Hydrol. Earth Syst. Sci. Discuss., 10, C86–C88, 2013
www.hydrol-earth-syst-sci-discuss.net/10/C86/2013/

Hydrology and Earth System Sciences Discussions

Interactive comment on "The influence of precipitation and temperature input schemes on hydrological simulations of a snow and glacier melt dominated basin in Northwest China" *by* X. Ji and Y. Luo

Anonymous Referee #3

Received and published: 15 February 2013

The author proposed multiple lapse rates instead of single lapse rate for meteorological input in the SWAT model, which is essential in the mountainous watershed. I found a lot of limitations in this paper that are listed below. First of all, in the title should be changed and the model name (SWAT) should be included otherwise it reflects all kinds of hydrological model.

Major comments [1] The author did not describe what is the weather generator they use to convert monthly input to daily input? (page 813 lines 9). "Four of them have only monthly precipitation data from between 2000 and 2007" I believe there should

be a consistency check with the other daily data series. If the consistency test is done there should be some discussion and graph/statistics needs to be provided. [2] There are some very high peaks in both calibration and validation [Fig.11 Calibration: year 1968 Validation: 1988] from the model generated flow should be fixed. I think the author should try surface water lag coefficient [SURLAG] for minimizing the peaks. Or it may be linked with the inconsistency with TRMM input. [3] Why only two performance evaluation statistics used? Volume ratio or Root Mean Square Error (RMSE) can be a good indicator to see the change in flow. I think 0.68 NSE is not good enough. [4] It is not clearly mention the input is precipitation or rainfall. I think the issue raised by another reviewer. It's extremely important to clarify otherwise the work is conceptually wrong.

I think the model really needs better calibration. Also I could not find the recent publications on application of SWAT model in the high altitude catchments in the literature. Here are some very recent papers you can consider (not mandatory!)

Fuka DR, Easton ZM, Brooks ES, Boll J, Steenhuis TS, Walter MT (2012) A Simple Process-Based Snowmelt Routine to Model Spatially Distributed Snow Depth and Snowmelt in the SWAT Model1. JAWRA Journal of the American Water Resources Association 48 (6):1151-1161. doi:10.1111/j.1752-1688.2012.00680.x Rahman K, Maringanti C, Beniston M, Widmer F, Abbaspour K, Lehmann A (2013) Streamflow Modeling in a Highly Managed Mountainous Glacier Watershed Using SWAT: The Upper Rhone River Watershed Case in Switzerland. Water Resources Management 27 (2):323-339. doi:10.1007/s11269-012-0188-9

Minor Comments: [1] Lots of grammatical error [e.g. page 814 line 22: you wrote 'its also covers' it should be 'it also covers' [2] Please correct the sentence: Four of them have only monthly precipitation data from between 2000 and 2007 in the page no 813 line 9. [3] Figure 1 do not have scale and north arrow. Overall a thorough check by a professional English editor is essential to improve the manuscript.