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Interactive comment on "River predisposition to ice jams: a simplified geospatial model" *by* Stéphane De Munck et al.

Anonymous Referee #1

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Review of Manuscript 2016-308 "River predisposition to ice jams: a simplified geospatial model"

General comments This paper explores ice jam predispositions along northern rivers using a geospatial modelling approach in which sets of fluvial geomorphological parameters are compared with ice jam occurrences. There is a high success rate of predicting ice jam locations, however some errors do occur due to the presence of sand bars and low water depths, variables not considered in the model The approach does give a first assessment of the ice jam potential of rivers, hence, the paper is deemed publishable if the following minor revisions are considered.

Specific comments The narrowing index (NI) for bridge peers is rather arbitrarily derived that can lead to over- or under-estimation of their effect on ice jamming. No considera-

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Discussion paper

tion was given to the number of peers spanning across the bridge. Hence, the NI of a suspended bridge would have the same NI value as a bridge with many closely spaced peers. Could you please give an explanation of why this wasn't considered?

Also on the subject of bridges, I find that bridge peers do not necessarily stop an ice run to create an ice jam but reduce the inertia of the ice run enough for it to slow down and stop at a location further downstream from a bridge peer. Would such a consideration improve the predictability of the model?

Technical corrections Line 11: change "has been" to "was' Line 13: change "have been" to "were" Line 21: change "precipitation" to "rain events" Line 26: change "jam" to "jamming" Line 66: change "jam" to "jamming" Line 71: change "opposite" to "on the other hand" Line 89: change "comes" to "came" Line 92: change "channel's representation goes at some point" to "channel representation changes" Line 94: include "was represented by polygons and" after "channel" Line 113; the line should read "overestimates or underestimates ice jam occurrences at bridges." Line 114: "sediments" is not plural. Line 115: replace "transiting" to "transport" Lines 115-116: The clause should read "To approximate this parameter in the model, . . ." Line 166: "compared" (past tense) Line 172: The method is called "multi-criteria analysis" Line 202: replace "On the opposite" to "In contrast" Line 250: some errors here in the cross-referencing Line 259: replace "They mean that . . . something" with "This means that there is something not considered in the model". Line 259: change "seem" to "seems" Line 260: replace "grow bigger" to "extend further" Line 274: replace "it presents" with "has" Line 280: replace the last word "on" to "at" Line 305: replace "applied on" to "setup using" Line 311: replace "happened" to "occurred" Line 314: should "water depth" be included to bathymetry and the presence of an intact ice cover? Line 312: replace "exportability to" to "transferability of" Line 324: replace "false and positive errors" to "false-negative and false-positive errors".

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