

Hydrol. Earth Syst. Sci. Discuss., community comment CC4
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Reply on AC1

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Community comment on "If a Rainfall-Runoff Model was a Hydrologist" by John Ewen and Greg Martin O'Donnell, Hydrol. Earth Syst. Sci. Discuss.,
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Just to add a little clarity to my previous response, I want to make it clear that my opinion is that this paper is not anywhere near the ballpark of being a serious contribution to the literature. It is (yet another) philosophically naive paper by hydrologists who are working from intuition rather than from any epistemological formality.

I do not agree with the authors that there needs to be a reconceptualization of how we think of rainfall-runoff models. This tired cliché of people treating models as "black boxes" is an excuse to do bad philosophy, not an actual phenomena that happens among model developers. Notice that the authors did not actually point to any concrete problem (bad inferences, bad results, bad predictions) that occur *because of* this supposed problem (thus my criticism of their model), they imagine an audience of people who are apparently less sophisticated than themselves and lack a basic understanding of what models are. This imaginary boogymon does not exist, and if it did exist, it is not justification for doing bad philosophy or for changing how we write scientific papers.

What I mean when I say that this is bad philosophy is simple. This paper touches primarily on two subjects: (1) scientific epistemology, especially as it relates to the role of models in science, and (2) scientific writing. These authors make zero effort to review either of these (large) bodies of literature. They cite only other hydrologists who have made the same mistake in the past. We have a tradition in hydrology of letting hydrologists pretend to be philosophers without any actual attempt to synthesise the state of the philosophy of science as it relates to the problem of model realism (or uncertainty, or hypothesis testing, or underdetermination, etc.). This paper does not make even an attempt to build on the state of the science (here, the state of the philosophy) that is at the core of the discussion. The authors make no attempt to synthesize scientific epistemology or the philosophy of technical writing (which are both deep fields in their own right), yet they presume to make suggestions about both. It's embarrassing to read this paper.

Imagine if the situation were reversed -- suppose a philosopher with no technical knowledge published a paper on climate change attacking a strawman problem and coming to a ridiculous conclusion about how climate scientists should change their models - perhaps their suggestion is to account for sun cycles without making an attempt to understand the current state of climate models. The analogy is that this current paper under review comes to an equally ridiculous conclusion about how to write scientific articles with "knowledge tables" in "plain english" instead of using the standard

conventions of technical writing, and it comes to this conclusion without making even an attempt to understand either (1) the state of the philosophy of science on modeling or (2) the state of the science on the philosophy of technical writing. The hypothetical paper by this hypothetical philosopher would not pass the laugh test, let alone be sent out for review in any journal (hopefully), yet here we are reviewing an equally ridiculous philosophy paper in a hydrology journal. Frankly, it is disgraceful that we would even consider publishing this nonsense - this paper makes a mockery of not one, but two academic disciplines.

I strongly advise that this paper should be rejected.