

# ***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.***

**Anonymous Referee #1**

Received and published: 24 May 2016

The manuscript by Ortega-Becerril et al. investigates the effects of human-induced changes on the streams in semi-arid regions arguing that the changes to longitudinal profile and the lowered base level due to in-channel gravel mining and aquifer overexploitation lead to the intensification of geomorphic effects of flash floods. In this study, the authors compared two events occurred in the study catchment in 1973 and 2012 that were characterized by similar discharge but featured different flood dynamics.

The manuscript is well written and easy to follow by the reader. In general, the analysis is sound and quite well documented but several points need to be better clarified. My main concern is related to the comparability between the two flash floods events and specifically on the flash floods characterization in terms of spatial and temporal rainfall

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evolution. A spatially-detailed representation of the rainstorms that caused flash floods, based on radar data, is not reported. This could not be a problem given the aims of the manuscript but this aspect should be at least mentioned along the text. Accordingly, there is a lot of literature on flash floods and their geomorphic effects that could be cited (e.g., Borga et al., 2011; Gaume and Borga, 2008; Rinaldi et al., 2016; Surian et al., 2016) even if not focused on semi-arid regions.

More specific comment can be found in the attached annotated pdf.

Borga, M., Anagnostou, E.N., Blöschl, G., Creutin, J.-D., 2011. Flash flood forecasting, warning and risk management: the HYDRATE project. *Environ. Sci. Policy, Adapting to Climate Change: Reducing Water-related Risks in Europe* 14, 834–844. doi:10.1016/j.envsci.2011.05.017

Gaume, E., Borga, M., 2008. Post-flood field investigations in upland catchments after major flash floods: proposal of a methodology and illustrations. *J. Flood Risk Manag.* 1, 175–189. doi:10.1111/j.1753-318X.2008.00023.x

Rinaldi, M., Amponsah, W., Benvenuti, M., Borga, M., Comiti, F., Lucía, A., Marchi, L., Nardi, L., Righini, M., Surian, N., 2016. An integrated approach for investigating geomorphic response to extreme events: methodological framework and application to the October 2011 flood in the Magra River catchment, Italy. *Earth Surf. Process. Landf.* n/a-n/a. doi:10.1002/esp.3902

Surian, N., Righini, M., Lucía, A., Nardi, L., Amponsah, W., Benvenuti, M., Borga, M., Cavalli, M., Comiti, F., Marchi, L., Rinaldi, M., Viero, A., 2016. Channel response to extreme floods: Insights on controlling factors from six mountain rivers in northern Apennines, Italy. *Geomorphology*. doi:10.1016/j.geomorph.2016.02.002

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-136/nhess-2016-136-RC1-supplement.pdf>

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-136, 2016.

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