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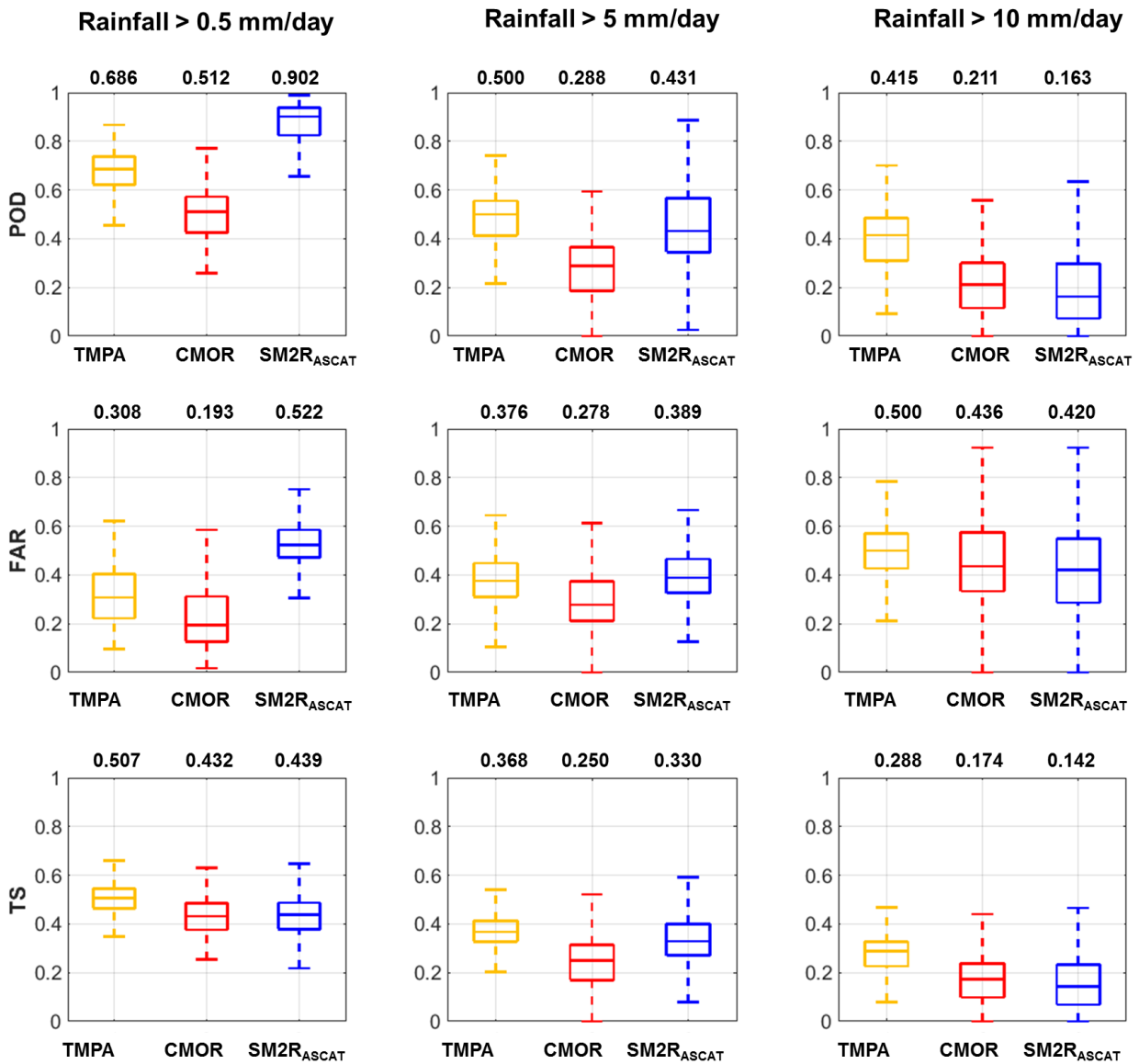
*Supplement of*

## **Which rainfall score is more informative about the performance in river discharge simulation? A comprehensive assessment on 1318 basins over Europe**

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2 Figure S1. Performances of satellite rainfall during the validation period in terms of POD (first  
 3 row), FAR (second row) and TS (third row) for three rainfall thresholds over the study basins, for  
 4 the three products TMPA (first boxplot), CMOR (second boxplot) and SM2R<sub>ASCAT</sub> (third boxplot).  
 5 Numbers at the top of each plot represent the median score value obtained by considering the  
 6 original spatial coverage of each product. Please note that higher POD and TS and lower for FAR  
 7 score values indicate better rainfall time series.

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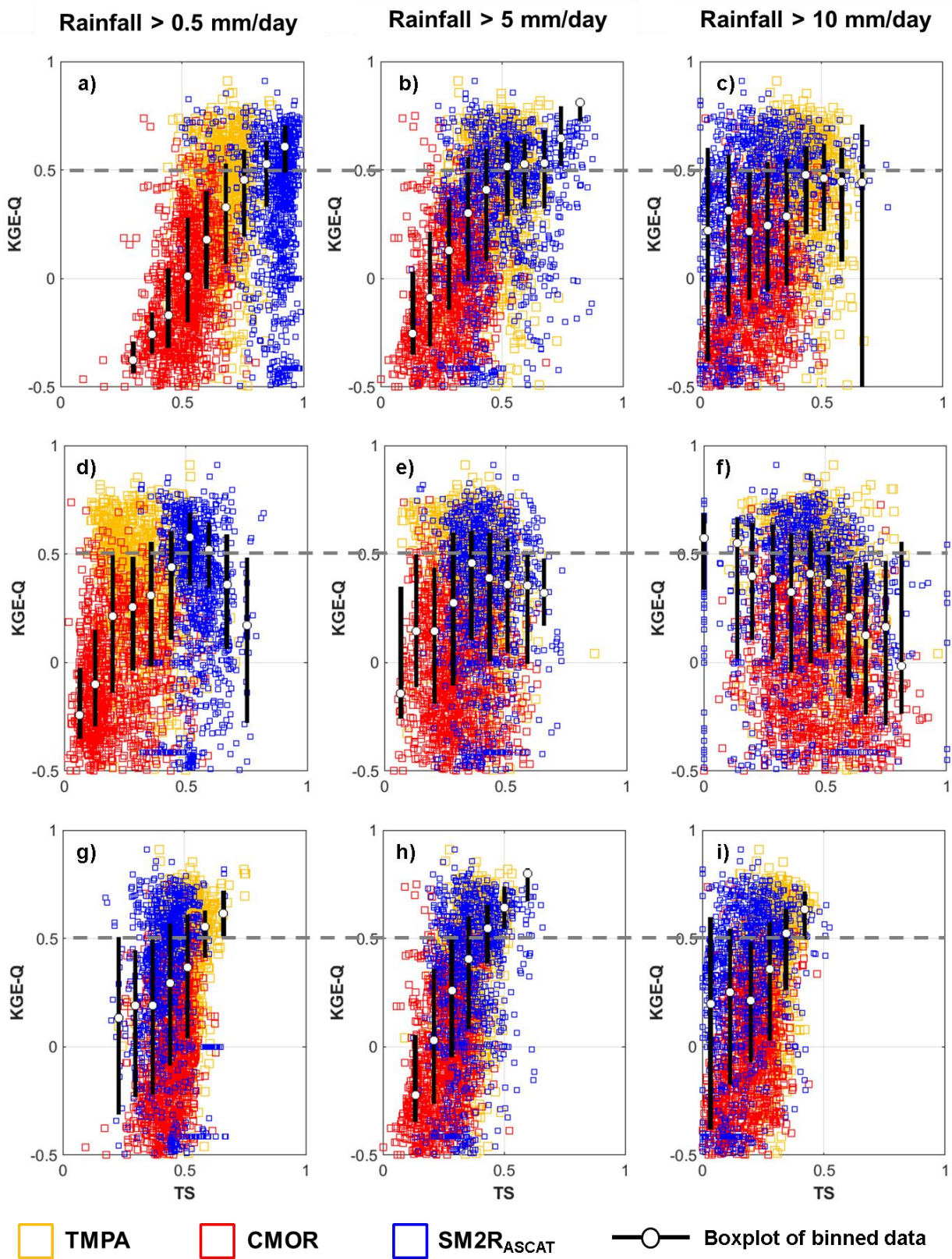
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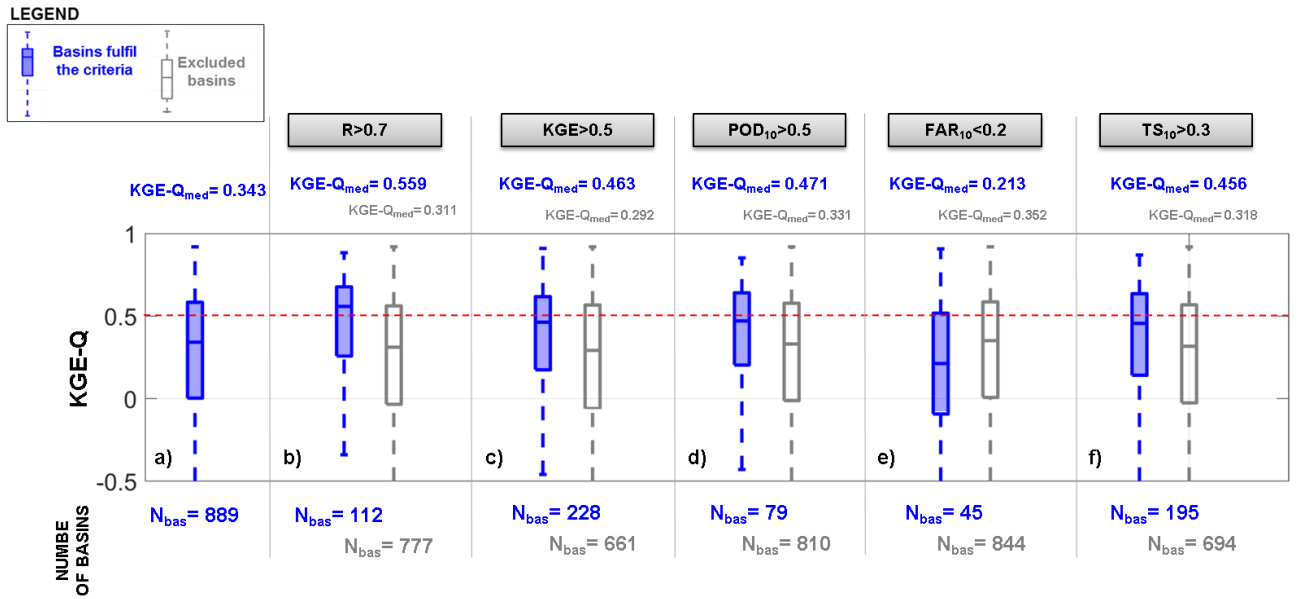
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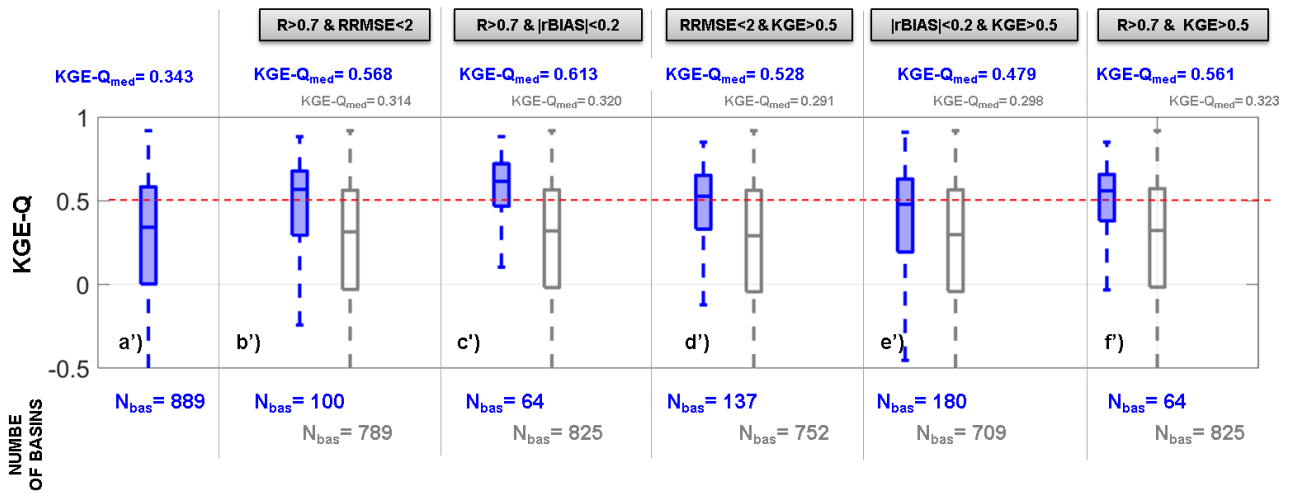


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20 Figure S2. Performances of discharge in terms of KGE-Q against a, b, c) probability of detection  
21 (POD), d, e, f) false alarm ratio (FAR) and g, h, i) threat score (TS) of rainfall. The scores are  
22 evaluated for the validation period (2013-2016) for all the 1318 basins.

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26 Figure S3. Hydrological performances in terms of KGE-Q values that can be obtained during the  
 27 validation period by the three satellite rainfall products for all the basins whose outlet section is  
 28 located below the TMPA area (889), a) without any constrain on the rainfall scores; b, c, d ) fixing  
 29 a constrain on continuous scores; d, e, f) fixing a constrain on categorical scores; and a', b', c', d',  
 30 e', f') constraining a combination of two scores.

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