Soil moisture under contrasted atmospheric conditions in Eastern Spain

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Soil moisture plays a key role on the recently abandoned agriculture land where determine the recovery and the erosion rates (Cerdà, 1995), on the soil water repellency degree (Bodí et al., 2011) and on the hydrological cycle (Cerdà, 1999), the plant development (García Fayos et al., 2000) and the seasonality of the geomorphological processes (Cerdà, 2002). Moreover, Soil moisture is a key factor on the semiarid land (Ziadat and Taimeh, 2013), on the productivity of the land (Qadir et al., 2013) and soils treated with amendments (Johnston et al., 2013) and on soil reclamation on drained saline-sodic soils (Ghafoor et al., 2012). In previous study (Azorin-Molina et al., 2013) we investigated the intraannual evolution of soil moisture in soils under different land managements in the Valencia region, Eastern Spain, and concluded that soil moisture recharges are much controlled by few heavy precipitation events; 23 recharge episodes during 2012. Most of the soil moisture recharge events occurred during the autumn season under Back-Door cold front situations. Additionally, sea breeze front episodes brought isolated precipitation and moisture to mountainous areas within summer (Azorin-Molina et al., 2009). We also evidenced that the intraannual evolution of soil moisture changes are positively and significatively correlated (at p<0.01) with the amount of measured precipitation. In this study we analyze the role of other crucial atmospheric parameters (i.e. temperature, relative humidity, global solar radiation, and wind speed and wind direction) in the intraannual evolution of soil moisture; focussing our analyses on the soil moisture discharge episodes. Here we present 1-year of soil moisture measurements at two experimental sites in the Valencia region, one representing rainfed orchard typical from the Mediterranean mountains (El Teularet-Sierra de Enguera), and a second site corresponding to an irrigated orange crop (Alcoleja).

Key Words: Soil Moisture Discharges, Intraannual changes, Atmospheric parameters, Eastern Spain

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