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Hydrology and Earth System Sciences Discussions

Interactive comment on "Spatial stochastic and analytical approaches to describe the complex hydraulic variability inherent channel geometry" *by* N. Hadadin

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This paper presents a simple methodology to relate river streamflow and different hydraulic variables to the river drainage area. In general the paper is well written in terms of the literature survey and the discussion part. One useful output of this paper is the ability to estimate the annual streamflow or other hydraulic parameters simply given the drainage area especially in locations where gauging stations do not exist. However it seems that the accuracy of the estimates of the flow discharge in the streams CEM Types IV and V is questionable, while the accuracy of the estimates of the flow

discharge in the streams CEM Types II and III is reasonable. For example the stream at Abiaca CEM Types IV and V has an actual average annual streamflow of 33 cubic meter/s (table 1) while the estimated using the equation Q = 9.3778 (DA)ˆ0.4 (figure 2) using the actual drainage area of 244.5 km squared (table 1) is 84.6 cubic meters/s that about 3 times greater than the actual annual streamflow (table 1). Another example the stream at M. Worsham 1 CEM Types II and III has an actual average annual streamflow of 33 cubic meter/s (table 2) while the estimated using the equation Q = 5.1423 (DA)ˆ06288 (figure 3) using the actual drainage area of 13.5 km squared (table 2) is 26.4 cubic meters/s that is close to the actual annual streamflow (table 2). I think the accuracy in predicting the hydraulic variables (flow discharge, width, depth, longitudinal slope,. . .,) is more reasonable in the streams CEM Types II and III than the streams CEM Types IV and V, would the author consider that in his discussion.

The paper suggests a power relation between the drainage area and the average annual streamflow, however what would the case when one likes to estimate the annual streamflow given the drainage area in the case of low precipitation or high precipitation year. It seems that table 4 is a duplicate of table 3 or the other way around, would the author correct them. Moreover, in tables 1 and 2 the abbreviation A should be corrected to DA that refers to the drainage area.

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