

## ***Interactive comment on “Reconstructing long-term gully dynamics in Mediterranean agricultural areas” by Antonio Hayas et al.***

**Anonymous Referee #3**

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This is a valuable contribution, but one that could be improved by teasing out some of the relationships as far as possible. There seem to be at least three development processes for the gullies: 1) Once started gullies tend to grow by positive feedback (as they gather collecting area) until they consume the source area. These gullies seem to be approaching this state in the south, but less so in the north. 2) Gullies grow in major events, and fill between them. Can the rainfall element be modelled, roughly, by summing a function of rainfall events for each interval [e.g. (rain-threshold) or a power of it] to try and tease out the effect of the land use element. 3) Residual element may be due to land use (is it uniform over the area?), which might change the threshold beyond which gullies expand. It is perhaps too much to hope that this can be rigorously carried through, but discussing the problem in these terms would greatly enhance the value and wider applicability of the research.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-239, 2016.

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