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Wet and dry spells in Senegal: comparison of detection based on satellite products, reanalysis, and in situ estimates

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Additional Figures

Supplementary figures were included to provide additional informations on others dry and wet spell indicators beyond what was pratical in the main article.

variogram

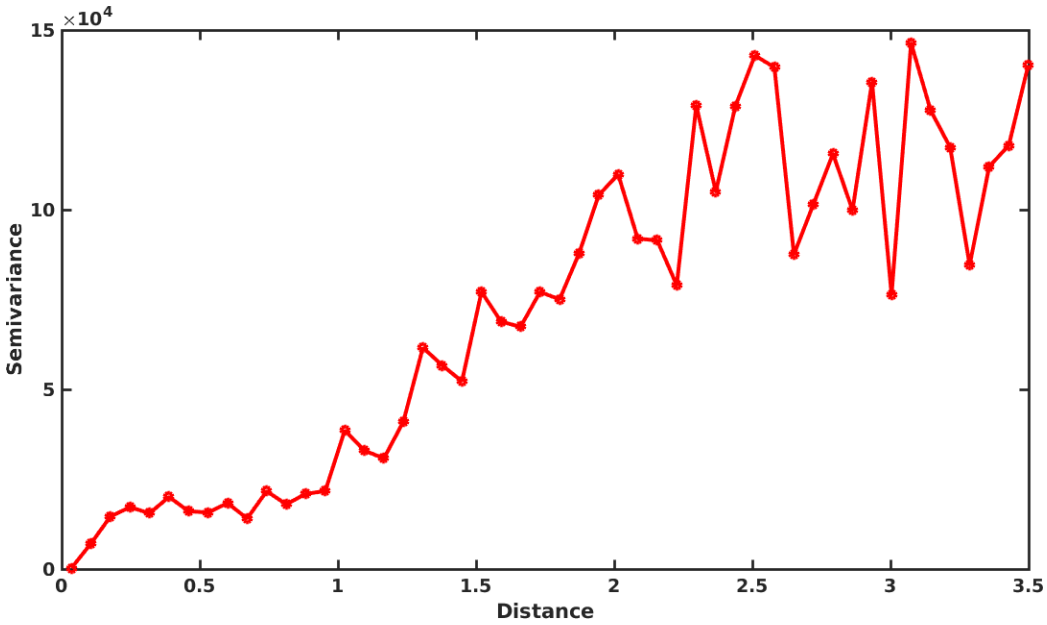

Figure S1: Climatological rainfall amount variogram computed from the gaugedata from June to October.

Dry Spells

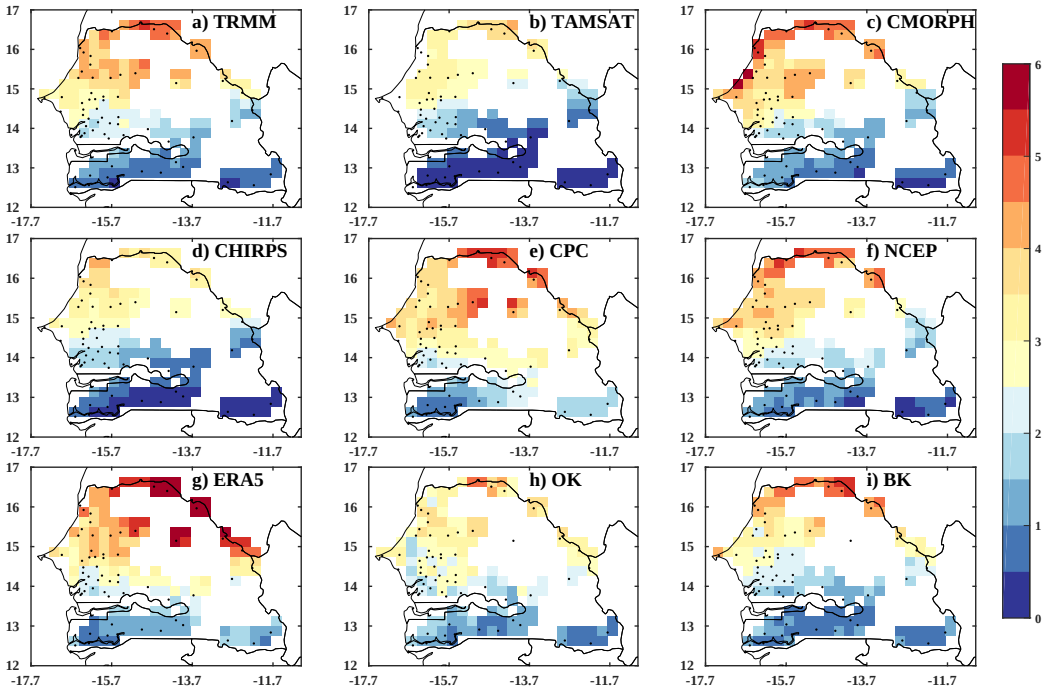

Figure S2: Spatial distribution of the number of DSC10 computed in the rainyseason (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h)OK, i) BK.

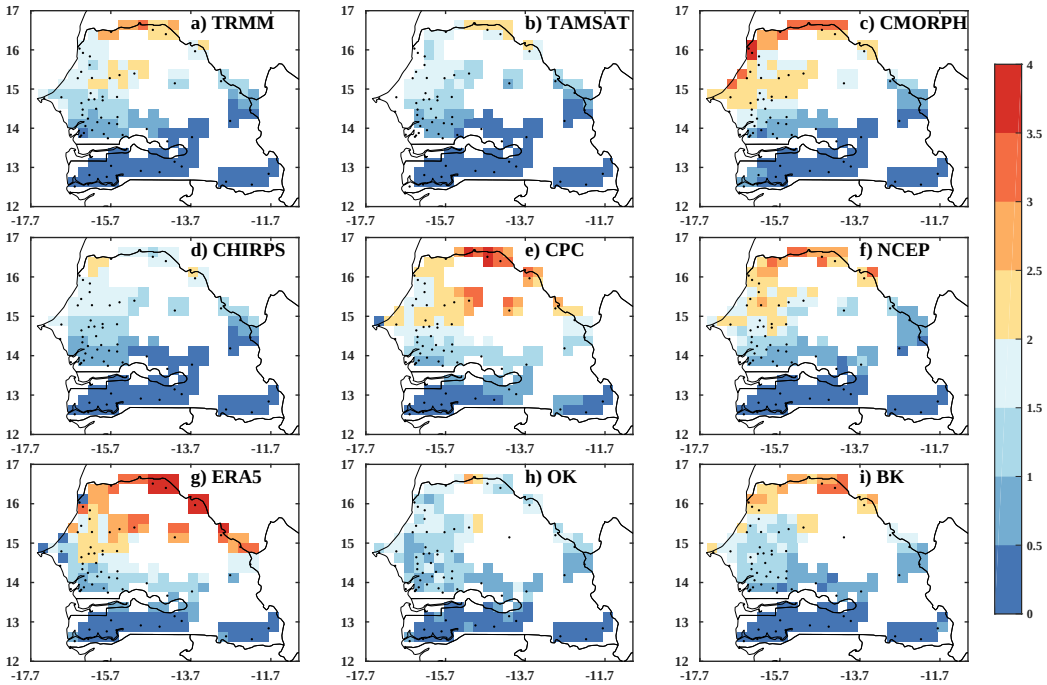

Figure S3: Spatial distribution of the number of DSC20 computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h) OK, i) BK.

Wet Spells

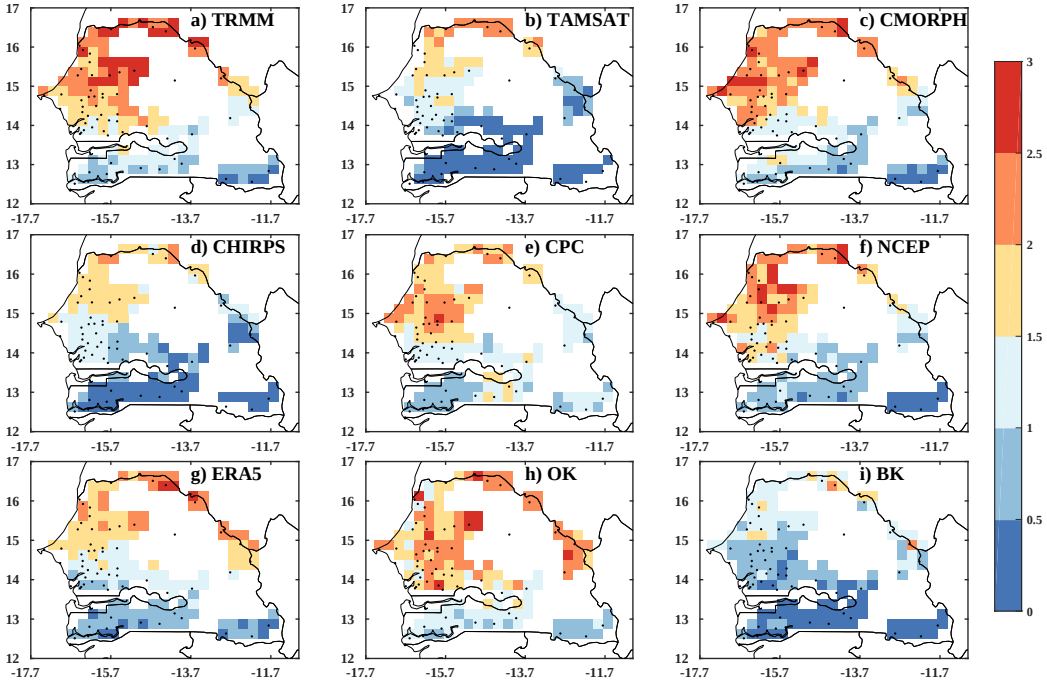

Figure S4: Spatial distribution of the number of DSl computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h) OK, i) BK.

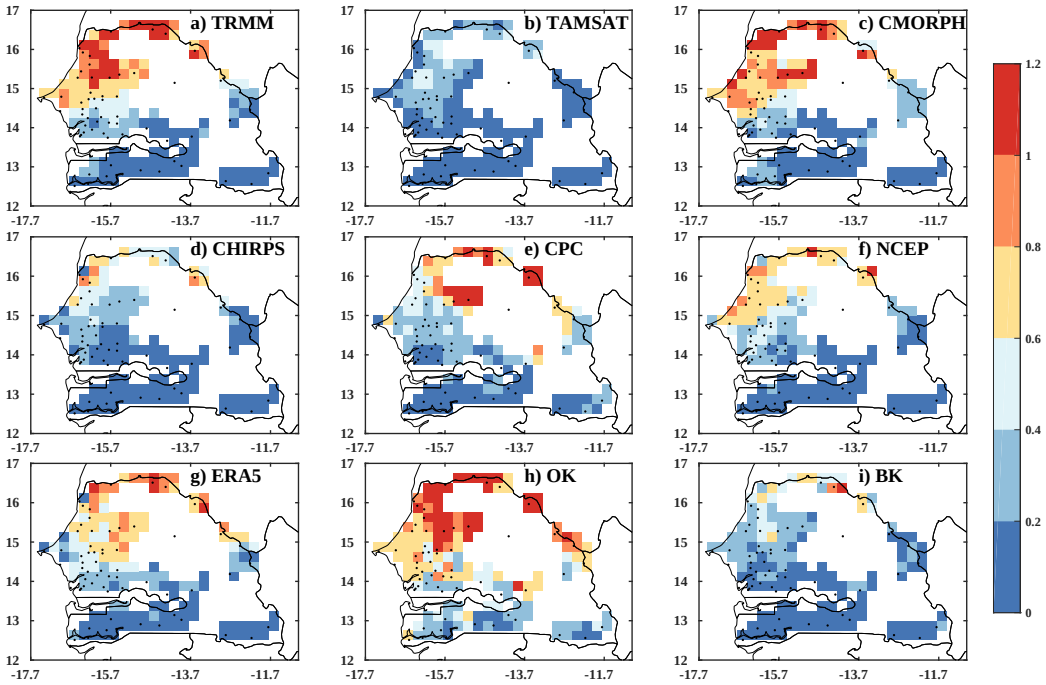

Figure S5: Spatial distribution of the number of DSxl computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h) OK, i) BK.

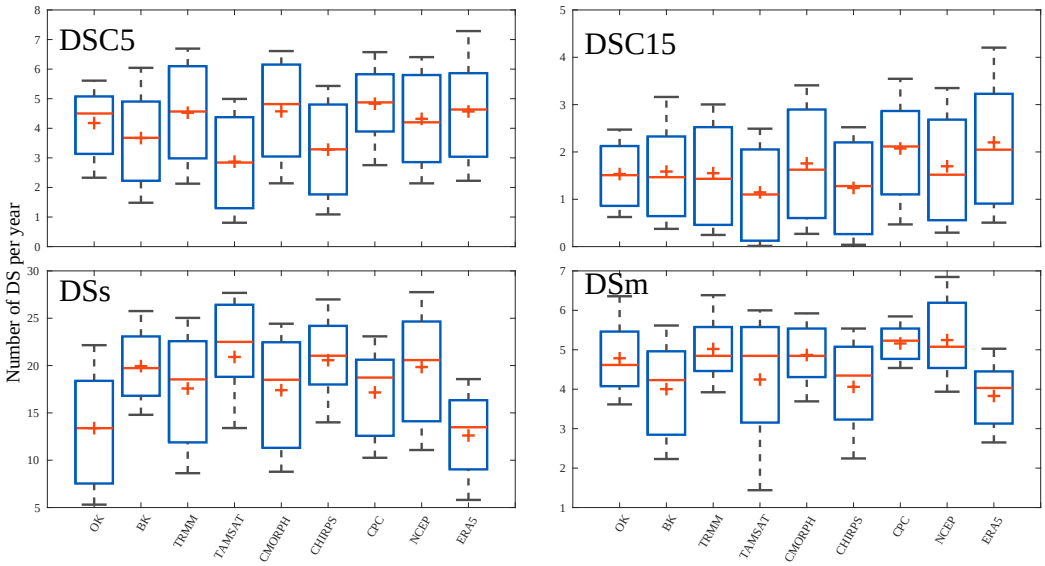

Figure S6: Climatological (1998-2010) distribution of the number of DSC5, DSC15, DSs and DSm for : TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, BK, OK. The + represent the mean value, the − represent the median value, the box represents the 25th and 75th percentile values, and the whiskers represent the extreme values.

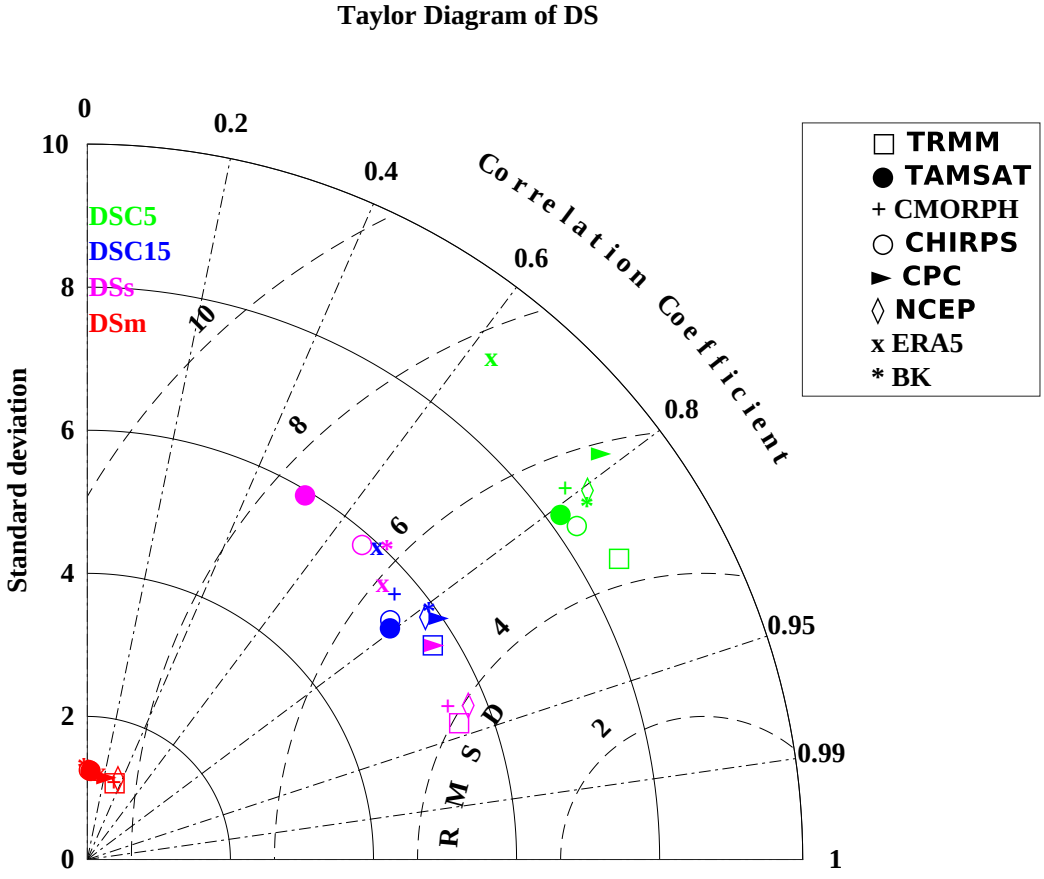

Figure S7: Climatological (1998-2010) distribution of the seasonal distribution of number of DSC5, DSC15, DSs and DSm for : TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, BK, OK.

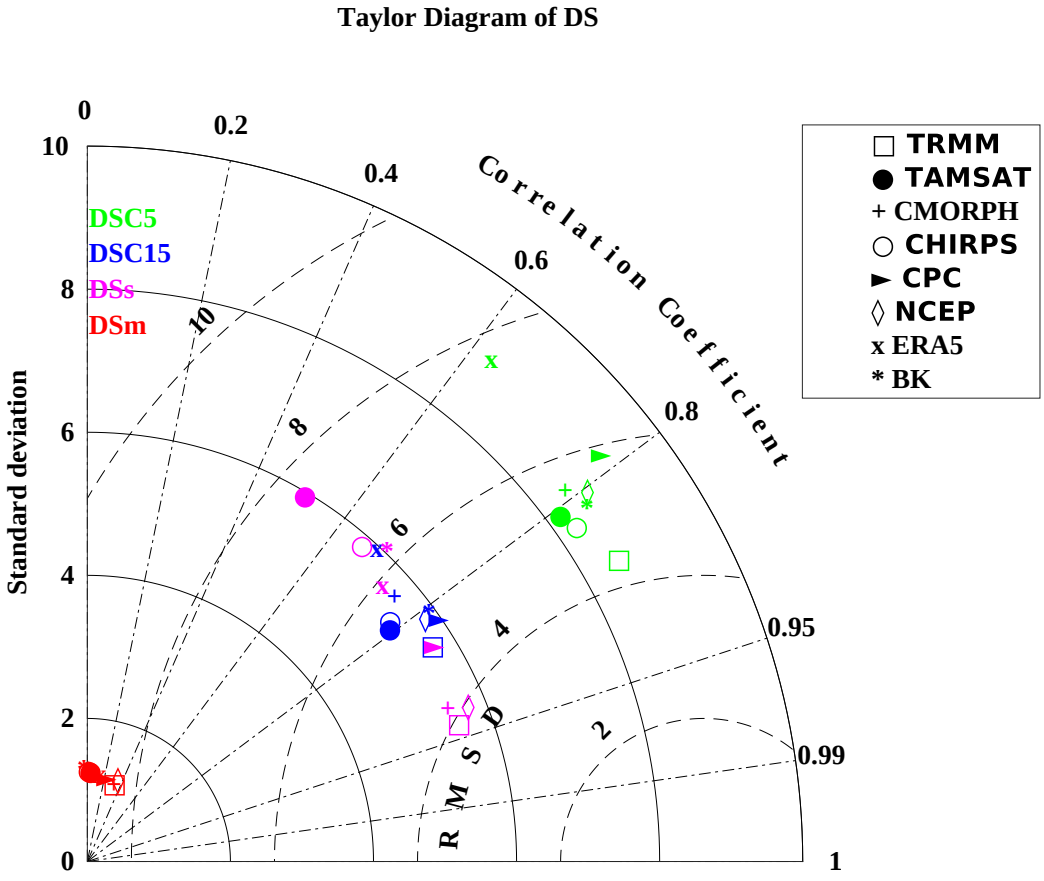

Figure S8: Taylor Diagram of the occurrence of DSC5, DSC15, DSs and DSmfor : TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, BK. OKproduct is considered as reference

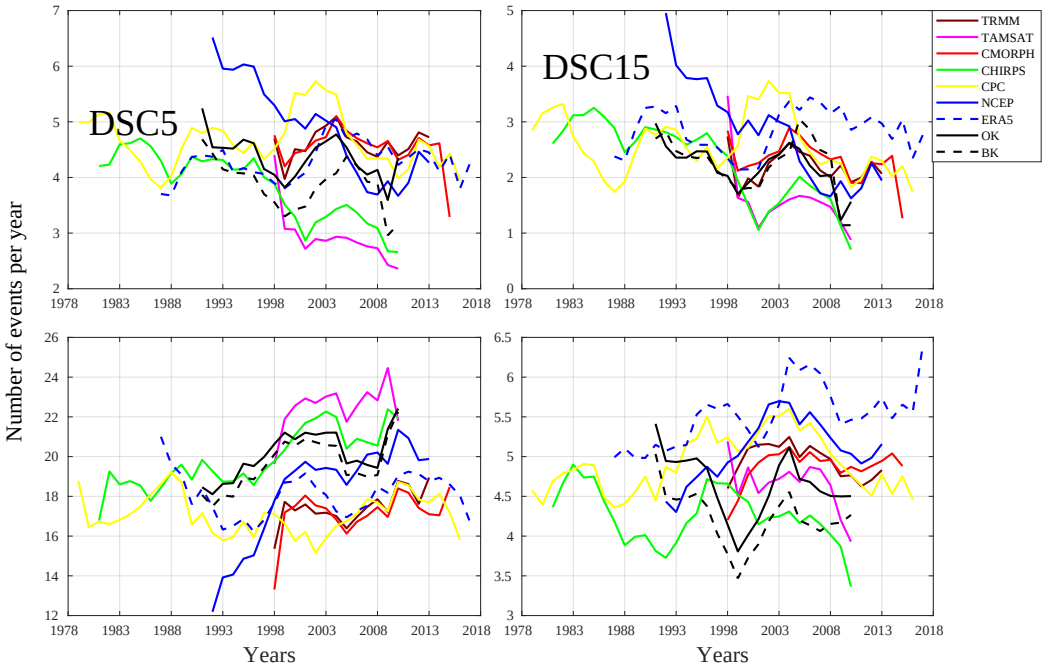

Figure S9: Interannual variability of the occurrence of DSC5, DSC15, DSs and DSm for : TRMM (1998-2013), TAMSAT(1998-2010), CMORPH (1998-2015), CHIRPS (1981-2010), CPC (1979-2016), NCEP (1992-2013), ERA5 (1987-2017), BK (1991-2010), OK (1991-2010)

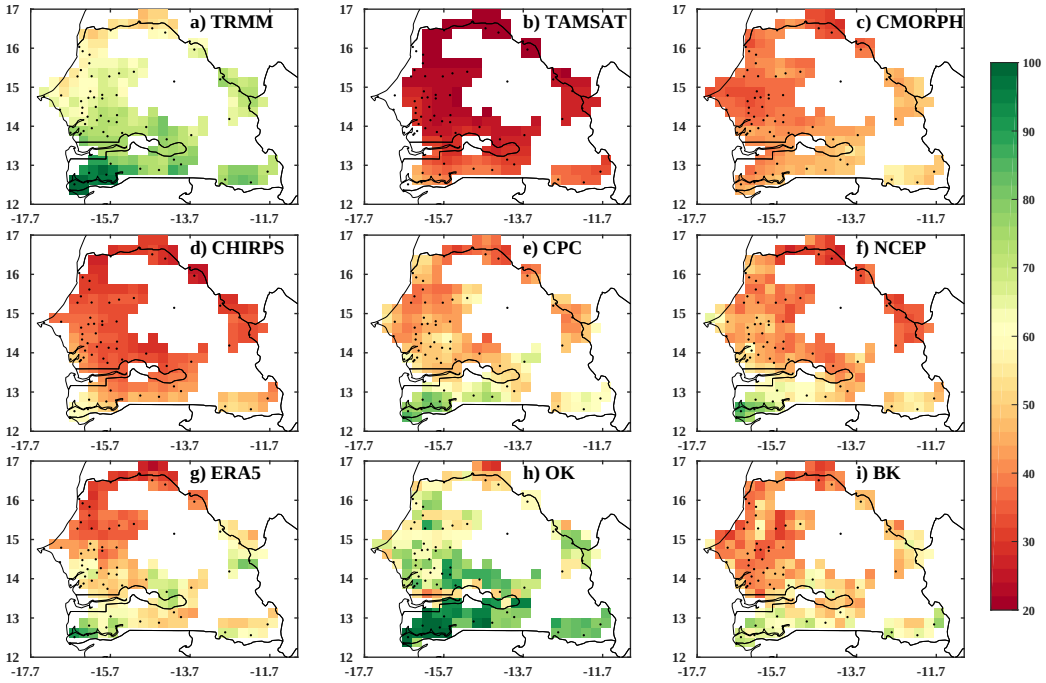

Figure S10: Spatial distribution of the number of WS1 99P computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h)OK, i) BK.

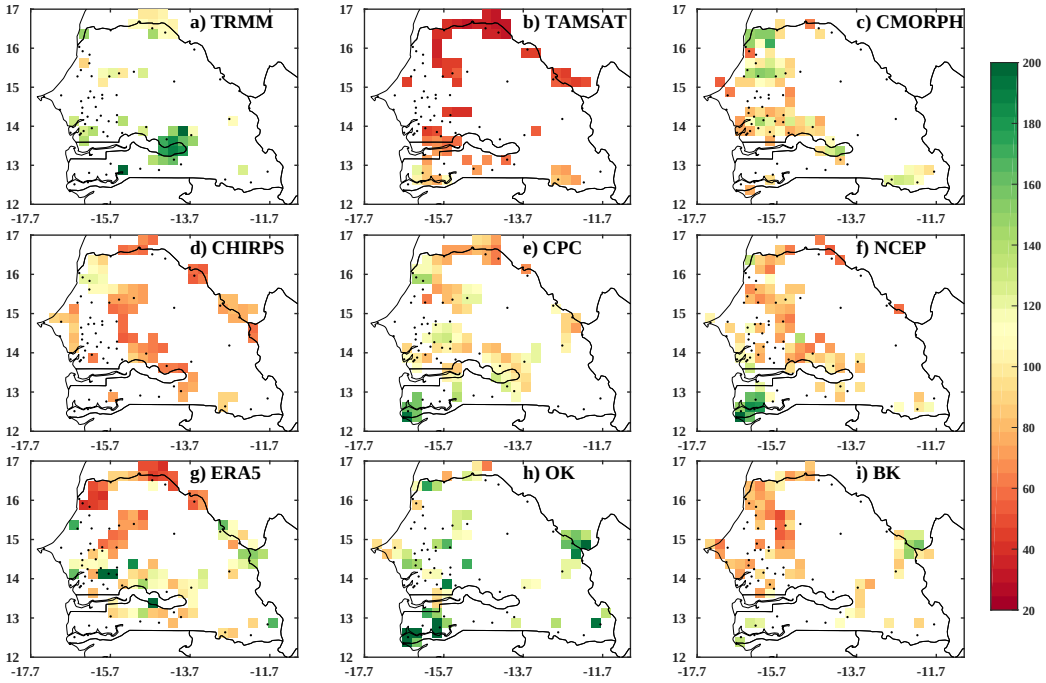

Figure S11: Spatial distribution of the number of WSM 99P computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h) OK, i) BK.

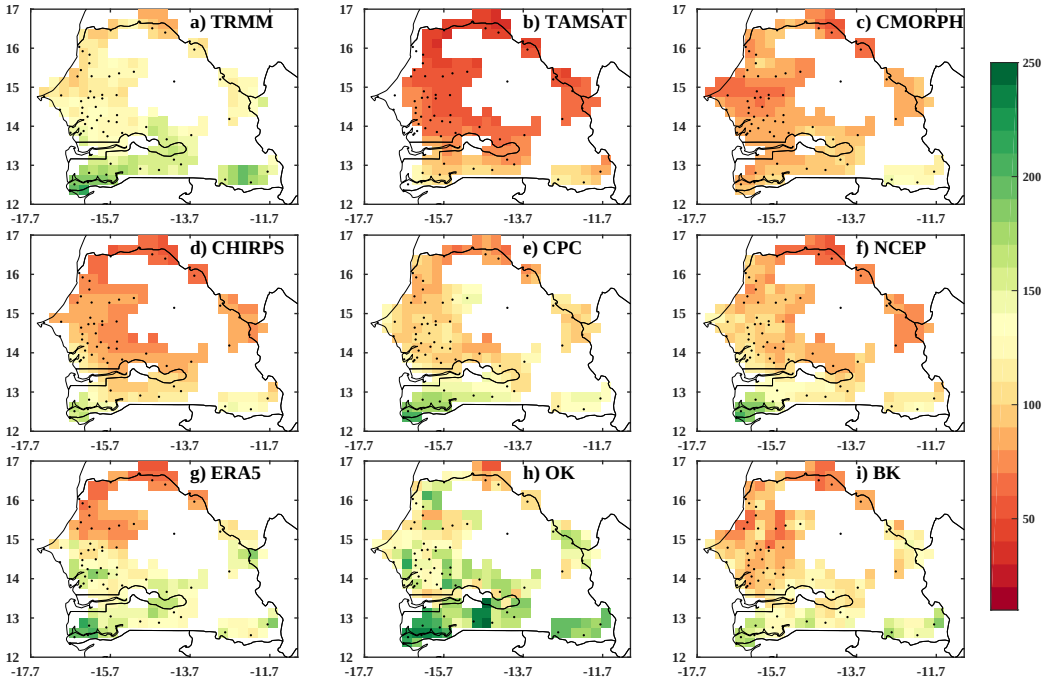

Figure S12: Spatial distribution of the number of WSC5 99P computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h) OK, i) BK.

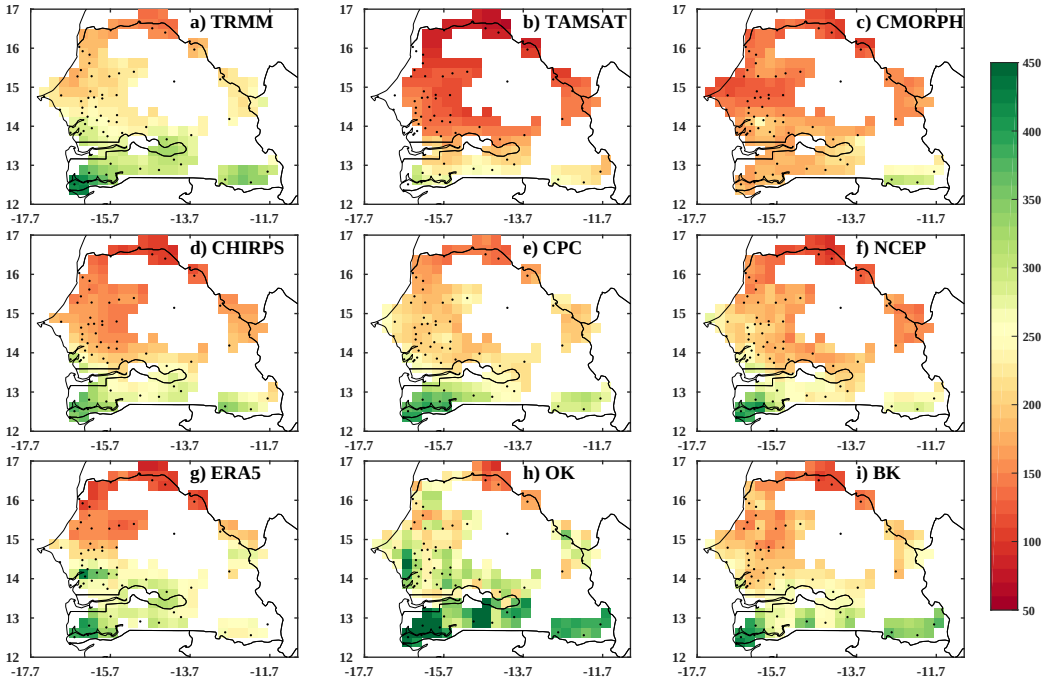

Figure S13: Spatial distribution of the number of WSC15 99P computed in the rainy season (June to October) for the overlap period (1998-2010) for : a) TRMM, b) TAMSAT, c) CMORPH, d) CHIRPS, e) CPC, f) NCEP, g) ERA5, h) OK, i) BK.

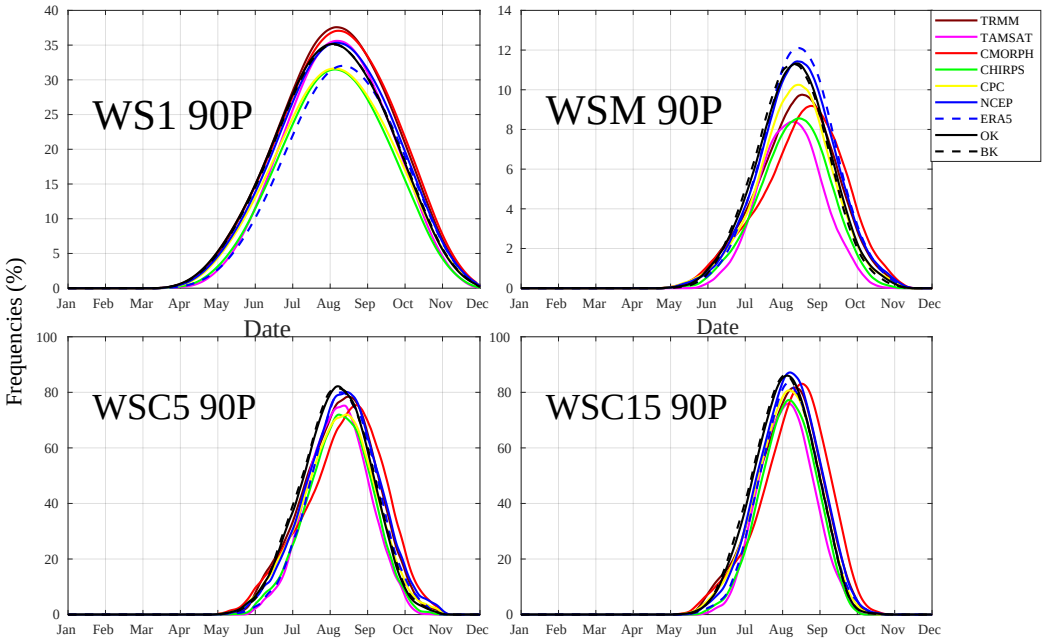

Figure S14: Seasonal cycle of the occurrence of WS1, WSM, WSC5 and WSC15 ($90th$) percentiles averaged for the period 1998-2010, for TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, BK, OK

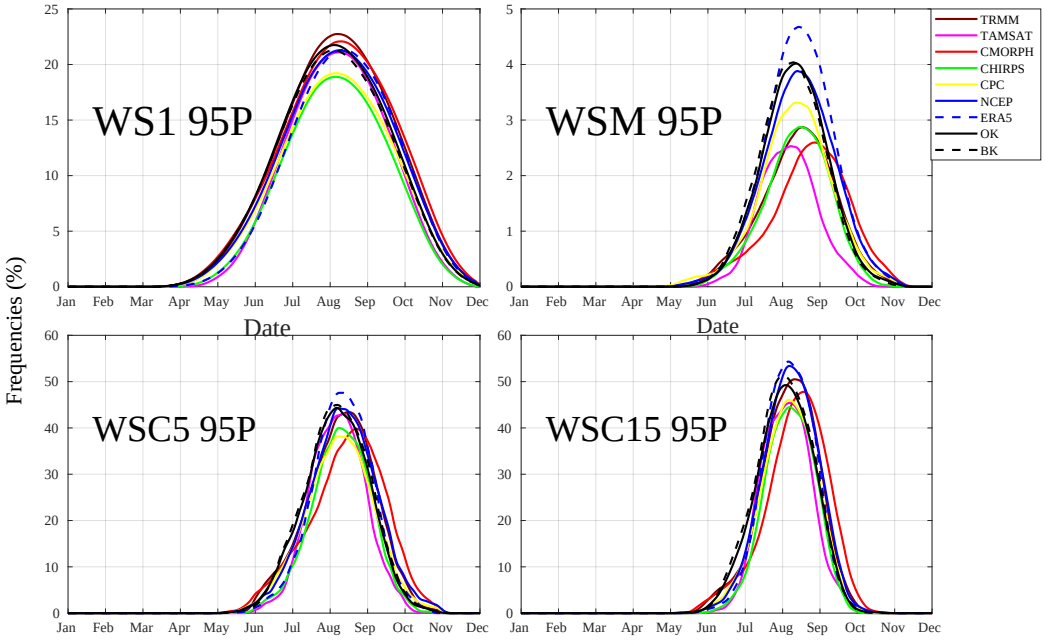

Figure S15: Same as figure S5 for the 95^{th} percentile

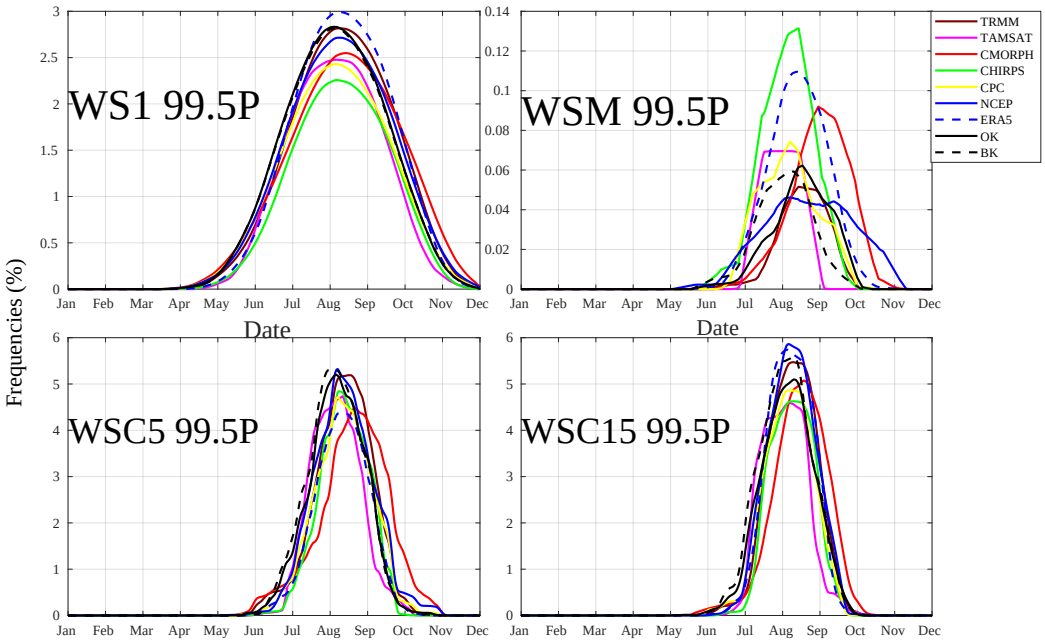

Figure S16: Same as figure S5 for the 99.5^{th} percentile

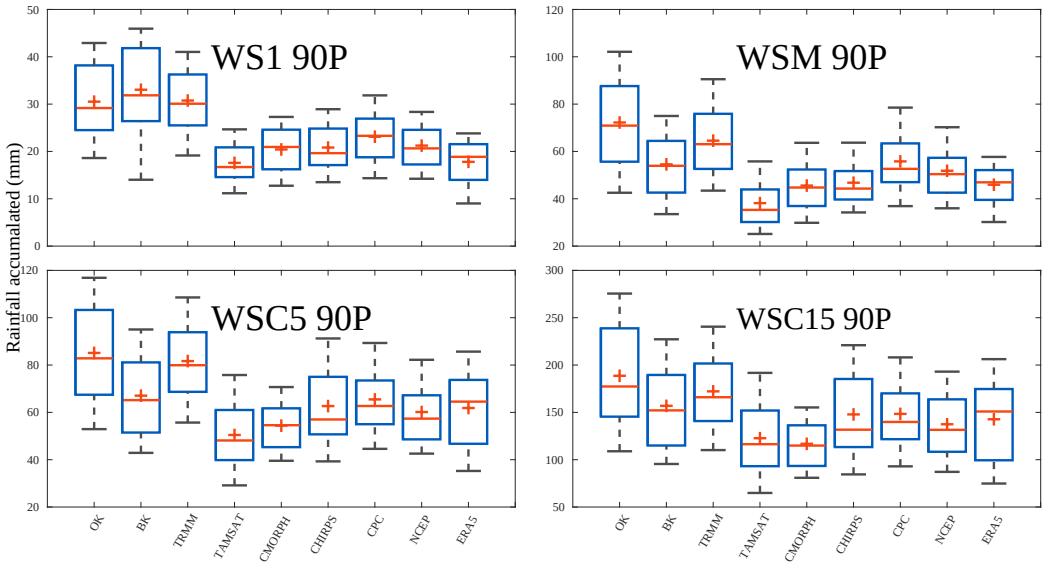

Figure S17: Yearly cumulated rainfall provided by WS1, WSM, WSC5 and WSC15 ($90th$) percentiles, averaged for the period 1998-2010, for TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, BK, OK. The + represent the mean value, the − represent the median value, the box represents the 25th and 75th percentile values, and the whiskers represent the extreme values

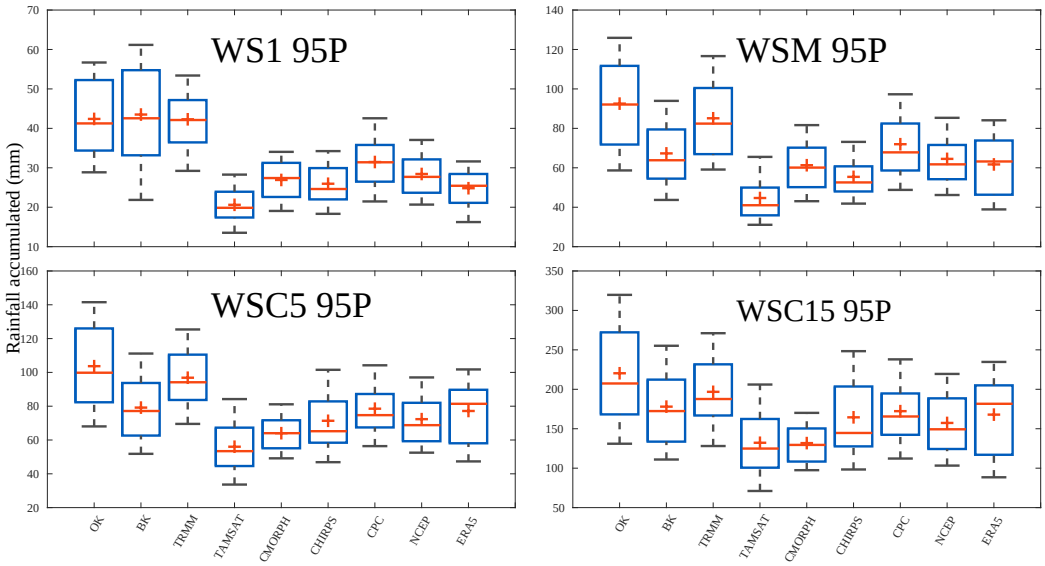

Figure S18: Same as Figure S8 for the 95^{th} percentiles.

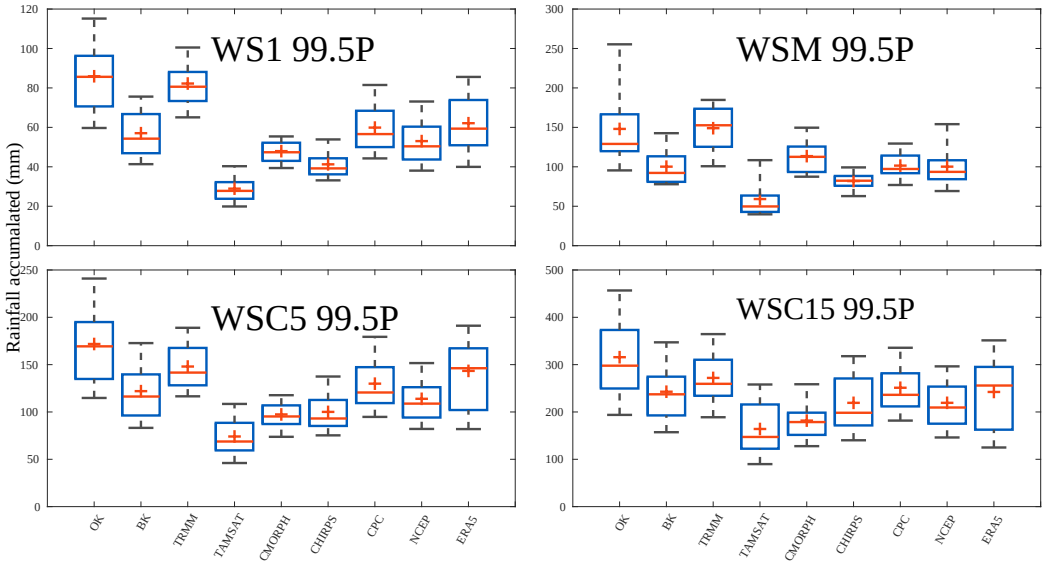

Figure S19: Same as Figure S8 for the 99.5^{th} percentile.

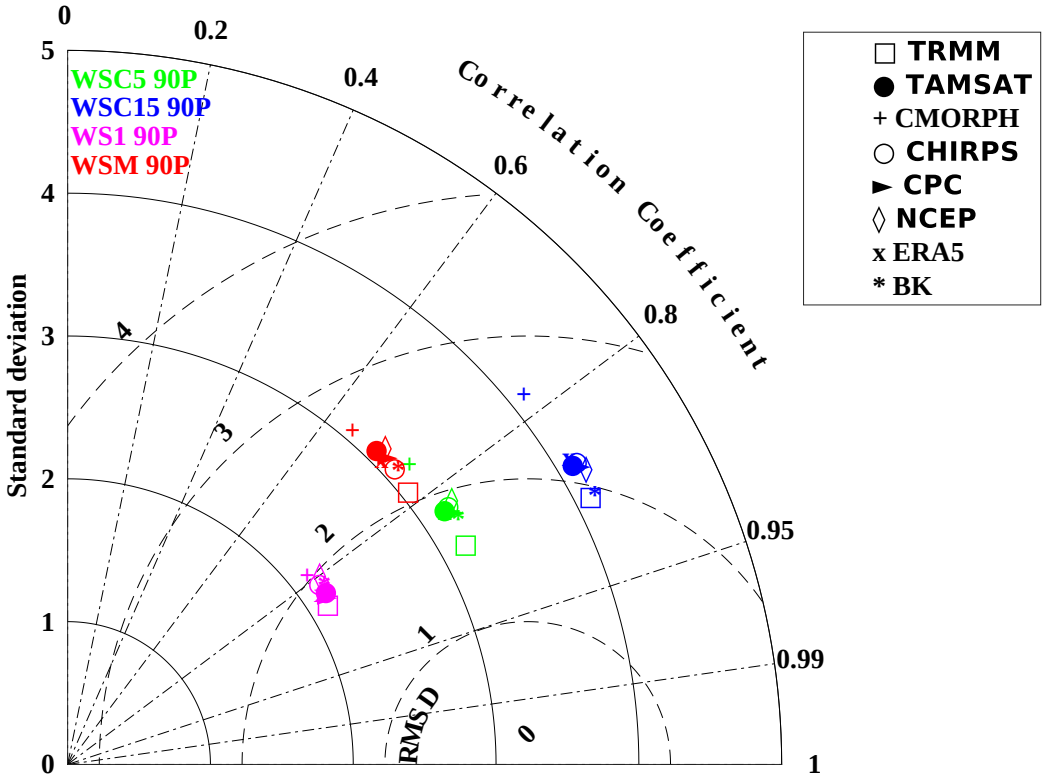

Figure S20: Taylor Diagram of the spatial distribution of the number of WSC5, WS1, WSM, WSC5 and WSC15 ($90th$) percentiles using TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, BK. OK product is considered as reference during the period 1998-2010

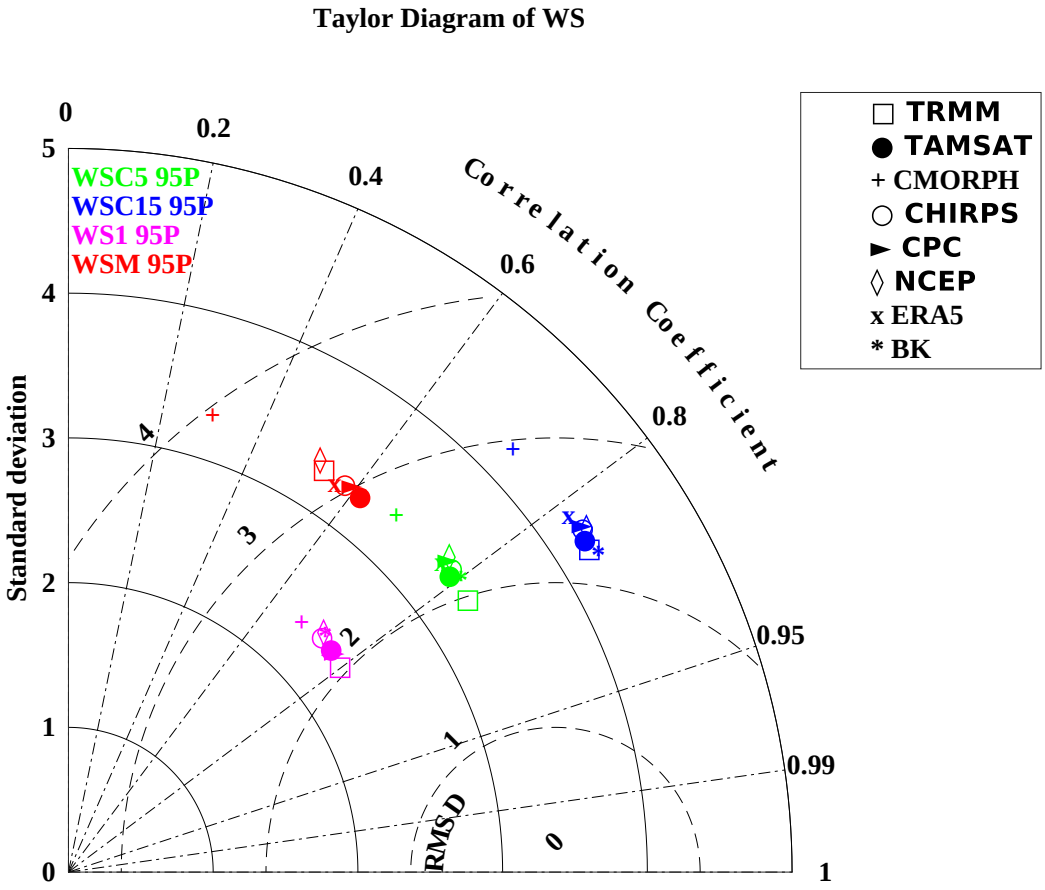

Figure S21: Taylor Diagram of the occurrence of WSC5, WS1, WSM, WSC5 and WSC15 (95^{th}) percentiles using TRMM, TAMSAT, CMORPH, CHIRPS, CPC, NCEP, ERA5, OK. BK product is considered as reference during the period 1998-2010