Geophysical Research Abstracts
Vol. 18, EGU2016-7463, 2016
EGU General Assembly 2016

Ecohydrology of Graciosa semi-natural grasslands: water use and evapotranspiration partition

Teresa A Paço (1), Paula Paredes (1), Eduardo B Azevedo (2), João S Madruga (3), and Luís S Pereira (1)

(1) LEAF, Institute of Agronomy, University of Lisbon, Tapada da Ajuda, Lisbon, Portugal, (2) Research Center of Climate, Meteorology and Global Change (CCMMG) of the University of the Azores, (3) Research Center of Agrarian Technologies (CITA), University of the Azores

Semi-natural grasslands are a main landscape of Graciosa and other Islands of Azores. The present study aims at calibrate and validate the soil water balance model SIMDualKc for those grasslands aiming at assessing the dynamics of soil water and evapotranspiration. This objective relates with the need to improve knowledge on the ecohydrology of grasslands established in (volcanic) Andosols. This model adopts the dual crop coefficient approach to compute daily crop evapotranspiration (ETc) and to perform its partition into transpiration (T) and soil evaporation (Es). The application refers to a semi-natural grassland sporadically sowed with ryegrass (Lolium multiflorum Lam.). Model calibration and validation were performed comparing simulated against observed grassland evapotranspiration throughout two periods in consecutive years. Daily ET values were derived from eddy covariance data collected at the Eastern North Atlantic (ENA) facility of the ARM programme (established and supported by the U.S. Department of Energy with the collaboration of the local government and University of the Azores), at Graciosa, Azores (Portugal). Various statistical performance indicators were used to assess model accuracy and results show a good adequacy of the model for predicting vegetation ET in such conditions. Surface flux energy balance was also evaluated throughout the observation period (2014-2016). The ratio Es/ET shows that soil evaporation is much small than T/ET due to high soil cover by vegetation. The model was then applied to contrasting climatic conditions (dry vs. wet years) to assess related impacts on water balance components and grassland transpiration.