

Height of the Planetary Boundary Layer: This quantity can be useful in air quality applications, aviation applications and other forecast applications where knowledge of the spatial variation of the depth and strength of near-surface mixing is important. In high latitudes it tends to be important in a bimodal sense: 1) to determine the degree and persistence of convective mixing in the summer and 2) to determine the depth and persistence of the low-level surface inversion and/or ice fog in wintertime.

The PBL height is computed from a variety of standard measures of turbulent mixing, including an examination of the vertical temperature and wind structure. It is strongly dependent on the solution provided by a given PBL scheme however. Previous work examining a low level inversion case during January 2000 revealed considerable variations in the solutions provided by different PBL schemes in MM5 over the Fairbanks area. We anticipate that there is considerably less dependence on the form of the PBL scheme for summertime convective situations, however, due to our overall better understanding of boundary layer behavior under such conditions.