

Interactive comment on “Robust estimation of hydrological model parameters” by A. Bárdossy and S. K. Singh

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The authors thank Prof. Pegram for his positive review.

Concerning the sensitivity issue:

the definition of C_3 should be correctly:

$$C_3 = \left\{ \theta_2 - \frac{\theta_1 - \theta_2}{2} ; \theta_1 \in B_{\vartheta} \text{ and } \theta_2 \in D_{\vartheta} \right\}$$

In fact our idea was to alter points from the boundary (B_{ϑ}) and from the inside (D_{ϑ}) of
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the set by the same vector η . That means four new parameter vectors

$$\theta_1 + \eta$$

$$\theta_1 - \eta$$

$$\theta_2 + \eta$$

$$\text{and } \theta_2 - \eta$$

are created. If $\eta = \frac{\theta_1 - \theta_2}{2}$ then $\theta_2 + \eta = \theta_1 - \eta$. This point is denoted as C_1 while $C_2 = \theta_1 + \eta$ and $C_3 = \theta_2 - \eta$. Due to the definition the depth of C_1 is greater or equal to 1 while for C_2 it is less or equal to 1. For C_3 one cannot make any statements on the depth.

The depth of C_1 guaranties good model performance. As C_2 can already be outside the set the corresponding parameter vector might perform badly. While for C_3 there is a chance that it is inside the set.

By definition C_1 and C_2 are altered versions of θ_1 (boundary) while C_1 and C_3 are altered versions of θ_2 (inside). The altered versions of the inside point vary less than those of the boundary point which leads to our conclusion that inside points are less sensitive.

Page 1655: We will correct the text and the figure to make them consistent.

Thanks for the list of corrections of the text.

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