-t contours of simulated O_3 at the RY station from 22 to 29 May 2010. The radiosondes are plotted with colored bullets. In addition, simulated (white lines) and observed (black numbers) potential temperature is shown for each model.