Hydrology and Earth System Sciences Discussions

Interactive comment on "Prediction of future hydrological regimes in poorly gauged high altitude basins: the case study of the upper Indus, Pakistan" *by* D. Bocchiola et al.

Anonymous Referee #3

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General comments The manuscript 'Prediction of future hydrological regimes in poorly gauged high altitude basins: the case study of the upper Indus, Pakistan' reports on an interesting and relevant approach to flow prediction in highly and data scarce environment. However the authors need to attend to some presentation/formatting inconsistency and further explanations of the methodology are requested for some sections of the manuscript. And one would expect some observations on the reliability/ confidence level of the approach, aspect that is lacking in the present work.

Specific comments Formatting/presentation The authors are not consistent on the ref-

erencing throughout the manuscript, in the introduction references have 'e.g'(page 3745, lines 2, 9, 13, 16, 22, 27) for some authors but not for all of them (page 3745 line 8) same observation for page 3746 in addition to the fact that here the reference line 18 has 'see' prior to the author's name. The authors use several acronyms in the manuscript without providing at least once the full description, reference made to page 3747 line 10 (TRMM), page 3749 line 1 (EVK2CMNR), line 6 (CCSM3 GCM, IPCC), page 3750 line 1 (BWK), page 3751 line 14 (RGB),page 3754 line 21 (ICIMOD), page 3767 line 20 (SCS-CN), page 3769 line 8 (SRM) Table 1 There is a note underneath that is misplaced Table 2 The label [.] is not appropriate for items without units. Table 3 What is the unit of the water content, wilting/field capacity? Table 4 Total precipitation unit not correct Figure 2, the grid size label will convey more information to the reader Page 3764 line 19 unit is missing for soil moisture (47) References Page 3746 line 26, reference Ming et al., 2007, not consistent with the year in the reference list Page 3748 line 2, reference Seibert et al., 2009 should read Seibert and Beven 2009, similar change to be done for reference Gabriel et al., 1991 line 7. Similar observation for reference Soncini et al., 2011 page 3752 line 4. Page3751 line 26, reference Bocchiola and Rosso, 2007, the year is not consistent with the reference list. Reference not done per norm page 3753 line 8. Phrasing Page 3746 line 46 , kindly rephrase 'seems still limited' Page 3767 line 5, kindly rephrase Page 3769 line4 and 5, comments seem to be misplaced. Content, Data, Page 3752, more description needs to be provided on scene A2 Page 3758, the authors should explain why Askole was seen to be the most representative station of the study area, any statistics to support their statement on line7? Page 3758, authors used the 500m spatial resolution DTM, is it appropriate to cater for steep gradient in mountainous region like the HKH? Can authors explain why they did not use finer datasets of DEM that are freely available? Modelling Page 3755, line 22, the authors refer to 'some others parameters , they should provide the full description. Assumptions Page 3766, line 5, the authors reported that 'no noticeable down wasting should occur by 2059' what are the underlying assumptions? Sensitivity and uncertainty analysis. The authors refer several times in the manuscript to the sen-

sitivity analysis (page 3766, line 14, page 3768, line1; page 3769 line 23)but nowhere in the manuscript results of the sensitivity analysis are presented. Page 3763,paragraph starting line 20,the authors acknowledge that accuracy is not key to their approach, what is the the added-value of this study especially to water managers and planners? Is this just another academic exercise without any practical relevance on the ground?