Geophysical Research Abstracts,
Vol. 10, EGU2008-A-10657, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-10657
EGU General Assembly 2008


# Effects of hydrological extremes of 2006 and 2007 on net ecosystem exchange of a temperate grassland

**P. Leahy** (1) and G. Kiely (1)

(1) Centre for Hydrology, Micrometeorology and Climate Change, University College Cork, Ireland. (email : paul.leahy@ucc.ie ; fax : +353-21-4276648)

Evaporation, net ecosystem exchange (NEE) and soil moisture were measured at a grassland site in southern Ireland for the period 2002-2007 and long term rainfall records were obtained from the nearby synoptic station at Cork airport.

A drought occurred during the 2006 growing season, with only 53% of the 30-year average June and July rainfall recorded at the synoptic station. However, despite the extremely low precipitation, soil moisture levels remained well above wilting point during the drought and net ecosystem exchange during this time was close to the five year average. This result suggests that even in an extremely dry growing season such as that of 2006, $CO_2$ fluxes from agricultural ecosystems in southern Ireland are not greatly altered. By contrast, the summer of 2007 was extremely wet, with over three times the 30 year average rainfall received during June and July at Cork airport.

Grassland primary productivity was affected during this time, with an almost complete collapse of $CO_2$ uptake leading to a greatly reduced NEE. Grass harvesting was delayed and the quality and quantity of the harvest reported by farmers operating within the measurement area were reduced.

NEE at this site therefore appears to be sensitive to soil moisture conditions in the growing season only at the wetter end of the range. As predictions of future climate for this region exhibit a shift in precipitation patterns to drier summers and wetter winters, we suggest that the NEE of agricultural grasslands in this region will generally remain robust in the face of changes in hydrological conditions.