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Hydrology and Earth System Sciences Discussions

Interactive comment on "The hydrological response of baseflow in fractured mountain areas" *by* A. Millares et al.

Anonymous Referee #1

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In this paper, the authors evaluate streamflow recession patterns of three streams in Spain in order to demonstrate that the recession traits of a stream can be used to differentiate between different types of responses in mountain environments with fractured material.

The work has laudable scientific goals, and the difference in the recession patterns of these three streams is interesting. The recession analysis is sound. However, the authors have not clearly demonstrated the recession differences are due to different fracture states in the subsurface in each catchment. Furthermore, the paper could be better organized. The paragraph structure is not up to the standard of a reputable scientific journal. I think that the authors could improve the manuscript so that it could be accepted in the future, and so I would recommend acceptance with major revisions.

I do not believe this paper is appropriate for the IP3 special issue as it does not address any significant cold regions hydrology problem. I'll leave this matter up to the editors.

My specific comments include:

Page 2263, lines 20 – 25. The authors appear to be assuming that faster recessions are associated with more fractured material. Is this so, and what basis is there for this assumption.

Pages 3364, 3368; The paragraph structure is not correct.

Page 3362, line 18; What does N represent?

Page 3368, lines 5 – 10; It would be good to refer to Figure 6 and Table 1 here.

Page 3370, line 6; You have not shown that the "main indices affecting recession. . .. are geologic features. . .". You could if you could show that the Lanjaron is different than the other two catchments in some way, but no evidence to suggest this was presented. This is a gap that must be filled in order to make the paper acceptable for publication.

Page 3370, line 9; Please explain/define the Gravelius index.

Page 3371, line 5; Could you expand on these thoughts? What would have been found if you had not corrected the fragments for external factors? These "external factors", such as evapotranspiration act on catchments all the time, and everywhere? What is truly learnt about catchment behaviour if we only focus on recession patterns, ignoring the fact that basins are not like buckets that only lose water through the stream? Some statements on the wider applicability of the results would add much to the manuscript.

Page 3371, line 25; But Figure 5 implies that the same period of record is available from all three streams.

Figure 6; The figure caption should better explain which one (a or b) represents slower or faster recession. Also, add the blue lines to the legend.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 3359, 2009.