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Hydrology and Earth System Sciences
Discussions

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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The reviewer's suggestion that the authors have earlier studied similar phenomena is justified only in a small part. The authors actually deal with the issues of limnetic cycle of floodplain lakes (FPL) and published scientific articles explaining the various aspects of the FPL but the objective proposed in the article is new and have not been taken up either by the authors of the article nor in the literature of the subject. Long series of observation which was a basis for formulating an objective of the study allows

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objective determination of the major factors influencing the frequency and duration of potamophases and limnophases. It is not true that the proposed approach is standard and does not represent a scientific novelty. It is the first and only study in world literature which determines the quality and intensity of limnetic processes in the river valley. Scientific papers on limnetic ecosystems of FPL generally focus on highly specialized issues (de Emiliani 1997, Pan et al. 2014, Pyron et al. 2014) describing the state of the aquatic environment without giving determinants of this state, generally without explanation of spatial and temporal variability of the phenomenon. In this context, the proposed solutions make possible cause-effect interpretations. The presented results of the study are also a good base for comparison with other river valleys. Innovation is a desirable feature for scientific papers but not necessarily address all the presented problems. One can obtain the overall effect of innovation despite the use of standardized research methods. An example of such an approach is this paper. Limnetic – fluvial phenomenon has been explained based on the known and commonly used quantitative research methods, absent in the field of basic research of river valleys. Reviewer's comment for the triviality of the PCA method is subjective. Objectively, principal component analysis is used widely in many fields of science, both in quantitative and qualitative research (Vila and Masó 2005, Zhou et al. 2009, Sanae et al. 2014). It is generally available as part of Statistica package. Principal component analysis (PCA) has been called one of the most valuable results from applied linear algebra. PCA is used abundantly in all forms of analysis - from neuroscience to computer graphics - because it is a simple, non-parametric method of extracting relevant information from confusing data sets. With minimal additional effort PCA provides a roadmap for how to reduce a complex data set to a lower dimension to reveal the sometimes hidden, simplified dynamics that often underlie it (Shlens 2003). We agree with the reviewer comment about the inadequate defining of the y-axis (PC2), which will be added to the manuscript. The importance of this axis in the analysis of the main factors is rarely possible to precise determination, because it constitutes the replenishment of information explained by the first axis. The suggestion regarding ap-

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plicability of the study is only partly justified and constitutes (according to the authors) its advantage rather than a disadvantage. Article represents the mainstream of basic research aimed at widening the existing knowledge about the functioning of floodplain lakes. Hydrology and Earth System Sciences is a journal for the publication of original research in hydrology, placed within a holistic Earth system science context. HESS encourages and supports fundamental and applied research that seeks to understand the interactions between water, earth, ecosystems, and humans. That is why the paper exactly fits into the scope of the journal.

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