

Interactive comment on “Water balance of selected floodplain lake basins in the Middle Bug River valley” by J. Dawidek and B. Ferencz

J. Dawidek and B. Ferencz

beata.ferencz@up.lublin.pl

Received and published: 29 September 2013

B overall comments In order to make stronger connection between the results and the stated hypothesis our manuscript will be modified and re-arranged. The arguments consistent with the hypothesis will be well presented and highlighted in the results and discussion sections. Discussion will also be remodeled, with a greater emphasis on the arguments supporting the hypothesis we established in the introduction section. Discussion will be changed in order to maintain a balance between the issues raised. Paragraph which is currently the most extensive (more than 30 sentences) will be compressed for easier perception and clarity. With regard to terminology used in the manuscript, which concerns floodplain lakes it should be emphasized that the

C5274

mentioned types of lakes connections to the river has been previously presented in the limnological literature. For the first time the names of different types of hydrological were used by Dawidek and Turczyński, which is explicitly referenced in the manuscript. Other language issues raised by the reviewer will be resolved by a native speaker.

It is true that term recharge is misused throughout the manuscript. In parts concerning surface inflow and/or outflow we will use the terminology proposed by the reviewer. C Figures and tables Figure 1 - the term recharge will be changed to "input" "output" as suggested by the reviewer - confluent is a term used to describe the organization of the outflow, derived from Latin word. Confluentia in Latin means "runoff" while confluere "flow together". Confluent lake basin is supplied with river waters through a limb that is consequent to the river valley. That is why "confluent lakes" in our opinion is appropriate term. This term should not be confused with the English term confluence. The authors feel that the term is clear and unambiguous and does not require any changes, especially since it is used in the literature concerning the floodplain lakes. - caption of figure 1 will be changed from "recharge types of floodplain lakes" to "types of floodplain lakes connection to the parent river". The terminology will not be changed of the reasons set out above. The consistent use of the terminology is an advantage because it gives one a chance to organize the terminology used in relation to the floodplain lakes freely depending on the author. - this figure shows all the possible ways of floodplain lakes connection with the parent river in the Bug River valley, and this will be clarified in the manuscript. Hydrological type of floodplain lakes of the area under study remains constant regardless of the flow rate. The situation can be changed only with extreme hydrological phenomena that bring about the complete remodeling of floodplain water distribution. At that time, however, we would not deal with the same floodplain lake and the scale of changes is not possible to predict. According to the title of the article which refers to the lakes in the middle Bug River valley, we showed all kinds of connections with the river within the study area. Other potential forms of connection with the parent river observed in river valleys of other latitudes do not fall within the substantive scope of the article. Figure 2 The figure will be completed to show lakes morphometry and

C5275

flow network, in order to provide more Fig. 3 According to the legend of figure the y-axis indicates the water level in the river (WL cm), which under certain conditions in a variety of ways (Fig. 3 a, b, c) provides river connection to the lake basin. Therefore, the increase in water levels is accompanied by increased flow rates. Lake basin with certain capacity reduces outflow from the lake - ΔQ . On the contrary when inflow decreased, then the inflow is lower than the outflow. It results from the fact that outflow is increased by water stored in the lake basin during potamophase. This process is determined by a connection of both downstream and upstream crevasses with the same river (a system of connected vessels).

The 2 small panells below panel B present in details the relationship between the value of inflow and outflow of the contrafluent lake. In the initial phase there is only inflow, outflow equals zero (filling the lake basin). After the inflow stops, the outflow occurs (inflow equals zero). In order to clarify the issue of smaller panels we will supplement the descriptions of the x, y axes and the signature of the functional phase of the lake. Table 1. Insead of "genetic types" we will use 'lakes origin' Table 2 According to the subject of the paper Table 2 contains the necessary for its implementation water balance components of the studied lakes. It also takes into account the nature of the lakes connection to the Bug River, which is reflected in the values of basin supply and drainage including confluent (IC) and contrafluent (ICTR) conditions. In the case of the Bug valley lakes there is no change in the type of connection with the river. This stability will be emphasized in the manuscript. d. line by line comments Abstract abstract will be completed with the main findings and conclusions Line 4 does not refer to the unknown in the literature issues. Complementary description of the connection (upstream / downstream connection) helps the reader to understand the phenomenon. Line 5-6 analogously to Line 4. 5-"only possible" is in fact too informal and will be replaced Line 19 "intermediate features" are explained in details in the following lines "After a period of slow contrafluent recharge, the inflow of water through a downstream crevasse from the area of the headwater of the river was activated; this caused a radical change of flow conditions into confluent ones". Intro Line 9- "hydrological" is not defined in the

C5276

paper, but it refers to the limnetic consequences of fluvial supply The hypothesis will be supplemented in order to be set up better the horizontal vs. vertical components of the hypothesis Equations 4 &5: As suggested by the reviewer we will distinguish between the two I (inĩńĆow) terms and the two O (outĩńĆow) terms, according to their nature of the process (confluent / contrafluent). Page 10068 line 5: As suggested by the reviewer we will rephrase "territorial research" to 'field research' Page 10068 line 8: As suggested by the reviewer we will rephrase "atmospheric supply" to 'atmospheric deposition' Page 10068 line 24-27: change in storage, calculated according to equation 6 makes it possible to accurately calculate the amount of water stored in the lake basin. In contrast to the commonly used method based on the difference of water levels lake. Results body Line 22: "clearly" is not necessary and will be deleted Conclusion and Discussion -Page 10072, line 21-24: the phrase "In all cases" has been mistakenly used in the manuscript. Although generally horizontal exchange dominated by an order of magnitude or even more above the vertical one, there have been episodes when the data proved otherwise (in 2008 Lake Jama Roma and inter-levee lakes). This generalization of the process will be completed by the aforementioned exceptions.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 10061, 2013.

C5277