

## Supplementary material:

**Figure S2: PBL air temperature observations compared to model values**

The (a,c) WINTER and (b,d) SUMMER model air temperature errors for the SLUCM\_MYJ (first row) and BEP\_MYJ (second row) configurations. Positive values indicate an overestimate in the model. Points are binned every 50m and each point has a minimum of 10 unique data points that are used to create an average error for that binned height and time of day. The comparisons were done for model grid points that were designated as an NLCD 2006 urban cover land cover type.

