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Hydrology and Earth System Sciences Discussions

Interactive comment on "Influence of rainfall observation network on model calibration and application" *by* A. Bárdossy and T. Das

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1 The suggested references have been included in the revised manuscript.

2 The abstract has been changed according to the recommendation.

3 Fig. 3 (in the old version of the manuscript) has been replaced with a new figure (Fig. 5 in the revised manuscript). Fig. 5 shows the variance obtained using the averaged areal precipitation over the catchment, computed with the selected seven network densities, for the simulation period (1961 - 1990).

4 A new figure (Fig. 3 in the revised version) is included in the revised version. Fig. 3 shows the average daily standard deviation of the 51 rainguage network for the simulation period (1961-1990). Another new figure (Fig. 4 in the revised manuscript)

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is added in the revised version of the manuscript. Fig. 4 shows the average variance over each grid of the catchment. The variance is calculated, using the interpolated precipitation computed with the 51 raingagues over the period (1961-1990).

5 The networks were kept constant for each subcatchment. External drift kriging was used to interpolate precipitation. This means that the weights were adjusted. For subcatchments some of the weights might have become very small - in this sense the number of rain gauges with significant influence might be smaller. However due to the fact that the selected rainfall networks are uniformly dense over the whole catchment thus (more or less) uniform for each subcatchment.

6 The automatic calibration was performed using the daily discharge at each subcatchment outlet (total number of subcatchment is 13). During the calibration the model parameters of the head water subcatchments are optimized before the mixed subcatchments.

7 The locations of different discharge gauges referred to the text are shown in Fig. 1.

8 The influence of raingauge density in other regions might be very different depending on the rainfall type (convective or advective), seasonality of precipitation, importance of snow accumulation and melt, topography and land use. The more the hydrological processes are complicated the more precipitation observations might be necessary.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 3691, 2006.