

Harmonized evaluation of daily precipitation downscaled using SDSM and WRF+WRFDA models over the Iberian Peninsula

-Online Resources-

Authors

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Station ID	Name	IP Region	Longitude	Latitude	Elevation (m)
1395	VIGO PEINADOR	Northern	-8.623889	42.239167	261
420	A CORUNA	Northern	-8.419167	43.366944	58
3910	GIJON	Northern	-5.641667	43.538056	3
3922	SANTANDER CMT	Northern	-3.799444	43.491667	52
3950	PAMPLONA (OBSERVATORIO)	Centre	-1.636389	42.817500	442
424	SORIA	Centre	-2.483056	41.775000	1082
3970	VALLADOLID (VILLANUBLA)	Centre	-4.850000	41.700000	846
3946	MADRID/BARAJAS	Centre	-3.555556	40.466667	609
3971	DAROCA	Centre	-1.410556	41.114444	779
3943	LEIDA (OBSERVATORIO)	Mediterranean	0.621667	41.618333	191
2969	BARCELONA/AEROPUERTO	Mediterranean	2.069722	41.292778	4
3925	CASTELLON DE LA PLANA	Mediterranean	-0.040556	39.989167	25
421	MURCIA	Mediterranean	-1.169167	38.002778	61
3908	ALMERIA/AEROPUERTO	Mediterranean	-2.356667	36.846389	21
3921	CACERES CIUDAD	South Western	-6.366667	39.483056	459
416	CIUDAD REAL	South Western	-3.919444	38.989167	628
336	ALBACETE LOS LLANOS	South Western	-1.863056	38.951944	704
1406	TARIFA	South Western	-5.597500	36.015278	32
418	HUELVA (RONDA DEL ESTE)	South Western	-6.909444	37.280000	19
337	CORDOBA AEROPUERTO	South Western	-4.845833	37.844167	90
214	LISBOA GEOFISICA	South Western	-9.150000	38.716667	77

Online Resource 1 : Characteristics of the 21 stations over the Iberian Peninsula included in the study.

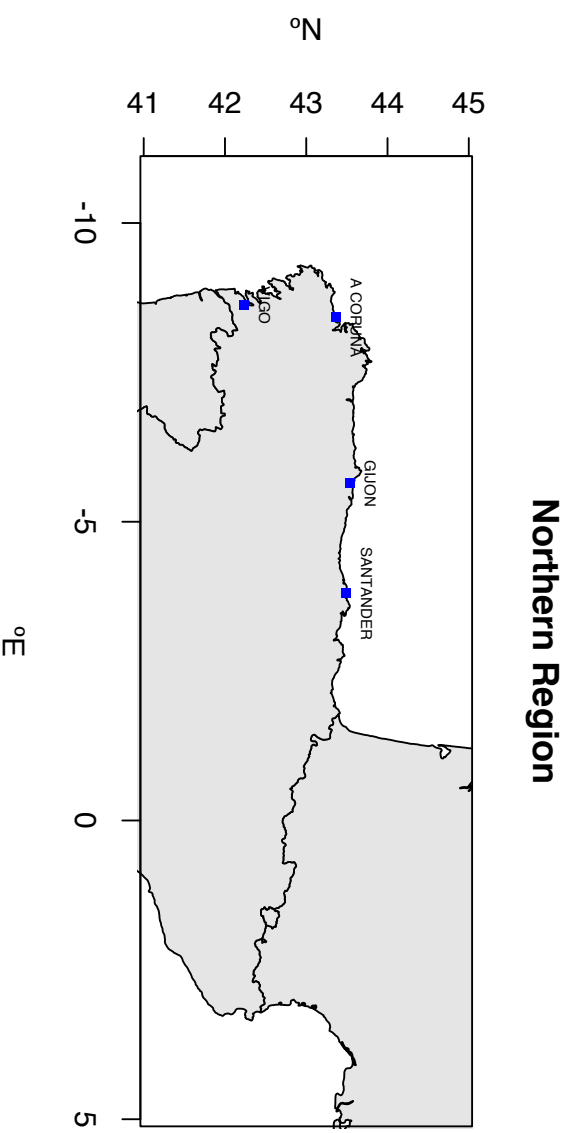
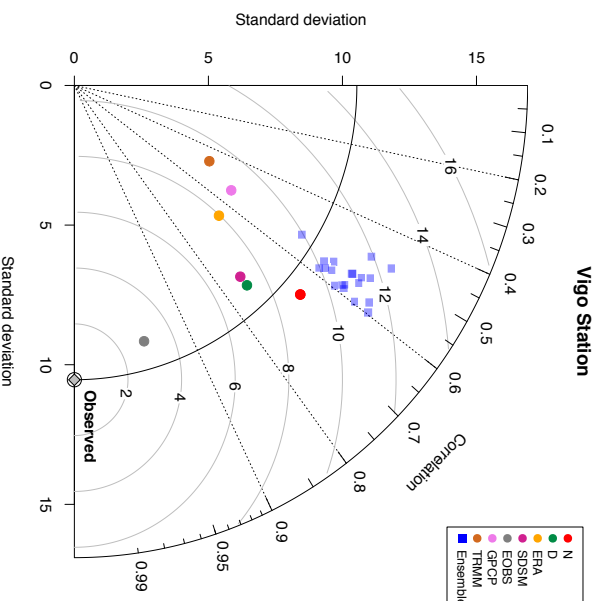
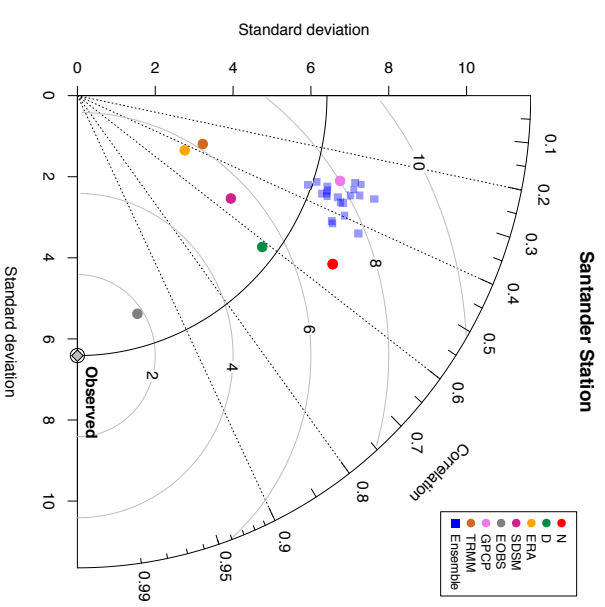
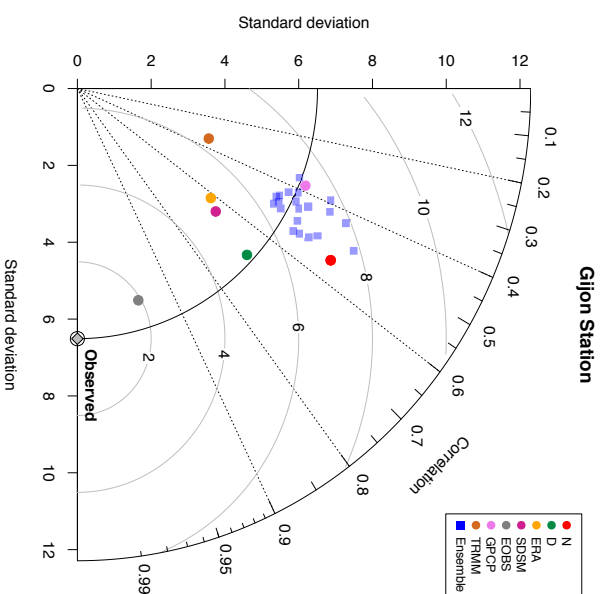
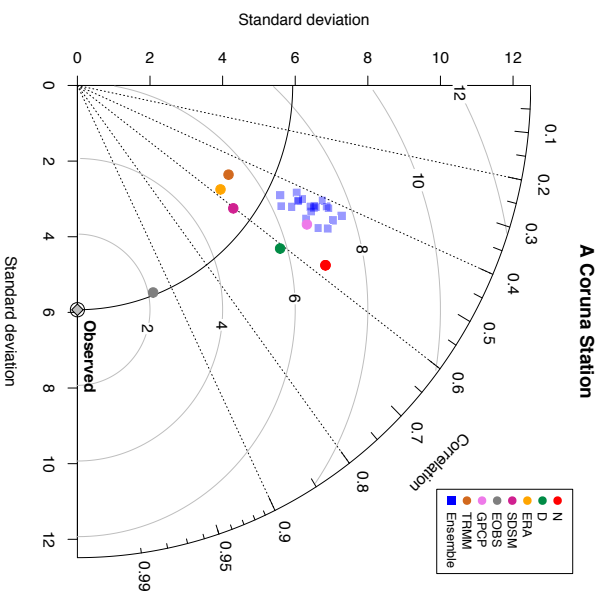
Predictor	Description
DSWR	Downward solar radiation
MSLP	Mean sea level pressure
USUR	Near surface zonal wind
VSUR	Near surface meridional wind
DSUR	Near surface divergence
F500	Wind strength at 500 hPa
U500	Zonal wind at 500 hPa
V500	Meridional wind at 500 hPa
Z500	Vorticity at 500 hPa
H500	500 hPa geopotential height
D500	Divergence at 500 hPa
F850	Wind strength at 850 hPa
U850	Zonal wind at 850 hPa
V850	Meridional wind at 850 hPa
Z850	Vorticity at 850 hPa
H850	850 hPa geopotential height
D850	Divergence at 850 hPa
PREC	Precipitation
R500	Relative humidity at 500 hPa
R850	Relative humidity at 850 hPa
RSUR	Near surface relative humidity

Online Resource 2: Description of the predictors included in the SDSM model.

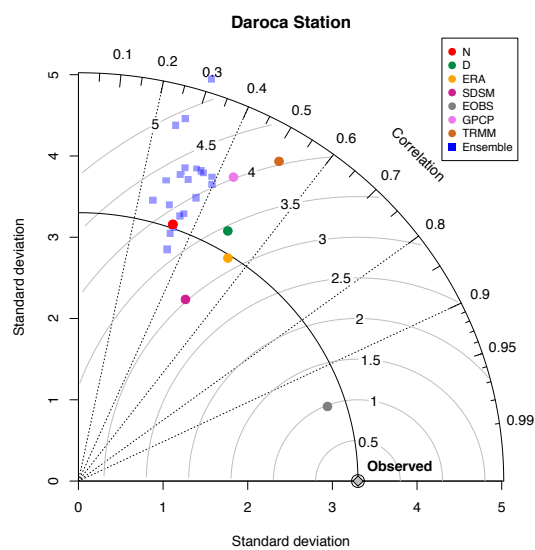
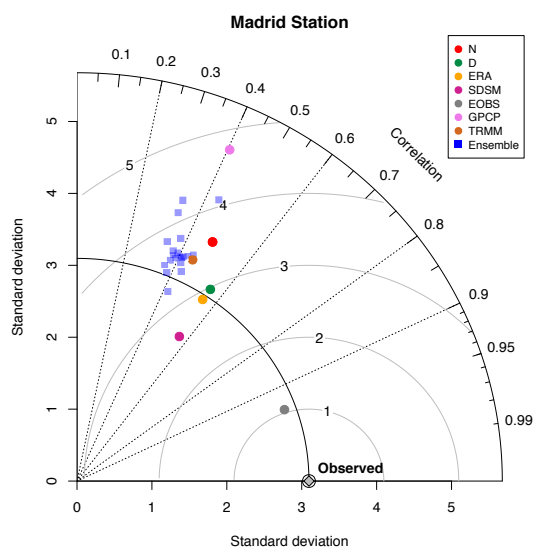
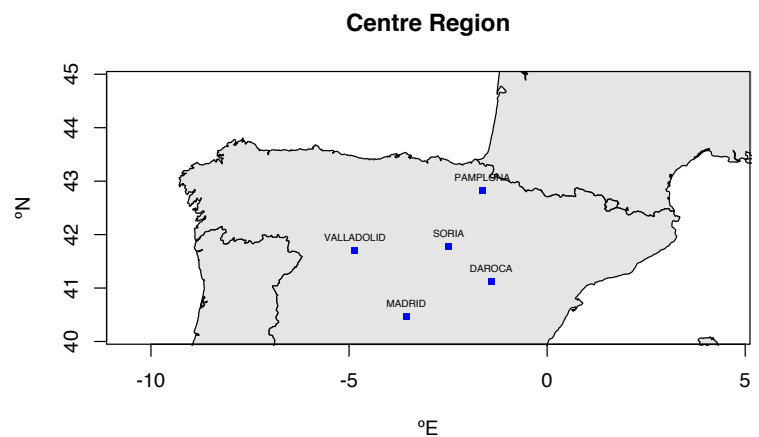
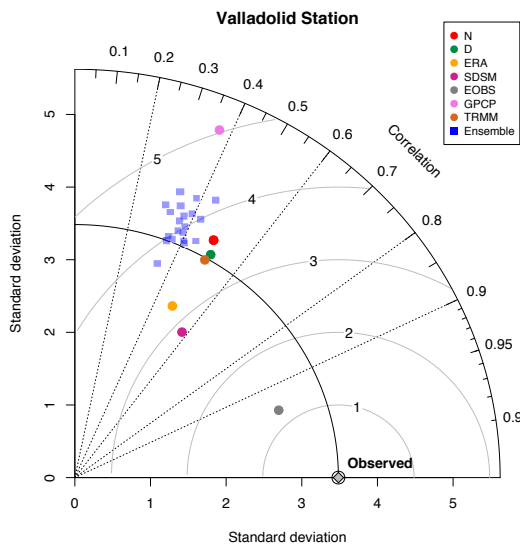
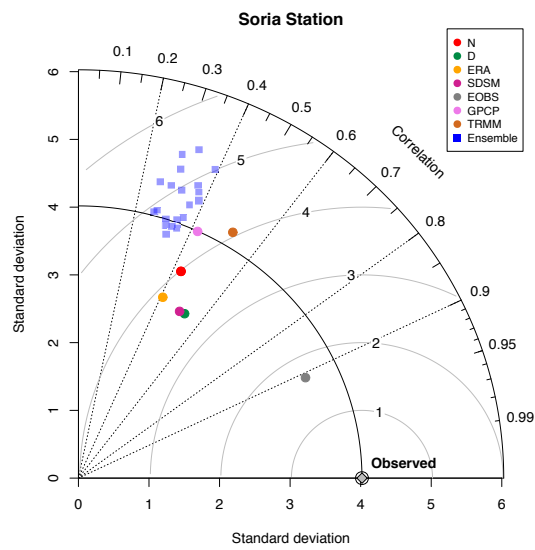
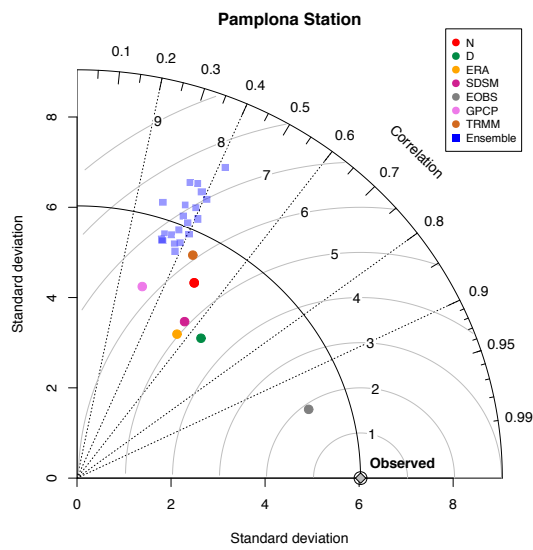
Experiment EOBS_SDSM – Predictor Suite

	DSWR	MSLP	USUR	VSUR	DSUR	F500	U500	V500	Z500	H500	D500	F850	U850	V850	Z850	H850	D850	PREC	R500	R850	RSUR	R2
Vigo	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	23.9
ACoruna	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	0	27.9
Gijon	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	36.2
Santander	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	24.7
Pamplona	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	25.2
Soria	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	26.8
Valladolid	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	35.8
Madrid	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	29.2
Daroca	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	22.6
Lleida	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	30.6
Barcelona	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	26.4
Cast. Plana	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	21.4
Murcia	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	25.7
Almeria	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	28.9
Caceres	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	25.1
Ciudad Real	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	31.9
Albacete	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0	0	20.9
Tarifa	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	38
Huelva	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	46.3
Cordoba	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	0	0	19.8
Lisbon	1	0	1	0	1	0	1	0	0	0	0	0	1	0	0	1	0	1	0	1	0	23.1

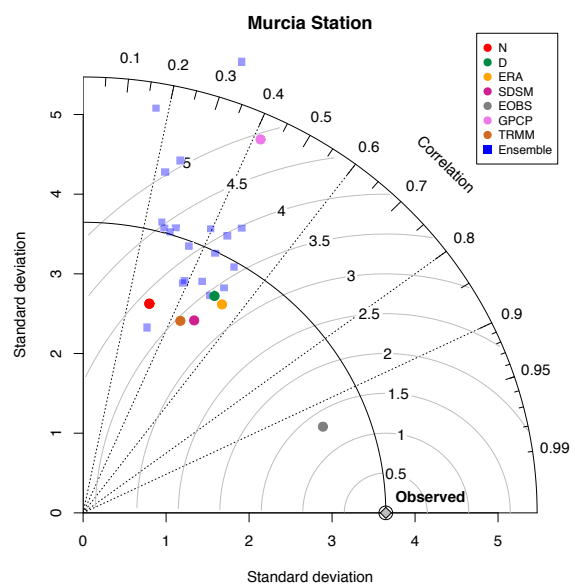
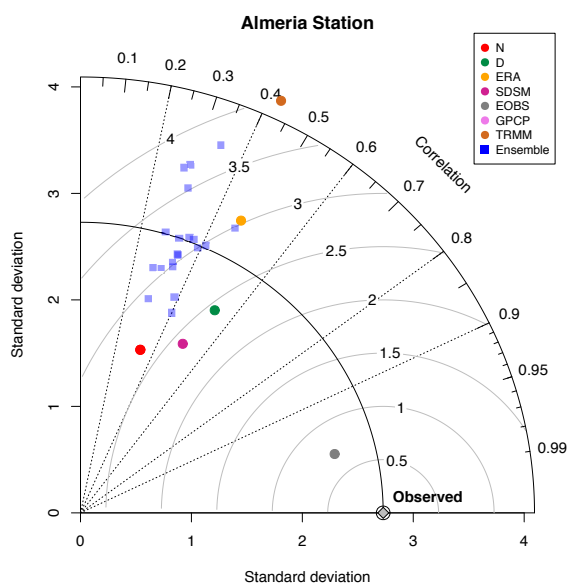
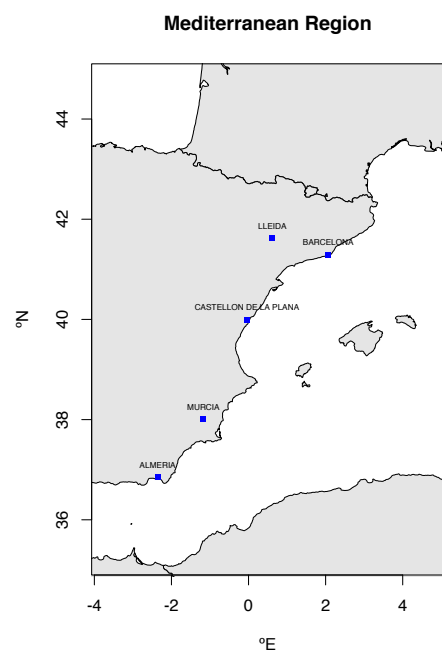
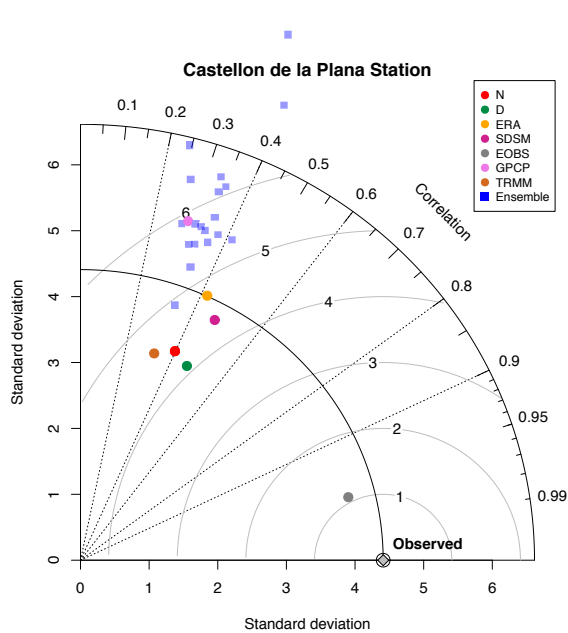
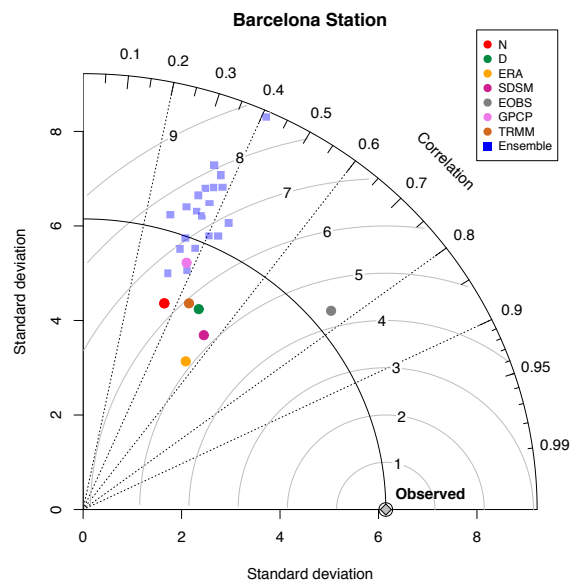
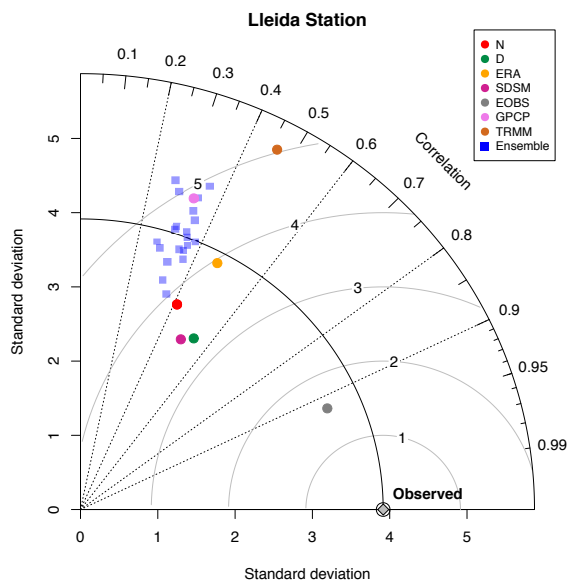
Online Resource 3: SDSM predictor suite and R2 values obtained at each station after the calibration of the model for period 1979-2009. In this experiment, gridded data from EOBS is downscaled with SDSM.



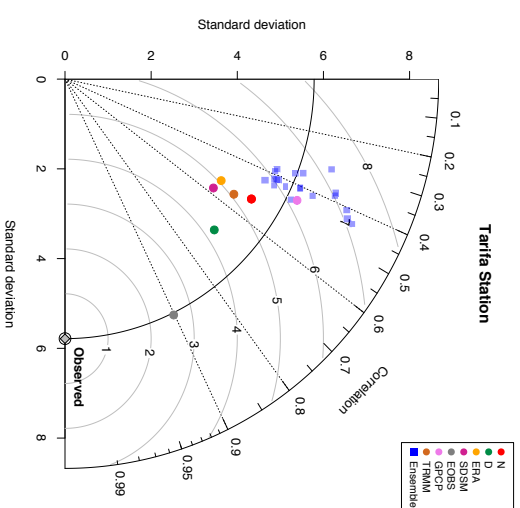
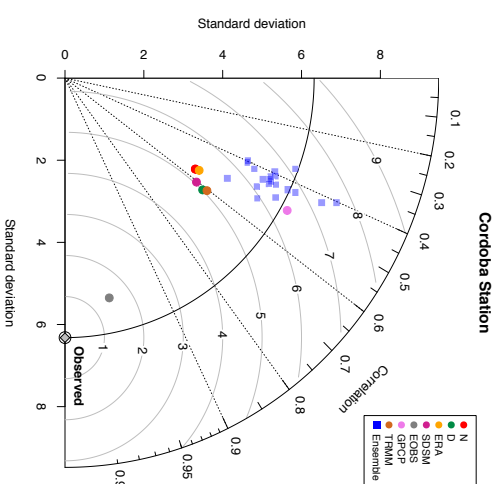
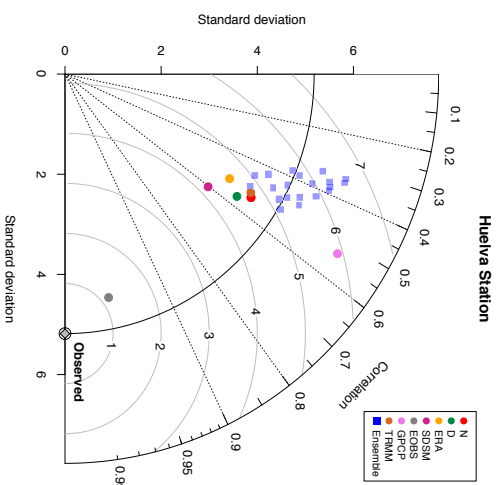
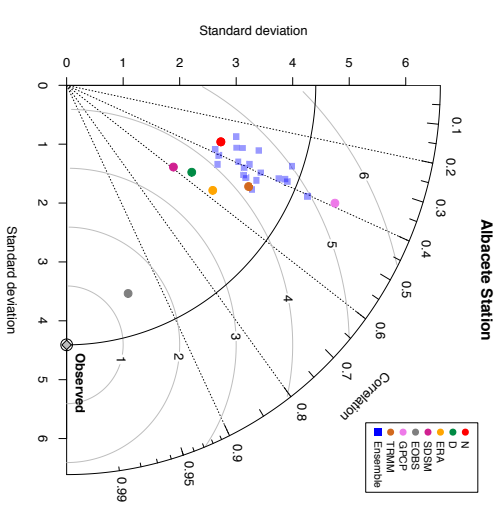
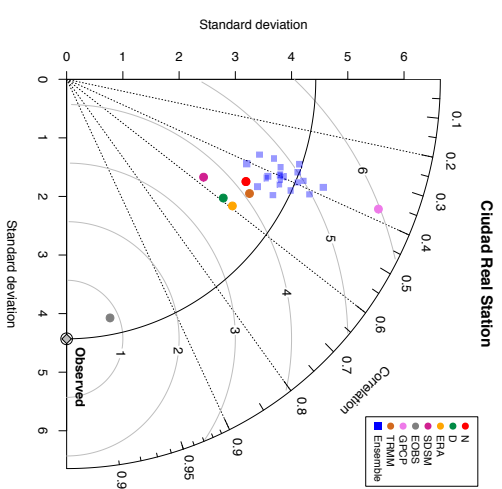
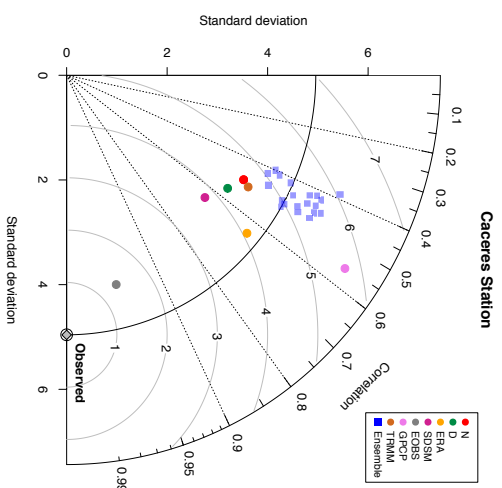
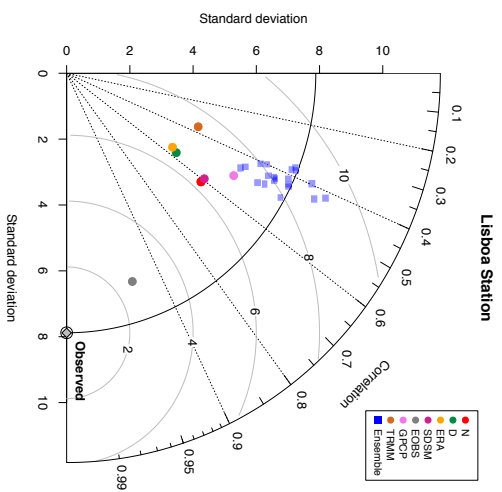
Online Resource 4: Taylor diagrams for the Northern region. Seven experiments/datasets can be found on it: WRF N (red), WRF D (green), ERAI (orange), the SDSM ensemble mean (magenta), EOBS (grey), GPCP (violet) and TRMM (brown). Observed station data (grey diamond) and the members of the ensemble created by SDSM (blue squares) are also shown.



Online Resource 5: Same as Online Resource 1 but for the Central region.

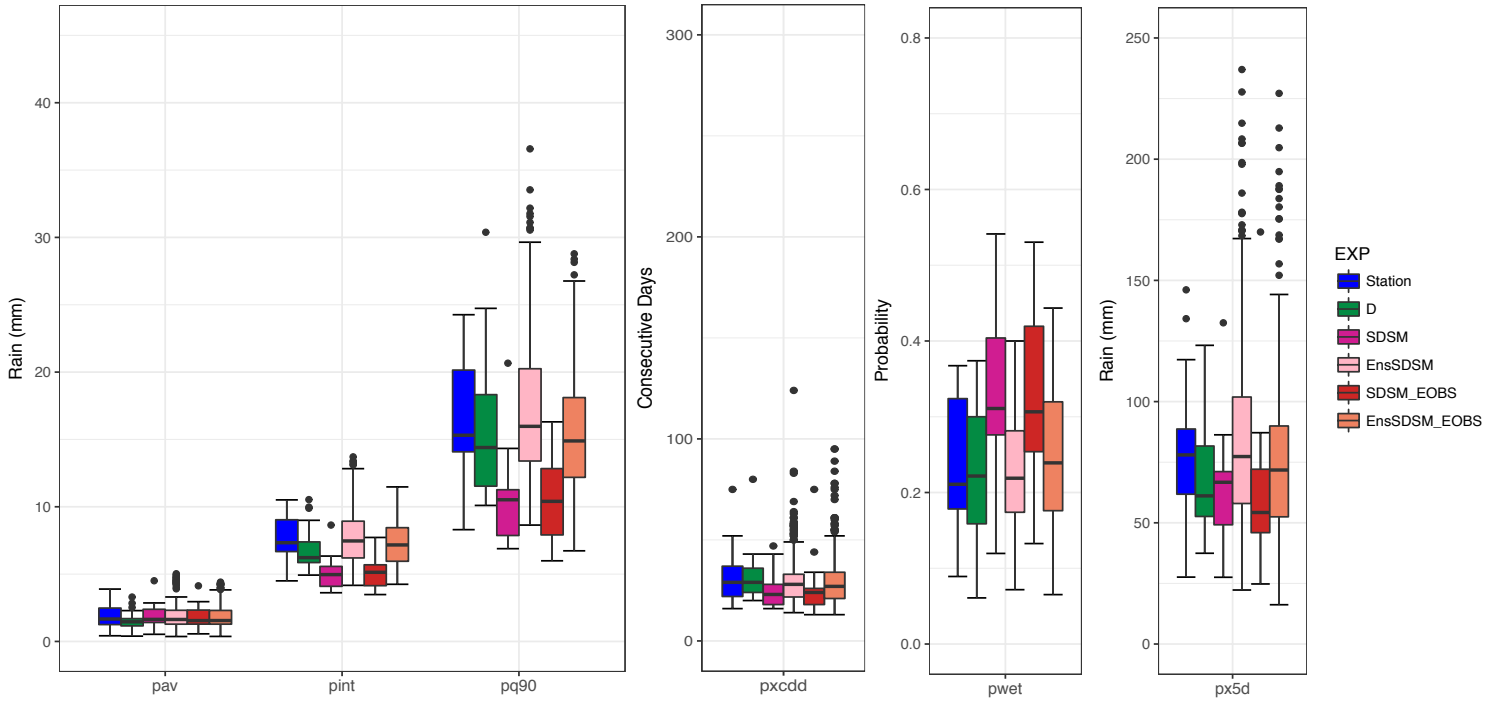


Online Resource 6: Same as Online Resource 1 and 2 but for the Mediterranean region.

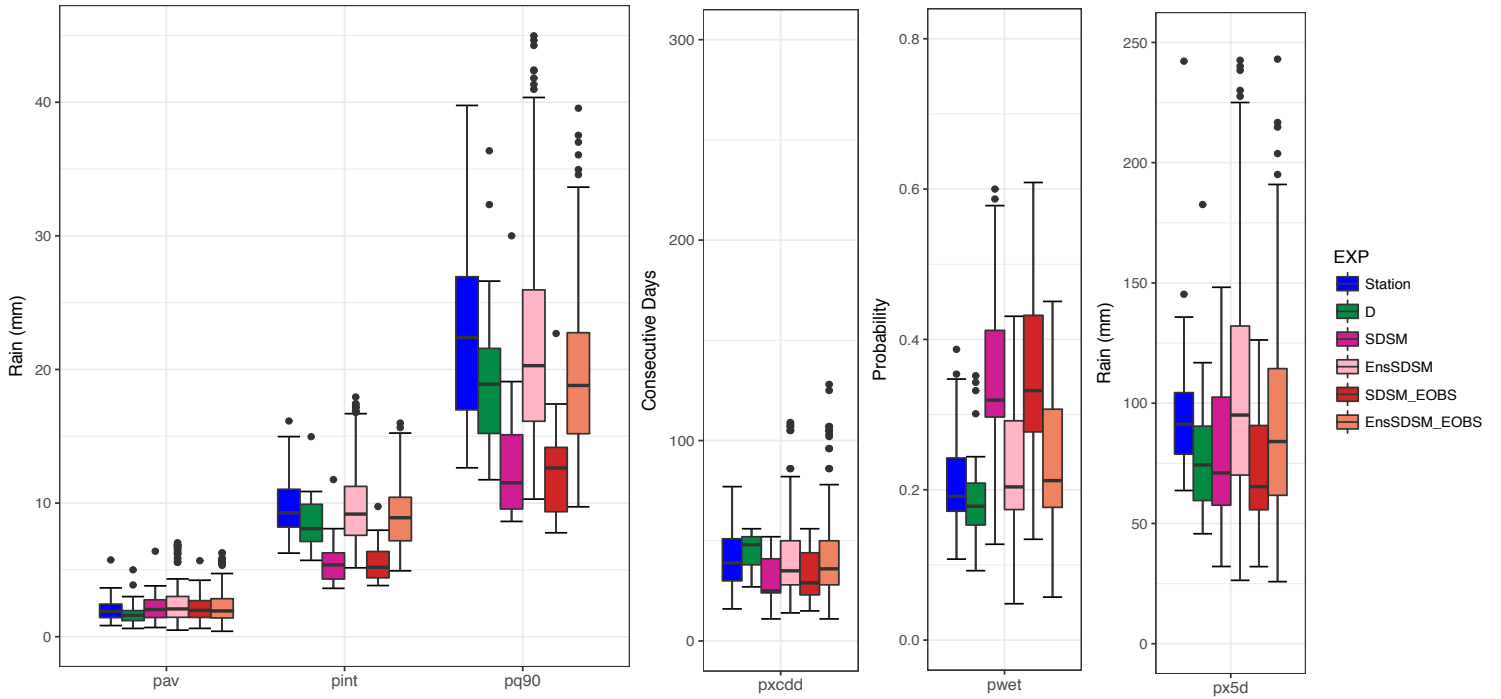


Online Resource 7: Same as Online Resource 1, 2 and 3 but but for the Southwestern IP.

Indices for the 21 Stations (MAM)



Indices for the 21 Stations (SON)



Online Resource 8: Precipitation diagnostics (pav, pint, pq90, pxcdd, pwet and px5d) produced by the observed data, WRF D, SDSM mean and the members of the SDSM ensemble, SDSM over EOBS and the members of this ensemble (in blue, green, magenta, light pink, red and orange respectively) for spring (MAM, top) and autumn (SON, bottom). The results of the 21 stations over the IP are included on each box and whisker.