Geophysical Research Abstracts
Vol. 19, EGU2017-5020, 2017
EGU General Assembly 2017

Comparison of measured and modeled surface fluxes at two experimental sites in Bulgaria

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The poster presents the results of eddy flux measurements at the sites of Chirpan (172 m. a.s.l.) and Rozhen (1759 m. a.s.l.) in Bulgaria compared to flux series computed by SURFEX modeling platform forced with measured meteorological data. The aim of the project is to validate the use of SURFEX modules to simulate local water and energy budget of typical Bulgarian landscapes in order to achieve better representation of evapotranspiration, infiltration and runoff at larger scales. More than 2 years of micrometeorological measures of the first site and 1 year of the second site are completed with ground flux and radiation balance measures with half hour time step. That permits to compare measured and simulated terms of the energy balance equation: net radiation, sensible and latent heat fluxes and ground flux, as well as measured and simulated soil moisture and snow cover properties. Comparison shows higher simulated than measured evapotranspiration in spring for the both sites. For the plain it may be explained with the Vertisol soil type, which high clay content conserves moisture – a feature that has to be maintained in the simulation. For the mountain site snow water content variability shows much faster response of the simulation than the measures during both snow accumulation and snow melt period. Different results are obtained with the introduction of multi-energy-balance option in SURFEX.

Keywords: energy balance, water budget, surface fluxes, micro-meteorological method, SURFEX