

Large scale evaporation estimated from complementary relationship with a simple ABL model

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A simple convective boundary layer (CBL) model with the complementary relationship allowed estimation of regional evaporation. The CBL model simulated the specific humidity deficit when the bulk stomatal resistance=0. This was used in Penman equation to derive evaporation E_{po} that would occur with ample soil moisture. Similarly potential evaporation E_p was obtained with actual humidity deficit. Finally they allowed evaluation of evaporation E through complementary relation $E = \eta * E_{po} - E_p$ where η is to be determined through iteration. This was tested with ISLSCP Initiative I data set, and resulting evaporation values were compared with those from watershed water balance method. A good agreement was obtained.