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Real-time adjustment of satellite-based rainfall estimates using the conditional mean: hydrological validation over French Guiana

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Satellite precipitation products are known to be plagued by large biases, which limit their use for operational applications. This communication presents a robust approach to adjust the satellite-based rainfall estimates using an intensity-dependent error correction curve, determined by taking the mean of historic ground measurements given the satellite estimates (conditional mean). We apply the procedure to seven satellite precipitation products over French Guiana and present a double validation, first at the raingage scale, and then at the catchment scale. Over the six catchments used here, the rainfall-runoff simulations are considerably improved when the correction is applied, outperforming the well-established quantile mapping technique.