Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2019-588-AC2, 2020

Hydrology and Earth System Sciences
Discussions
Open Access
EGU

Interactive comment on "A history of the concept of time of concentration" *by* Keith J. Beven

Keith Beven

k.beven@lancaster.ac.uk

Received and published: 6 February 2020

This is a very well written paper of interesting content as a review, not as a scientific paper. The appendix is an interesting comparison of calculation methods but does not add new knowledge. However, I think it is addressing a problem that does not really exist and is mis-titled. It is really a history of rainfall to runoff hydrograph construction and manipulation, and the discussion of Time of Concentration seems somewhat bolted on to the main content. The fact of the matter is that hydrologists have been using simplifying mathematics to describe rather complicated natural phenomena in practical ways for a great many years, and on the whole these have proved very useful. Yet the author seems to have an "axe to grind" about this particular issue. I recommend that it is re-written to sound less perjorative and re-titled as an historial survey of rainfall to runoff modelling, and simply note in the text that the term "Time of Concentration" is badly used if taken too literally.

Printer-friendly version

Discussion paper

Response: Gven the material that is presented in this paper, this referee comment is really rather surprising. In particular:

1. This is not a history of rainfall-runoff models. A history of rainfall-runoff models would be much much longer (see Chapter 2 in my book on Rainfall-Runoff Modelling that gives a more extensive overview). Instead, as the title says, it concentrates specifically on the different and confused ways in which time of concentration has been used in the past which underpins the wide range of estimates that arise in its application.

2. In what way is the paper pejorative? It simply makes the distinction that definitions based on both velocities and celerities have been confused in the past, and suggests that we should be more careful in the use of the term time of concentration. If that is considered as an "axe to grind" then so be it - surely we should aim to apply concepts correctly!!

3. The Appendix is not a comparison of calculation methods, it provides derivations of time of concentrations under the kinematic wave assumptions for different surface and subsurface flow assumptions. Comparisons of calculation methods are given in the other review papers cited.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2019-588, 2020.

Printer-friendly version

Discussion paper