



Understanding the interaction of diurnal circulation patterns and local turbulent fluxes in an Alpine environment

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The general spatial and temporal features associated with flows driven by the local heating and cooling of sloping terrain are well studied and the gross features of up-valley/down-valley and up-slope/down-slope wind systems are fairly well understood. However, the details associated with the impacts of spatial heterogeneity are not as well understood. In particular, the effect of spatially and temporally varying circulation patterns associated with mountainous terrain on local surface fluxes is not well understood. In this work, we describe some preliminary results from an intensive hydrological field campaign conducted during summer and fall 2009 in the Val Ferret region of the Swiss Alps near the Grand St. Bernard pass. Data from a suite of 12 micrometeorological surface stations (Sensorscope stations) and a comprehensive eddy flux station will be presented including measurements of the turbulent fluxes of water vapor, heat and momentum. Particular attention will be given to the correlation between wind, temperature and radiation patterns and to investigation of time periods when the winds are transitioning and it is difficult to theoretically describe turbulent fluxes.