Geophysical Research Abstracts
Vol. 12, EGU2010-14285, 2010
EGU General Assembly 2010

Evaluation of soil respiration small scale variability within agricultural systems

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Soil respiration is the second largest flux of carbon between terrestrial ecosystems and the atmosphere and is affecting climate sensitivity and vulnerability of the terrestrial carbon stock. Despite the importance of this process, knowledge about the factors controlling it and its variability across ecosystems is still quite limited. The correct evaluation of soil respiration allows to differentiate agricultural systems acting as source or as sink of carbon, and evaluating the effects of management practices on CO2 emissions. Soil CO2 efflux is difficult to estimate due to the high spatial variability that characterises it. The large scale spatial heterogeneity of soil respiration caused by differences in site conditions is quite well understood, while little is known about the micro scale heterogeneity within agricultural systems. The objective of this study was to characterize the small-scale variability of soil respiration in an agricultural system in the central part of Italy.