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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Technical Note: A measure of watershed nonlinearity II: re-introducing an IFP inverse fractional power transform for streamflow recession analysis" *by* J. Y. Ding

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Initial response to Referee 2: major comments

First of all, I would like to thank Editor Markus Hrachowitz for his editorial direction. Following his direction helped reframe my submitted post peer-review comment on Chen and Wang (2013) paper into this stand-alone technical note. This helps explain its singular focus on the Spoon River in Illinois, the centerpiece of their paper.

Now to the review from Referee 2. I appreciate both the thoughtfulness and thoroughness of his/her review, including a lengthy list of specific or minor comments. But I'm afraid they have mis-understood the purpose of a technical note. This is *not* a full research article, thus its lack of extensive data sets for analysis. The intent and purpose of the note is captured by the title and distilled in the opening abstract, on both of which I notice Referee 2 is silent.

On the scientific merit of the note, if I read correctly their objections, these concern the *application*, or lack thereof, of the IFP transform model, not the model itself. (Whether or not my style of presentation is acceptable to a science journal, I leave it to the call of Editor.)

Since 1980's, the rich and diverse literature on the streamflow recession analysis almost inevitably starts from the Brutsaert-Nieber (BN) drought flow model (1977), including this note of mine.

That the IFP transform model (Eq. 2a) is an *exact solution* of the BN model (Eq. 1) is mathematically a *self-contained* kernel of truth. This means one can go directly from Eq. 1 to Eq. 2, without referencing external sources of material, peer reviewed or not. This claim or statement of mine is not in dispute.

A comparison of the *mathematical* method of IFP transform of the *original* flow-rate data and the *statistical* method of fitting by linear regression the *derivatives* of same data, is interesting, not to mention the importance in helping reduce uncertainty in drought flow prediction. But this is outside the scope of the note (Page 15662, Lines 23-25).

HESSD

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Corrections to the published text:

P15663, L22 : "in term of" to read "in *terms* of"

P15665, L19: "Melbourne, Australia" to read "*Canberra*, Australia"

P11668, L12: "in absolute number" to read "in absolute *value*"

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