Ocean Sci. Discuss., 8, C552–C554, 2011
www.ocean-sci-discuss.net/8/C552/2011/

Ocean Science Discussions

Interactive comment on "Calculating the water and heat balances of the Eastern Mediterranean basin using ocean modelling and available meteorological, hydrological, and ocean data" *by* M. Shaltout and A. Omstedt

Anonymous Referee #2

Received and published: 16 August 2011

Comments on the paper "Calculating the water and heat balances of the Eastern Mediterranean ..." by M. Shaltout and A. Omstadt

The paper addresses very interesting and important question of the heat and water balance in the Eastern Mediterranean and reaches some important conclusions that are unfortunately very poorly justified. Thus, the paper suffers from serious deficiencies and thus has to be completely revised in order to satisfy publication standards in a peer review journal. The manuscript has also to be reviewed by an English speaking person since the language quality often makes the text hardly understandable. More

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specific comments follow: Abstract: Lines 13 – 16: statements about the heat and water balances are trivial if the authors did not rank processes that control heat and water balances in order of importance, but this has to be said explicitly. Lines 19-24: This paragraph does not have too much sense at the beginning of the paper. Page 1303: lines 26 till the end of the page bad English Page 1304: line 6 “until it becomes” Line 7: Levantine deep water is formed only occasionally Line 9: Roether and Schlitzer ... addressed (bad English) Line 13: Why “especially” in the Aegean? MAW should be called AW following CIESM suggested terminology (all the waters are modified after leaving the formation site) Page 1305: Line 7: calculations of the long-term changes of the VERTICAL temperature and salinity distribution Line 18: Are you sure that AVISO data are on one-day resolution? Page 1306: Line 23: ... but vertically resolved resolution (!?) properties, what that means? Line 25 – 28: please be more specific. Do not understand how you calculated current speed from satellite, evaporation, precipitation and river inflow data! Eqns. 1 and 2 please specify that U, V, W are horizontally averaged. Do not understand Eqn. 3. So the vertical velocity is obtained from boundary conditions? Please explain

Page 1309: You say that the surface flow is calculated using satellite data and the deeper flow from climatological oceanographic data, how? Please explain how Page 1310: Assumption of the linear decrease of the surface geostrophic velocity and the constancy of the velocity inversion layer across the entire Strait is very poor. By the way in the Fig.1 there is no sign of the exact position of the transect. Page 1311: Please be more specific in describing the BC for the model so that reader can understand Page 1312. Lines 13-17 Completely unclear. Be more specific where the sea level data come from Lines 21-27: Unnecessary description of the future work at least in this part of the paper. Page 1313: Lines 12-13: This is true only if the upper layer thickness is constant! Page 1314: Lines 21-22: “The agreement with Beranger ... and disagreement ... indicates that the present study is useful.” I do not think that the agreement or disagreement with other studies justify the present research. Page 1315: Referring to the figures 4 and 5 for the illustration of differences between modeled

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and reanalyzed does not make too much sense since the figures are not readable at all. Page 1316: Line 2: not “dived” but “divided” It is not clear how experimental T-S diagram has been obtained. How the average has been computed, please give some details? Line 29 until the end of the paragraph: How the authors reach the conclusion from their work that the meteorological forcing is more important than Sicily flux. This is an important conclusion and has to be elaborated.

Page 1319: Line 16 “satellite dynamic height . . .” it is not clear how the authors came to that conclusion using in this paper very simplified assumption of the constant 150-m no motion level and the linear (!) geostrophic current speed profile

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Interactive comment on Ocean Sci. Discuss., 8, 1301, 2011.