

# ***Interactive comment on “Water and sediment fluxes in Mediterranean mountainous regions: Comprehensive dataset for hydro-sedimentological analyses and modelling in a mesoscale catchment (River Isábena, NE Spain)” by Till Francke et al.***

## **Anonymous Referee #2**

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The manuscript presents a dataset on water and sediment fluxes in a Mediterranean mountainous region. The dataset is large and well organised (specific comments hereafter). I believe that the dataset is valuable for the scientific community and I recommend the manuscript for publications. Nonetheless, the authors have used parts of the dataset in (at least) eight other publications. While this might not be a concern, I do think that there is room for improving the manuscript (especially the one figure and the two tables) to provide a better overview of the available information (suggestions

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hereafter).

I was able to download the data without problems from GFZ data services. It is also possible to easily find and download the datasets in cuahsi. Moreover, as claimed by the authors, the data is stored following the cuahsi rationale.

## GENERAL COMMENTS

GIS data is often needed in many studies. I was wondering if it would be possible to add a section/table providing information on the data that is available (e.g. maps, resolution, source, links, etc) (see Table 3 in Nord et al., 2016). Also including details and link to the data published by Foerster et al 2015. I know that in many cases gis data might not be freely available. Nonetheless, I would certainly appreciate to know what is available and where.

After reading the last paragraph of the introduction, describing publications that have used parts of the database, I have noticed that some publications are missing (e.g. López-Zarazón et al 2009). I think it is important to list all the studies and briefly explain the objectives/results of these studies and the data that they have each used. It would be useful to summarised the information in a table.

Please, improve Figure 1. Where are located the 'main badland areas'? They are difficult to see despite its major importance as sediment sources. I would encourage the authors to find a better display. I would slightly change the symbols indicating the meteo and gauges stations, they can not be distinguished when not printing in color. Have the authors consider adding some pictures of the catchment? I think it could be useful. Also, it is not possible to quickly see in the map all the stations and what it is measured in each (i.e. a clear link between figure 1 and table 1 does not exist at the moment). A land use map and geology/pedology map would be helpful (and even essential if the data is to be used for distributed modelling). Also display the location of the soil sampling points (I would add another figure close to section 3.4) to give the reader a first idea on distribution within the catchment.

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I would encourage the authors to improve Table 1, too. I think it is important to have a complete overview of the data made available. In its current way, the reader needs to open the data source or read the complete manuscript to know where is every variable measured, during which period, with which instrument (include instrument type, model, etc). Which instruments are installed in the official stations? I would use the word 'sporadic' or 'punctual' instead of 'intermittent', and 'reflectance spectra' instead of 'spectra'. In the database you use '\_wavelength\_nm\_X' instead of 'wavelength\_nm\_X". I guess you want these variables to appear at the end of the list in the 'variables table'. Please, be consistent.

The variable 'ssc\_sampled' includes samples collected manually, and samples collected with an automatic sampler. To my understanding, this is a mistake because automatic samplers are subject to the uncertainties associated with the sampling apparatus. A calibration between cross-sectional manual samples and automatic samplers for each site should be provided.

Section 3.1 Explain how the rain gauges have been calibrated and controlled during the measuring period. You mention in the text that 'Snowmelt' occurs (Page 4-line 10). Is snow quantified? Are the rain gauges heated? Do you think that trends observed in section 3.1.2 are real? Or are they due to instrument malfunctioning? I have plotted a couple of time series and I do not see decreasing trends. Have you perform statistical tests? Please, provide more evidence. The authors mention that there are large pluviometric gradients. I guess it is possible to capture such gradients as many measuring points are available, but please, provide some evidence. I would appreciate to visualize the discharge rating curves in the paper. Would it be possible to add a figure with the six rating curves, associated uncertainties and maximum measured water stage values (to have an idea of the extrapolation range). Also, distinguishing the different methods used to measure discharge, i.e. velocity-area, dilution methods. . . the method used to determine the associated uncertainties should be detailed. We are refered to Lopez-Tarazon et al 2010 to have more information on the rating curve, despite that the data

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presented was collected from 2010 to 2016.

Provide evidence that 'average SSC in the section can generally be assumed to be acceptable due to the observed high flow turbulence'. As I mentioned before, samples collected manually and with automatic samplers should be presented separated, and the authors should prepare a figure comparing ssc from manual/automatic samples (for each sampling site). I would also suggest to add a figure with the rating curves to estimate ssc from turbidity (including uncertainty ranges and distinguishing how the water samples where collected: manually/automatic sampler).

Have other parameters (together with spectral reflectance) have been measured in the soil/sediment samples? If the answer is yes, please explain that in the text even if the authors have chosen not to make the data available. At what height were mounted the light source and the sensor for measuring the spectra in the field? The authors mention that spectras measured in loose material should not be compared to those measured in filters (please add references in page 12-line 6-10). I wonder if the authors have consider transferring the loose materials into filters, to measure the spectra and be able to compare the soil and sediment information. I would also appreciate a plot showing the measuring gaps for each data set (i.e. variable/station). I would encourage the authors to find a visual way to show the quality of the collected data in a plot.

In the variables table. Are water stage and discharge data 'average' data or punctual? Also, why variable name for reflectance is 'albedo'? elevation data could added for the soil sites. Almost no information is provided for the soil sampling sites in the database, only land use type (e.g. 'grassland'), could addition information be added (e.g. soil type, organic matter content, . . .)

SPECIFIC COMMENTS - You refer to the study site as 'dryland region' (e.g. Page 2-Line 5, Page 2-line23). Having in mind that the Isábena catchment has a Mediterranean climate, I wonder if this is correct to use this terminology. If I remember it well, other authors use terms as 'humid Mediterranean catchments with badland'. -

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Page 2, lines 10-11. I disagree on the fact that there has been little research ('or 'much less research') on relevant landscape components for water and sediment management. Please, could you explain this better or add references. - Page 2, line 18. Aren't Nord et al. 2016 presenting sediment data (i.e. hydro-meteo-sedimentological data)? Please, check. You then say that in the following line that you present an hydro-sedimentological dataset, what about the meteo? Please, be consistent. - Page 2, lines 27-28: Just a suggestion. I would like to read here the measurement period and the catchment area. - Page 4-lines 8-9. Which data did you use to calculate these average values? Which period? - Page 4-line 10. Flow regime IS characterized or flow regimes are characterised. - Page 4. Sometimes you use the term 'mean' and others 'average'. I would suggest to be consistent. - Page 4-line 12. I am confused with the term 'mean annual discharge'.... Do you mean 'mean discharge' or 'mean punctual discharge' or 'mean instantaneous discharge'? which data period have you use to estimate these values? - Page 4, last paragraph. Please, revise punctuation. - Page 5-line 21-22. Why data from 2004 to 2010 is not included in the dataset? - Page 6, lines 3-4. Please, reformulate the sentence.

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