

Interactive comment on “Value of river discharge data for global-scale hydrological modeling” by M. Hunger and P. Döll

Anonymous Referee #2

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Manuscript No. HESSD 4-4125-2007: Value of river discharge data for global-scale hydrological modelling

Major Remarks The authors present an interesting study on the value of observed river discharge data used for model tuning of the global-scale hydrological model WGHM, thereby focusing on the data's impact on model performance in simulating a number of important flow characteristics. The paper is well structured, and the English is generally adequate. I recommend acceptance of the manuscript for publication as only a few minor revisions are suggested.

Although it is inherently included in the manuscript, it should be emphasized –

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especially in the abstract and the conclusions section; that the described effects of more observations available for model tuning strongly depend on the hydrological model formulation. For example, it is written in Sect. 3.1 on page 4145: 'V2 basins which require CFS are mainly located in snow dominated (e.g. Alaska, northern Canada and northern Siberia) and very dry areas (e.g. northern Africa, Central Asia), where the model can not account for all essential processes of the water cycle.' I would expect different effect in these areas if a hydrological model is used that has a more sophisticated representation of cold region and dry region hydrological processes. Thus, some effects are clearly model dependent.

In addition, it might be useful (if possible) to point out a) effects that are likely to be model independent, and b) effects that are strongly model dependent.

Minor Remarks In the following suggestions for editorial corrections are marked in *Italic*. (###Well, in my word document and the PDF file I created it was marked. This was before I noticed that the HESS system only allows ACSII reviews, which I personally find very inconvenient.###)

Abstract; par. 1; p. 2 - line 4 The choice of;

Sect.2.1; par. 1; p. 4131 - line 6 Döll (2002) does not exist in the reference list

Sect. 3.2.1.and Fig. 4: I don't understand how the SDF of V1 describes the value of additional discharge information. As SDF is defined, it just describes the goodness of fit for V1. It is written on page 4148: In variant V2, all SDFs should be zero. This contradicts to the definition in Sect. 2.3; Eq. 6. This is rather confusing. Therefore, I probably do not understand the whole first paragraph in Sect. 3.2.1. Please correct and rewrite!

Sect. 3.2.5; par. 1; p. 4153 - line 22; the Murray-Darling basin;

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Sect. 3.3 – par. 1 – p. 4154 - line 10 …introduction, basin size …

Sect. 3.3 – par. 1 – p. 4154 - line 15 … impact of basin size …

Sect. 4 – par. 1 – p. 4157 - line 5/6 and abstract - line 4 … of aquatic ecosystems.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 4125, 2007.

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