



Evapotranspiration and water balance in an Atlantic blanket bog in South-western Ireland

M. Sottocornola and G. Kiely

Dept. Civil & Environmental Engineering, University College Cork, Ireland

(m.sottocornola@student.ucc.ie / Phone: +353-21-4903025)

Atlantic blanket bogs are peatlands that occur in maritime regions where precipitation is much greater than evapotranspiration. In this paper we examine four hydrological years (October 2002 to September 2006) of eddy-covariance measurements of evapotranspiration in the context of the predicted climate change for South-western Ireland. The full water balance (precipitation, evapotranspiration, stream flow and water table change) for the hydrological year 2002/2003 was also analysed.

The Atlantic blanket bog ecosystem was found to have lower evapotranspiration than other peatland types, despite having more abundant precipitation and higher water table. Evapotranspiration seems to be constrained by the low occurrence of vascular plants and mosses (essential for transpiration), rather than by the low vapour pressure deficit and cool summer air temperature. A comparison between the four years suggests that the predicted climate change will probably increase winter evapotranspiration and lead to an earlier start of the growing season. The predicted decrease in summer precipitation may not radically affect the major evapotranspiration patterns of the bog. However, if the frequency of summer rain events should diminish, the moss component of these ecosystems may become water-stressed, ultimately leading to lower evapotranspiration, and possibly to a decrease in CO₂ uptake by the ecosystem.