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Hydrology and Earth System Sciences Discussions

Interactive comment on "Predictability of Western Himalayan River flow: melt seasonal inflow into Bhakra Reservoir in Northern India" *by* I. Pal et al.

Anonymous Referee #2

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The paper is mostly well written. Although the method and derived relationships are simple, I believe the result has some practical value. I have following comments (mostly of minor nature):

(1) As far as I can see, the main output of this paper is in Table 4, which presents a number of regression based empirical equations for predicting MAMJ flow to the Bhakra reservoir. The main problem in this table is that the units of the predictors/predictand are missing. The units must be specified to allow more sensible evaluation of these equations.

(2) In a number of equations (Table 4), the same predictor appears a number of times in the same equation. E.g. J(R) appears twice in Setting 1 (1 Feb), M(Q) appears

three times in Setting 1 (1 Apr) and so on. I would recommend to keep one predictor only once (bringing them together) as long as they are explicit. This way makes it easier to assess the relative contribution of each predictor. Example (Setting 1, 1 Feb): Q(MAMJ) = 16324 + 135*ND(R) + 80*J(R).

(3) In the equation for Setting 1 (1 Apr), interestingly the sum of all the terms with temperature is zero! Therefore, no need to include the temperature terms in this equation. This can be verifies by substituting Tavg = (Tmax – Tmin)/2 and DRT = Tmax – Tmin.

(4) The authors should also discuss in the manuscript relative importance and/or sensitivity of the predictors on the predicted flow.

(5) Pg 8145, Line 19: In Setting 1, I wonder whether the IMD rainfall also includes snowfall? If that is the case, the snowfall is used twice as input to the model.

(6) Although the paper is mostly well written, the use of many abbreviations is hindering its readability. The use of abbreviations should be reduced as much as possible and a list of abbreviations should be provided.

(7) In Fig. 1 the location of the Bhakra reservoir, particularly the outflow (control) point and the main inflow points, e.g. the Satluj river flow and BSL (pg. 8239, lines 5-8) should be shown.

(8) The letters used in Fig 5 are too small to read.

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