

Interactive comment on “Matching ERS scatterometer based soil moisture patterns with simulations of a conceptual dual layer hydrologic model over Austria” by J. Parajka et al.

J. Parajka et al.

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We would like to thank the anonymous reviewer for her/his helpful comments on the manuscript. We will fully address them in a final response, here we would like to quickly discuss and clarify the two major comments.

In the first comment the reviewer suggests that the calibration procedure should be termed multivariate calibration instead of multi-objective calibration. We believe that the terminology is probably not very important. However, we are in fact combining two objective functions rather than two variables, as discussed below, so multi-objective is probably the more appropriate term.

In the second comment, the reviewer states: "I also have a problem with the weights used in the objective function. w_r is the weight of the runoff, $1-w_r$ the weight of the soil moisture. However, assume that the range of the soil moisture data is between approximately 0 (residual soil moisture) and 0.5 (porosity). On the other hand, Figure 6 shows the runoff can range between 0 and 20 or more. Thus, in the objective function, runoff is going to have a much stronger weight than soil moisture, even if w_r is very low."

The reviewer implies that the objective function consists of two components, one IS SOIL MOISTURE with units 1 and the other IS RUNOFF with units m^3/s . This is actually not the case. The objective function consists of two performance measures, one is a PERFORMANCE MEASURE involving the Nash-Sutcliffe coefficient for runoff and the other is a PERFORMANCE MEASURE involving the correlation of soil moisture (Eq.7, 8 and 9) . The units of both performance measures are 1 and they are of similar magnitude. There is hence no inconsistency in using the weight w_r .

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 3313, 2008.

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