

Regional Scale Flux Observations at Cabauw.

F. C. Bosveld

KNMI, De Bilt, Netherlands (Fred.Bosveld@knmi.nl, 0031-30-2206911)

Direct measurements of surface fluxes are nowadays often performed with the eddy-correlation technique. The method is well established for observations in the lowest few meters of the atmosphere which gives flux estimates with a footprint of typically 100 m. Models and satellite products often give results on the kilometer scale or larger and benefit for their evaluation from flux estimates with larger horizontal scales. Until now only a limited number of techniques are available for direct flux observation at larger scale, e.g. airborne eddy correlation, scintillometers and tall tower based observations. Note that elevated observations “see” a larger footprint.

With the Cabauw 200 m meteorological tower in the Netherlands a unique platform is available to perform tall tower flux observations. The tower has been equipped with eddy correlation systems at 5, 60, 100 and 180 m height which measures fluxes of momentum, temperature, humidity and CO₂. In addition wind speed, temperature, humidity and CO₂ concentration are measured at a number of intermediate levels. This set of instruments has been augmented with an extra large aperture scintillometer which operates at the 60 m level over the 10 km path between a TV-tower and the Cabauw meteorological tower.

The surface fluxes as derived from the eddy-correlation systems at four different levels and from the scintillometer are compared and analyzed as function of relevant parameters like wind direction, time of the day and time of the year.