

Interactive comment on “Long-term ice phenology records from East Central Europe” by Katalin Takács et al.

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Several issues in the article require, in my opinion, minor corrections or additions before publishing. The most important are listed below:

Ice phenology data. Other causes of the formation of ice cover on rivers are also possible. For example, border ice zones can merge, and besides freezing over as a result of abundant presence of pancake ice forms, their flow can be locally restrained, forming ice bridges. Moreover, ice floes – the form of ice occurring during ice cover break-ups – are not mentioned, either. Consider replacing the terms ‘ice-on’ and ‘ice-off’ used for the beginning and the end of ice phenomena with others, more common in scientific literature. Perhaps it would be useful to mention ice jams on the river, if there

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is available data. Are they less frequent nowadays, or do they occur at a later date than before? This kind of information should considerably improve the value of the paper.

Data pre-processing. Some of the statements provided in the methods section are obvious to me and need not be explained. This, for example, applies to the information on the conversion of dates into numbers to determine the mean dates, or the explanation regarding the interpretation of a positive trend.

Long-term trends in East Central European freshwater ice phenology records. In the case of the Lower Vistula River section the duration of ice phenomena was found to be correlated with the pollution of the river water, especially as regards changes in the (annual mean) concentration of chlorides, which in the years 1960-2014 increased from approx. 40 to 200 mgÅdm⁻³ (Pawłowski B., 2017, Course of ice phenomena on the Lower Vistula River in 1960-2014, UMK Torun, 176 - in Polish, summary in English). Perhaps similar information for the Danube could be provided as well? As regards the Lower Vistula, in 1960-2016 the duration of ice phenomena substantially decreased: the changes ranged from 0.66 to 0.96 daysÅyear⁻¹ (the values were even higher and in the case of the gauging station located directly downstream of the Włocławek Dam). It was estimated that a change in the water chemistry could be accountable for up to 25-30% of the changes referred to above. Perhaps it could be useful to focus on anthropogenic factors which could have contributed to the reduction of the time the ice phenomena occur on the river. In my opinion some information on the hydro-engineering infrastructure in the area of the described stations on the Danube should be included. River control measures result in a delayed development of ice cover, its shorter holding period and a lower frequency of occurrence. In the case of the lowest section of the Vistula River the ice cover holding period is also reduced because of ice-breaking actions.

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