Interactive comment on "A propensity index for surface runoff on a karst plateau" *by* Christian Reszler et al.

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I enjoyed to read this paper concerning the development of an index for assessing runoff in karst areas. The index integrate a fundamental point in geoscience consisting of "reading the landscape". In this paper, the authors, made an effort to compile and propose what they have in mind (even if it looks sometime subjective) when they build their perceptual hydrological model. The authors developed their index by including geology, pedology, hydrology that consist of field approach and mapping to delineate their HRU.

1) Introduction Despite the effort, I found that the paper lack the "state of the art"on HRU, consequently I suggest that the authors highlight the previous similar studies

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concerning HRU and how different sources of information can contribute to the development of perceptual models in their introduction. I kindly ask them to better explain difference between HRU and HSA, limits and advantage of the HRU approach. I would like that the authors better explain why their method is innovative and better adapted in karstic and/or mountainous environment. Link to that, explain why traditional methods tend to focus on geology, geomorphology and not soil. What is the reason? (Suggestion: lack of soil map, if maps exist difficulties to translate the soil map unit classification into pedohydrological concept). Please provide references in your general assertion like karst water is used for water supply in Vienna, in karstic areas soils tend to be shallow, etc...

2) Case study area Please specify where the Hochschwab massif is in a general map representing Austria. Add references on the vegetation cover. I miss a more information (map) from the key lookout points in the polygons (number, position). I don't consider this request as mandatory, however it will be appreciate, indeed if the information is available, it will help to appreciate the advantage in time and space to cover the entire zone.

3) Method of process based mapping of surface runoff propensity Inverse the order (i), (ii) and (iii). Indeed, in the article you follow the inverse order.

a) Geology I suggest that the authors develop the methodology to assess the karstification potential of the bedrock. I understood that the "Rock Quality Designation (RQD)" was used but the link between this method and the 3 geology classes (limestone, dolomite, calcareous sandstone), however it is unclear. Provide more details.

b) Soils. Please better explained the "visual assessment" of the soils. What is the threshold between deep vs shallow soil? Provide a thickness range. Do they authors assess the texture of the soil (clay, silt, sand)? Or do they just classify between fine (< 2mm) and coarse (> 2mm)? If so; why do they consider that it's important? Why the authors did not used the available soil map? Why the author did not use of soil survey

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to complement the visible soil profiles in the polygons? I think that it would have been be more relevant than the use of the TDR Please explain better how you obtain the three infiltration capacity classes, it's not clear.

c) Vegetation. Please provide more information on your choice between dense and sparse. Any references?

d) Infiltration capacity. I agree that there is always subjectivity when the field experimentalist propose his perceptual model of a catchment, but in your case you should make effort in such a way that everybody can reproduce your decision tree. This paragraph lack the methodology on how the authors make the synthesis of the mapped properties. A clear methodology should be provide to obtain the different classes of each polygon.

Figure 2 and 5: add scale and orientation of the view

Figure 3 : please make effort to have a real geological crossection, bedding and fault are missing and the vertical limits between Dolomite, Calcareous Sanstone and Limestone units seems not natural to me.

7) Discussion.

Provide reference on the assertion that surface runoff propensity is at the pixel scale (10 m* 10 m). Discuss not only the advantage of the methodology but also the limits (like subjectivity, compilation of knowledge in different disciplines) and how can you overcome the limits. You should also go beyond the case of study, explaining how field experimentalist are still essential into the understanding of catchment behavior, showing that even if there is subjectivity in their assessment, the role of the field experimentalist is crucial to the hydrological community in the understanding of hydrological basin and their prioposition of perceptual models.

8) Conclusion.

Please provide some widening ideas on your method. As example, in flat areas the

field person can be help by the use of drones, consequently the method can also be apply in other non-mountainous context. Provide some advice on how the method can be adapt in non-karstic context.