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POSTER ABSTRACTS

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Session 1 Climate change and sensitivity of desertification 5

Session chairs: Giuseppe Scarascia Mugnozza and Giuseppe Enne

Session 2 Dryland resilience: the role of geo-engineering and agroforestry systems 19

Session Chairs: Mauro Centritto and Pier Paolo Roggero

Session 3 Integration of Bio-physical and Socio-Economic Issues – Generating Baseline Information for Desertification, Land Degradation and Drought (DLDD) Assessment 31

Session Chairs: Michael Cherlet and Stefan Sommer

Poster n. 35

Estimating carbon credits variations supplied from agriculturaland forest soils of Italy between 1979 and 2008

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Soils contain approximately three times the world amount of organic carbon present in vegetation and the double present in atmosphere. Italy, which has joined the Kyoto Protocol, has decided to consider only forest management within the additional activities contemplated for the count of carbon credits (CC), and to launch a monitoring campaign only in forests. The scope of this research work was to estimate CC variations supplied from both agricultural and forest soils of Italy during last the 3 decades (from 1979 to 2008). The soil database of Italy was the source of information of soil organic carbon stock (CS), referred to the first 50 cm depth. The CRA -CMA (Research Unit for Climatology and Meteorology Applied to Agriculture) database was the source of information for mean annual temperature and mean annual precipitations of the two periods 1961-1990 and 1991-2006. Multiple linear regression analysis were used to interpolate the CS with geographic attributes as predictive variables. An index of climatic change influence on soil organic carbon variations (Ic) was calculated. The net CS variations, that may be attributed to agricultural and forest management change, were calculated subtracting the ones due to climate change. The calculation of CC was done following the Emission Trading System (EU-ETS, EU Directive 2003/87/EC), and the exchange rate given by the Carbon Dioxide Emission Allowances Electronic Trading System (SENDECO2) at September 2010. The Italian CS passed from 3,32 Pg in 1979-1988, to 2,74 Pg in 1989-1998, and 2,93 Pg in 1999-2008. The CC lost from the first to the second decade totalled some 31,171 M€, while the CC recovered from the second to the third were about 9,218 M€. About 90 % of the recover was due to the management change in arable lands. Italy should then extend also to arable lands the CS monitoring.

Keywords: Carbon sequestration, Land management, Climate change impact, Environmental economics.