

# ***Interactive comment on “Analysis of frequency and duration of the functional periods on the basis of long-term variability of limnetic processes within the Bug River valley” by J. Dawidek and B. Ferencz***

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At first, we would like to thank the Reviewer for the time and effort incurred in reviewing the paper. Our responses regarding the main Reviewer’s comments are: 1. The writing will be strengthened in parts suggested by the Reviewer, in order to get a full understanding of the paper. Objectives as well as research hypothesis will be highlighted and more precisely formulated. In particular, the sentence which follows (“Moreover... confluent lakes...distance...”), which is the fact the second hypotheses will be rewritten

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to be more clear. 2. LER was determined for each of the study lakes on the basis of detailed and long-term (since 2003) in-situ measurements and remote sensing, and takes into account all the local conditions. This fact will be clarified in the paper. The Bug River valley is different from the valleys surveyed in cited by the Reviewer articles. There are no wetlands, sloughs or batture channel on the water path: river – floodplain lake (FPL). The Bug River supplies FPL either a) directly through crevasses, after exceeding the threshold of connectivity, just like described by Hudson et al. 2012, and Hudson et al. 2013 or b) by inundation channels. LER refers to the place (in the channel or crevasse) in which water overcomes the highest point and then inflows to the floodplain lake. The concept of LER has been described in detail by Ferencz and Dawidek (2015). 3. The paper is based on a study of duration and frequency of inundation and isolation periods in floodplain lakes. There is no suggestion that it presents actual lakes hydrology – water stages. River discharge or water stages are crucial when examining potamophases and limnophases since conditions of the lakes do not play a greater role in these processes. Moreover, as the authors of listed by the Reviewer position suggested (Hudson et al. 2012) during potamophase period lake water stages in 99% depend on changes of discharge and water level conditions of the parent river. Also local processes such as precipitation and evaporation do not play significant role when investigating functional periods, because they shape the conditions of lake water during limnophase. The paper study time and duration of the inundation and isolation periods and no variability of lake conditions in this period. What is more, the dynamic of lake water levels in each of the FPL shows individual characteristics (as described by Dawidek and Ferencz 2014, based on actual field measurements of lakes water levels in the Bug River valley), but the problem is not related to the present article topic. 4. Hydrological and limnological research of FPL lakes valley based on analyzing lakes relationship with the parent river have an environmental aspect. This has been confirmed in studies of the variability of flora and fauna in FPL of Bug River valley (e.g. Wojciechowska et al. 2005). The essential purpose of our paper was, however, an analysis of hydrological relationships within the floodplain of the river with

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a natural flow parameters. Abiotic conditions which determine functional periods occurrence are poorly described in the literature, which is undeniable advantage of this paper. Expanding the ecological issues (for example systematics of fauna and flora) would be a subplot in relation to the subject of the article.

Additional comments: Indeed, analysis of precipitation is unnecessary to the subject of the paper, that is why it will be removed in the revised manuscript. As mentioned in point 3 local processes, such as precipitation and evaporation does not affect the duration and frequency of functional periods. p 13158: A discussion about infiltration in the case of Bug River floodplain lakes is part of the issue of balancing lake basins' water resources. Negligible role in shaping an effective infiltration of water resources of the lakes has been explained by Dawidek and Ferencz in 2014. Fig. 3: The rate concept has not been sufficiently clarified in the paper. The "backward similarity" index compared studied year and two previous hydrological years while "forward similarity" index two years following the studied one. Explanation will be complemented in the revised article. Fig. 7. The bar graph would probably better represent data in different hydrological years but due to the number of lakes (20) would be totally incomprehensible, and therefore we decided on a line graph.

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coastal plain river. *River Research and Applications* 29, 149-160.

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Interactive comment on *Hydrol. Earth Syst. Sci. Discuss.*, 11, 13145, 2014.

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