



Estimation of horizontal advection of heat and moisture near a river

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Local advection of scalar quantities such as heat, moisture or carbon dioxide can be expected above inhomogeneous surfaces. The horizontal advection is maximum at the edge of different surfaces in downwind direction. The area near a river is vulnerable to be influenced by the river on the air temperature and moisture. Ten automatic weather stations(AWS) and two stations for flux observation were installed cross a river located in west of Taegu city in South Korea. West side of the river is agricultural area and east side of the river is occupied by industrial complex. Six sets of AWS are aligned perpendicular to the river in east side of the river. The variations of horizontal advection along normalized horizontal distance from the riverfront are estimated for various strengths of wind speed and eddy diffusivity using observation data. The advections are normalized by sensible heat flux and also plot on a typical horizontal axis. The results are compared to the numerical and theoretical estimations(Park and Paw U, 2004). In real atmosphere the winds are not uniform in vertical and horizontal direction both. The difference to the case of uniform wind profile is also demonstrated.

* Park, Y.-S., K. T. Paw U, 2004, Numerical estimations of horizontal advection inside canopies, *Journal of Applied Meteorology*, 43, 1530-1538.