



Flux-Gradient Technique with Ammer Valley Surface Layer Measurement Network

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Three sites in the Ammer Valley, in Baden-Württemberg (southwest Germany), have, since the end of 2013, installed ground stations. The Ammer Valley is in the complex terrain between the Black Forest and Swabian Alb, and it is characterized by high land-use heterogeneity. Within the 240 sq.km valley, station sites were selected for geographic, soil, and plant diversity. These stations were designed for a flux-gradient approach to measuring surface layer momentum, heat, and moisture fluxes. Using the flux-gradient method, estimated surface layer fluxes will be compared to an eddy covariance system, which is collocated with one of the flux-gradient stations. One motivation for investigating a flux-gradient measurements is the high cost of an eddy covariance system. With two heights and using 2-dimensional sonic anemometers, a flux-gradient station is approximately an order of magnitude less expensive than an eddy covariance system. Besides instruments for flux-gradient measurements, each site has a net radiometer, soil heat flux plates, and sub-surface temperature and moisture sensors up to 1.5 m deep, all of which provide additional measurements for surface fluxes. Five stations were setup during the winter of 2013-2014. This project also provides the basis for collaborative research in atmospheric, soil, and plant interactions.