Interactive comment on "Evaporation in a Mediterranean environment by energy budget and Penman methods, Lake Baratz, Sardinia, Italy" by F. Giadrossich et al.

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The present paper aims at estimating the amount of evaporation of lake Baratz in Sardinia. The lake is recognized at European level important for biodiversity. For that purpose two methods (BREB and Penman) are proposed to compute the evaporation. The data collected onsite are of high quality and well described. The paper is well organized and written. However, there are several aspects that need to be revised and that are discussed below.

First, coming back to the remark made by W.J. Shuttleworth, a fair comparison between

the BREB and Penman's approaches should consider substracting storage from the net radiation in the computation of the evaporation term. The authors mention it page 1917 as a conclusion. Accounting for storage term in Penman's equation improves results as shown by the author, and this should be the base for the results discussion of the paper.

Next, it appears clearly that heat storage is a key component of the lake energy budget. I'm not convinced the way you estimate this term is correct. I would like to remind that the heat storage term as a heat flux should be computed from a temperature gradient. In equation (4), division by Ai should replace A(t) but this is probably a mistyping. The area A is a function of height from the lake bottom and should be associated to Vi and deltaTi. But the problem here is that the volume Vi corresponding to the height h (by the way not described in the paper) is not at temperature Ti. If h represents de height between layers i and i+1 then an average of Ti and Ti+1 should be considered as average temperature of this volume. It looks like the water between the surface and the first layer at 1m is not accounted for in the total heat storage. Same remark for the bottom part. Temperature is measured at the surface, at five depths and at the bottom of the lake, which mean that the heat storage should account for 6 contributions. A picture explaining the vertical discretization would help.

Then, this is probably not an error but I would like to address the following issue to be sure not to miss something. To establish equation 7, a monthly average is applied to each term. What happen if you compute each term on a hourly basis, deduce Eb and then monthly-average the hourly Eb? The problem here is that the average of the product differs from the product of the averages if the average correlation is not small.

Finally, the measurement of surface temperature is a difficult task over lakes and the sensor is often under several centimetres of water (Le Moigne, et al. 2013). Surface temperature is another key parameter of the surface energy budget, it appears in Ae, lambda, Eb, etc. A discussion on the uncertainty on Ts and its impact on the results would benefit to the paper.

Le Moigne, P, Legain, D, Lagarde, F, Potes, M , Tzanos, D, Moulin, E, Barrie, J, Salgado, R, Messiaen, G, Fiandrino, A, Donier, S, Traulle, O, Costa, MJ, 2013 : Evaluation of the lake model FLake over a coastal lagoon during the THAUMEX field campaign. TELLUS SERIES A-DYNAMIC METEOROLOGY AND OCEANOGRAPHY, Volume: 65, Article Number: 20951, Doi : 10.3402/tellusa.v65i0.20951. Published: 2013.

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