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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "A first wildfire risk assessment for Belgium" *by* Arthur Depicker et al.

Anonymous Referee #1

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The manuscript presents a methodology for mapping wildfire ignition probability for Belgium using GIS overlay and expert rules techniques. It also provides a study of the fire regime in the country, based on historical data and analysis. The methodological approach, which is presented in the manuscript, is interesting and well described; adequate background information is given, which provides a comprehensive overview of the aspects that relate to wildland fires in Belgium. Below are some comments and suggestions for the revision of the paper (and the changing of its title). I believe that these are quite important in making the manuscript suitable for publication in the NHESS Journal. 1. The terms "Risk" and "Hazard" are not used as expected in a contemporary research work. The definition of "Risk" that is provided on page 4, line 23, was used in the past, but is nowadays avoided, since many terms related to natural hazards have been standardized. Therefore, the use of the term "risk assessment" in the title of the paper will be rather misleading for the readers of a

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Discussion paper

recent paper. It is essential that a new work contributes to the effort for establishing a common language for the study of natural hazards and specifically wildland fires, and complies with the existing EU directives and standards. Thus, I would suggest the revision of the manuscript, in order to use other, more appropriate terms for the description of the work and the maps produced. The INSPIRE document, which can be found via the following link, is an important source of information: https://inspire.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_NZ_v3.0.pdf (see p.126) 2. The “Hazard map” that has been produced in the context of this study is a reclassification of the land cover map, based on the “inflammability score” attributed to each land cover type. A name that includes the term "inflammability" or “combustibility” would be a more appropriate description of the content of this map. The following links are available to the authors, so as to study the concepts of “hazard potential” and “risk” that are used in the US: https://www.firelab.org/project/wildfire-hazard-potential https://www.firelab.org/sites/default/files/images/downloads/wfp_methods_041813.pdf 3. The inflammability categories and scores presented in table 1 are too generic for the creation of a map with reliable information for comparison with the “ignition probability map”. Moreover, the scores seem quite strange for some land cover categories and especially for “closed coniferous forest”. As the authors state on page 9, lines 23-24: “It seems that wildfires in such land cover are less controllable than those in coniferous or deciduous forests. This can be understood by the fact that heathlands and fens are largely covered by shrubs and grass that ignite easily”. However, the table 1 scores that are used in the study are not consistent with this statement. A clarification is needed as to what are the species and forest structure expressed by the category “closed coniferous forest”. Is it fir or pine, dense and closed high forests or other type of conifers? Verboom et al. (2013), in section 6.1, refers to “bushy conifer forest, juniper and rhododendron” and the score 100 may be reasonable for these, but not for fir or pine closed forests (eg. dense overstory but without understory vegetation). I would suggest using more criteria for the reclassification of the land cover map into a map that can express inflammability. This might also provide better results

in the comparison between the “probability of ignition” and “hazard” maps. Some additional comments below: 4. Page 6, lines 15-16: “The soil and land cover can serve as a proxy to fire susceptibility as soil texture is correlated with soil moisture. . .” Please justify your argument about the correlation of soil type, soil texture and soil moisture, and their relation to fire susceptibility. 5. Page 4, lines 15-20: Correctness and consistency are necessary in the description of the term “fire hazard”. It is explained as “potential fire behavior” in line 15 and that it “expresses the potential of wildfire occurrence” in line 18. Although wildland fires are not currently considered a significant natural hazard in Belgium, both in terms of occurrence and in terms of impact, this paper, if revised appropriately, will become an interesting and informative work for the community that deals with wildfires, since climate change is expected to play a role in increasing the significance of fires in the whole of Europe in the future, especially in the wildland-urban interface environments.

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