

Interactive comment on “Measurement and modelling of evaporation from a coastal wetland in Maputaland, South Africa” by A. D. Clulow et al.

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We would like to thank the reviewer for the time and thought that went into the comments on our paper.

Summary of RC1) A more detailed exposition of the theory, method, advantages and limitations of the SR approach outlined in the manuscript. In contrast, a briefer treatment of the PM and PT equations could probably be sustained.

AC1) Agreed. Although the surface renewal method is reasonably well documented, it is unlikely to be well known or understood by most hydrologists and wetland ecologist and some further information on how it relates (advantages/disadvantages) to this particular study would be valuable to the reader. We are likely to remove the discussion

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of the PT result from the dry site completely as the site is not really suited to a PT solution.

Summary of RC2) From reading the paper I did not have a concrete sense of the surface conditions of the Mire, and in particular, whether or not there were large areas of free standing water during the year, along with the spatial patchiness of the landscape. ET estimates from free water surfaces require estimates of the change in heat storage and temperature gradients within the surface water body itself, which I don't think were computed. If there are significant areas of free water, would a foot print analysis from the EC measurements be useful to allow partitioning of the fluxes from vegetated versus free areas to be estimated?

AC2)The surface condition of the mire during the study period was a homogeneous and the vegetation cover was complete (except for a period after the fire). This is certainly not always the case as there are some wet seasons (summer) in which the water level rises above the peat surface. Under these conditions, your recommendation of partitioning the surface flux would be appropriate. However, during our year of research the rainfall was below average and there was no surface water in the mire. On pg 8 In 20 we refer to the water level being no closer than 0.1 m below the surface and through the dry season it dropped further to 0.3 m below the surface. A sentence spelling out the homogeneity of the site will be included under the "Study site" heading.

Summary of RC3) I am looking for 2 things: (a) the management implications of the study for the site itself, and (b) the implications of the science to the broader scientific community - Finding ways to make the study speak to ongoing questions with global relevance should help it pack more of a punch.

AC3) This reviewer comment has been highly valued by the authors. In addressing these two points the paper will benefit enormously and substantially extend its relevance. (a) There are comments that can be made in terms of management implications that we will included. Primarily this will focus on the impact of vegetation changes

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and succession in the park, as there are other vegetation types in this mire including a Swamp Forest on the western fringe. Climate and fire in particular determine the dominance of one vegetation type over the other in this ecosystem. Changes in vegetation distribution will alter the evaporation and therefore the water-balance of the area which of course is critical to the adjacent lake. (b) There are indeed other studies on wetland energy balances and ET but as mentioned in this paper most are from the northern hemisphere and in subarctic regions. As pointed out by the reviewer, our results in the context of existing knowledge are the critical. We have emphasised the scientific measurement, techniques and specific results. Taking this to the next level and discussing in the context of global wetlands and the differences will indeed improve the impact of the paper. Primarily, we expect to focus on the ET rates and partitioning of the energy balance during the day.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 1741, 2012.

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