**Hydrology and
Earth System
Sciences
Discussions**

Interactive comment on "Disinformative data in large-scale hydrological modelling" *by* A. Kauffeldt et al.

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I think this is an important paper for the global hydrological modeling community. Problems with global data sets have been recognized before (as noted by the authors) but there has never been such an ambitiously comprehensive, model independent, analysis of the available data sets as this. As an indicator of where more investigation of data is needed it is extremely valuable. I hope the authors will go on to consider the shorter term consistencies and disinformation that they mention in the conclusions.

I have noted a few minor points of English, but also a few more important queries that should be addressed in a revision below.

Keith Beven

C14

P491 L5. the question whether

P491 L6 what restrictions to basin size are imposed by input data

P492 L5 (also 496 L23) for all these hydrographic data sets

P492 L10. tend to have a higher accuracy than data ..... What do you mean by accuracy here and how might it be assessed? Is there, in fact, a real basis for this statement – apart from pers.comm.? It would need a statistical averaging out of random sampling errors but surely that is not necessarily the case (consistent bias in rating curves might be involved for example). Is the pers.comm. based only on such a conceptual averaging or on real evidence?

P492 L15 in preparation at the time of writing; . . . errr, so how could you use it if it was in preparation? Needs rewording.

P493 L19. I do not see why this is a symmetric error (also later)? I see no reason for any expectation about whether it might be positive or negative in any basin, nor why distribution should be symmetric over a distribution of basins. Refer to it simply as a scaled area misfit?

P495 L25. But that is ok, right? If those factors have a major effect then it would also have an impact on a model that also does not take them into account explicitly so that the data would be disinformative. Whether a compensating balance of anthropogenic effects could be identified is another question, but this is at least an initial screening without other direct evidence. So could be more positive here!

P497 L27. the energy limit values (potential evaporation) – but potential evaporation estimated for a grass cover is not the same as an energy limit value (and PE for Penman-Monteith calculation for example depends on what assumptions were made for the canopy resistance when the canopy is wetted/dry). The assumptions of the different PE calculations could be summarized in an appendix but this statement needs qualifying. Would you not expect a much higher PE for a rough forest canopy that is being

C15

wetted most days in the Amazon for example (next page) but not necessarily for an area where the forest has been cleared for pasture? (though basic problems with the climate data mentioned later might also clearly be important!!)

P498 L11. The proportion of stations with too-high evaporation and implausibly high RCs were similar for all basin sizes – surely or implausibly high RCs – these sets of basins must be mutually exclusive?

References need check – Westerberg et al 2011 not listed.