

## ***Interactive comment on “Towards an increase of flash-flood geomorphic effects due to gravel mining and ground subsidence in Nogalte stream (SE Spain, Murcia)” by J. A. Ortega-Becerril et al.***

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Received and published: 9 July 2016

The presented manuscript aims towards the understanding of the human effects on the fan dynamics in semi-arid region on the south of Spain, during two main flood events occurred in 1973 and 2012. In my opinion, the manuscript is well written, clear and concise, but it can be improved or enhanced in some sections. My main concerns are in the Hydrology section:

140 Page 5 In this line presented the precipitation over Puerto Lumbreras to determine the return period of precipitation which affect the runoff. I consider this methodology has to be improved, since measure of precipitation over the apex fan might not be representative of the precipitation that caused the discharge. This aspect is especially

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critical in semi-arid areas with marked slopes as is the case of Guadalentín River. Particularly the 1973 event discharge in Puerto Lumbreras was a consequence of the intense precipitations upstream, in its upper watershed (Capel-Molina, 1974). For this reason, I consider that to determine the return period of the floods based on precipitation, all the precipitation over the watershed draining to the study area has to be considered for both floods (1973 and 2012).

144-147 page 5 The wide range of runoff found in the bibliography may indicate moderate high (1500 m<sup>3</sup> s<sup>-1</sup>; Benito et al., 2012) or beyond the T500 return period (2489 m<sup>3</sup> s<sup>-1</sup>; CHS, 2013). In Methodology section is presented that an analysis of the field area affected by the 2012 flood, gathering information on water levels and the effects of flooding was made for this study. Which are the results of this analysis? Are closer to 1500 or 2489 m<sup>3</sup> s<sup>-1</sup>?

Additionally, I have a comment regarding the discussion section, lines 341- 348 As presented in the discussion, there are two main factors considered to affect the fan morphology. 1) The gravel mining which reduce the sediment availability and 2) the over-exploitation of aquifers. In my opinion, there is a third possible factor, which is the movements of the Alhama-Lorca fault, which crosses the fan apex, and generated the 2011 earthquake in Lorca. Has the influence of the fault movements been considered in this study? If not, it might be interesting to add some discussion of how fault movements can affect the slope of the fan and the aquifer connectivity.

Also, In my opinion conclusions are too long and include cites, some of this content is more appropriate on discussion section.

Other minor comments Line 189 page 7 errata, 2002 in state of 2012 There are citations without reference, I located Benito et al 2012, CHS 2013 and Capel-Molina, 1974 but it might be others, please revise