

Combining members weighting and downscaling

VIEWER



EVALUATION AT BELESAR RESERVOIR

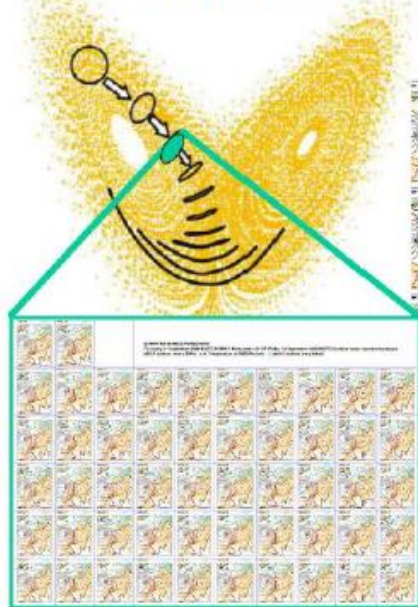


BEST NAO
weighting and
combination

SIMPA

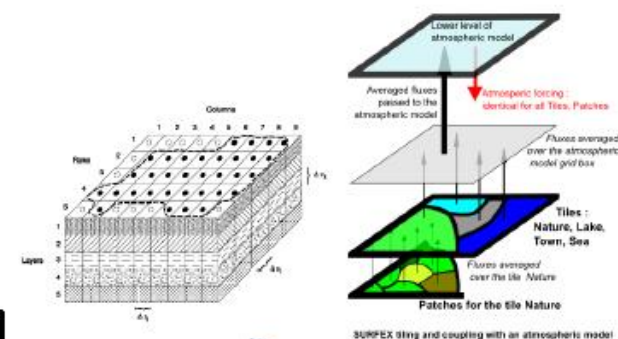
SURFEX

ECMWF S5



- **Domain of application:** All water reservoirs in Spain
- **Potential user(s):** dam managers
- **Decision making process:** Partition of water resources among main users: agriculture, energy, public supply

Downscaling based
on ANALOGS



VIEWER



EVALUATION AT BELESAR RESERVOIR

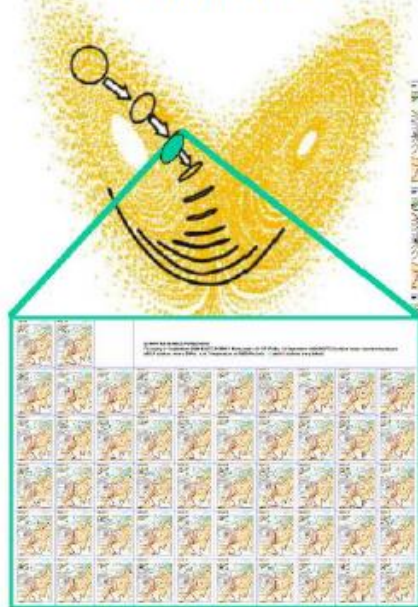


BEST NAO
weighting and
combination

SIMPA

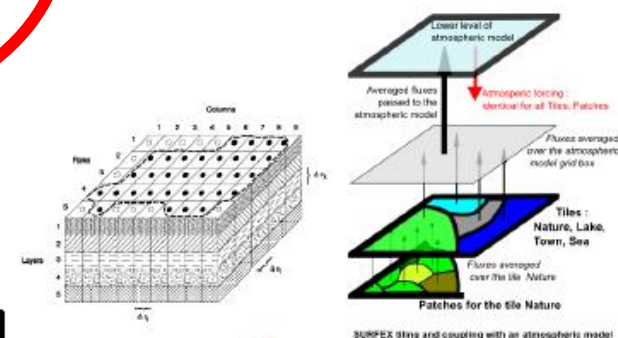
SURFEX

ECMWF S5



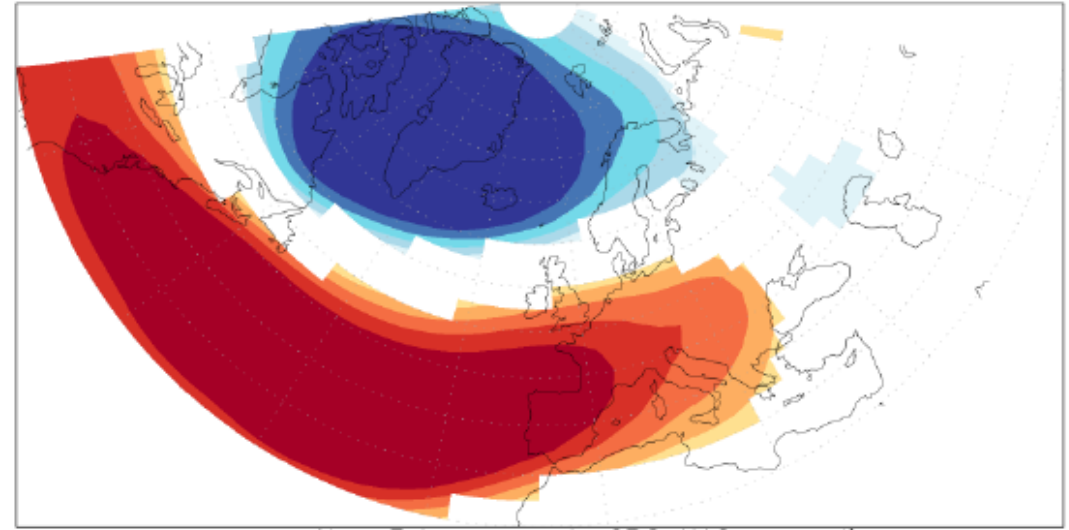
- **Domain of application:** All water reservoirs in Spain
- **Potential user(s):** dam managers
- **Decision making process:** Partition of water resources among main users: agriculture, energy, public supply

Downscaling based
on ANALOGS

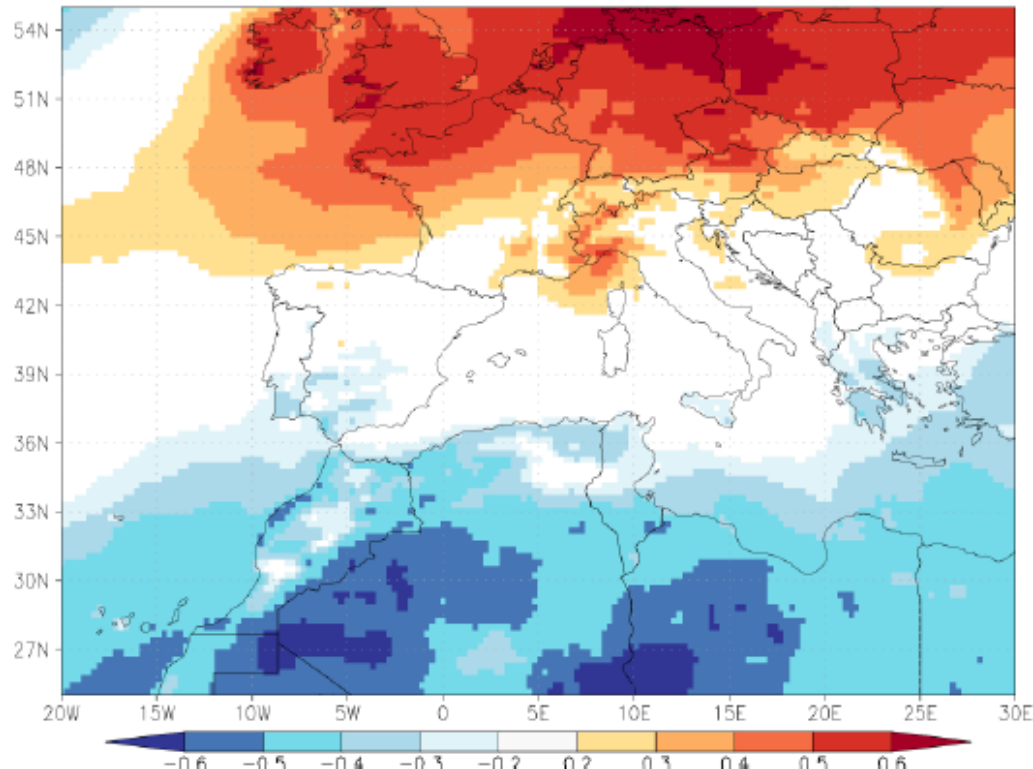


North Atlantic Oscillation

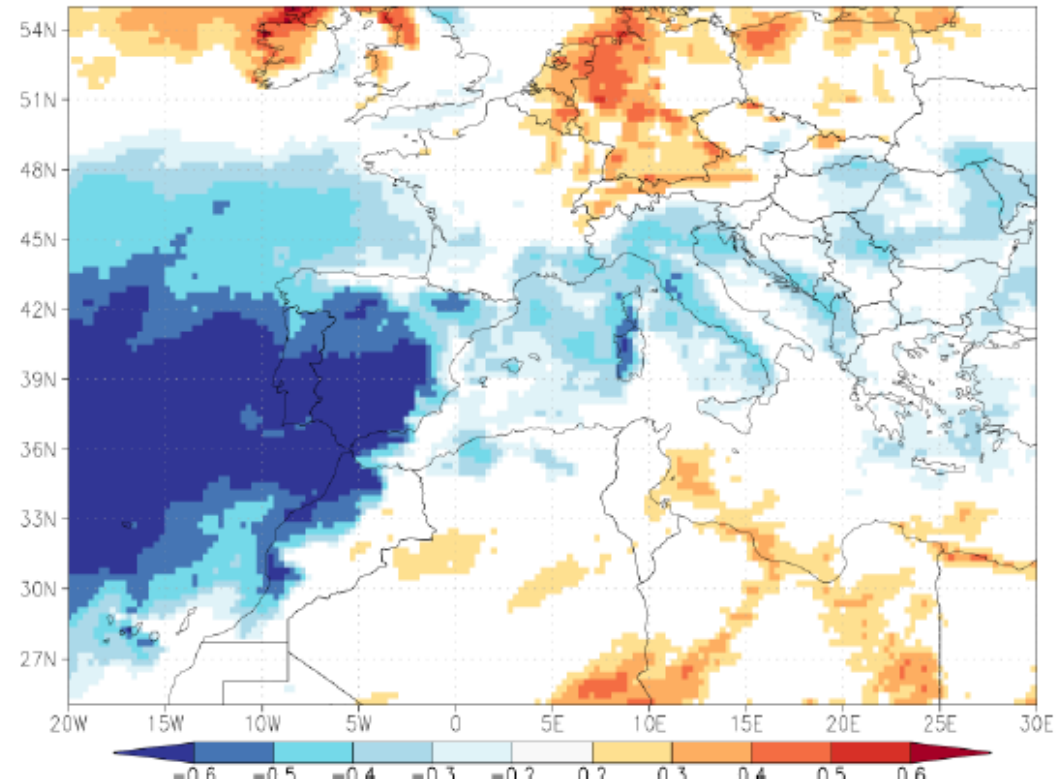
corr Nov-Feb averaged CPC NAO anomalies
Nov-Feb averaged NCEP/NCAR 500mb height anomalies (detrend) 1979:2018

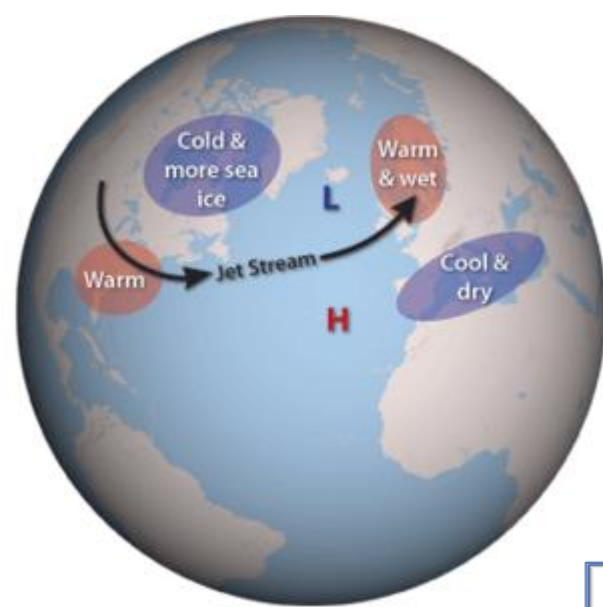


corr Nov-Feb averaged CPC NAO anomalies
with Nov-Feb averaged ERA5 T2m anomalies (detrend) 1979:2018 $p < 20\%$

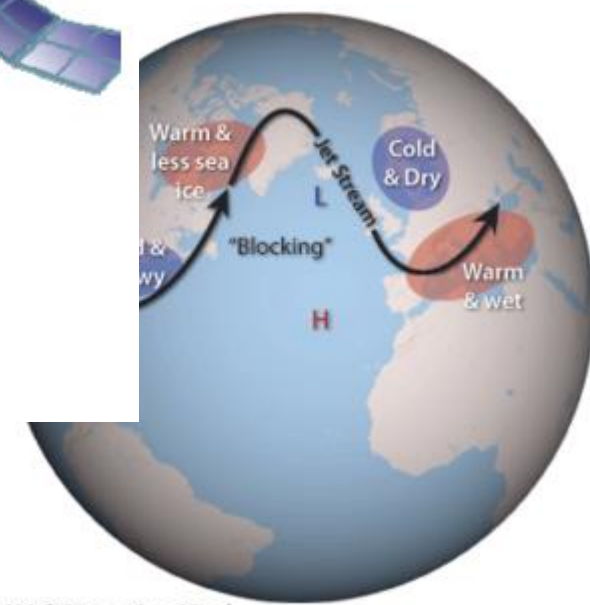
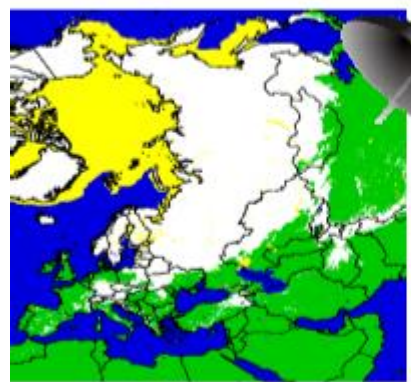


corr Nov-Feb averaged CPC NAO anomalies
with Nov-Feb averaged ERA5 precipitation anomalies (detrend) 1979:2018 $p < 20\%$

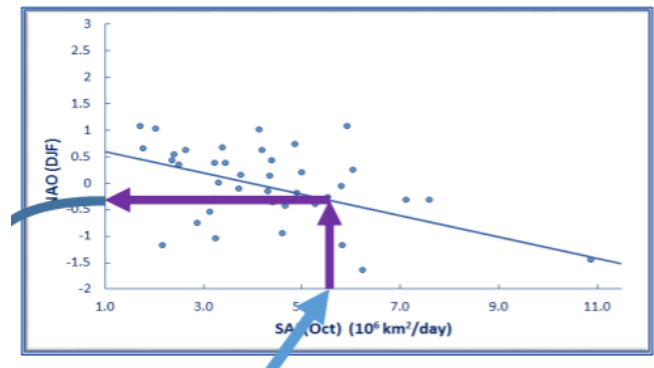




NAO Positive Mode

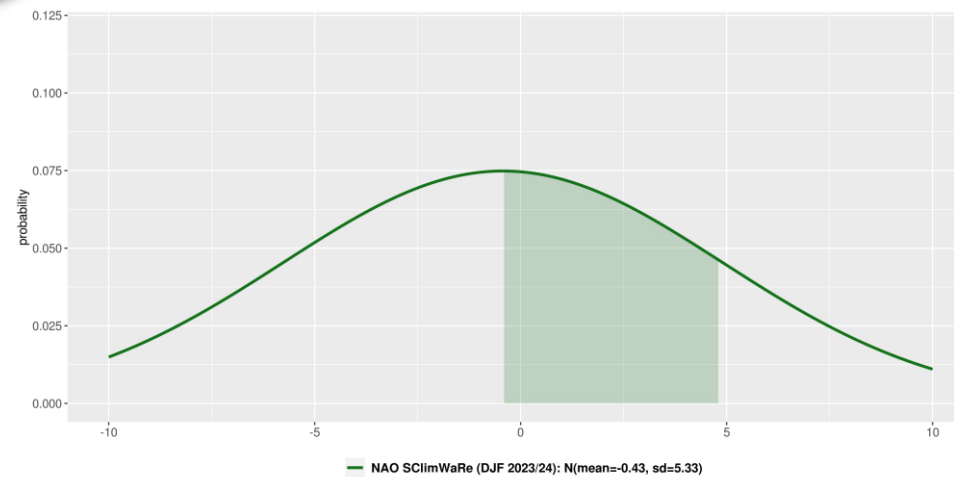
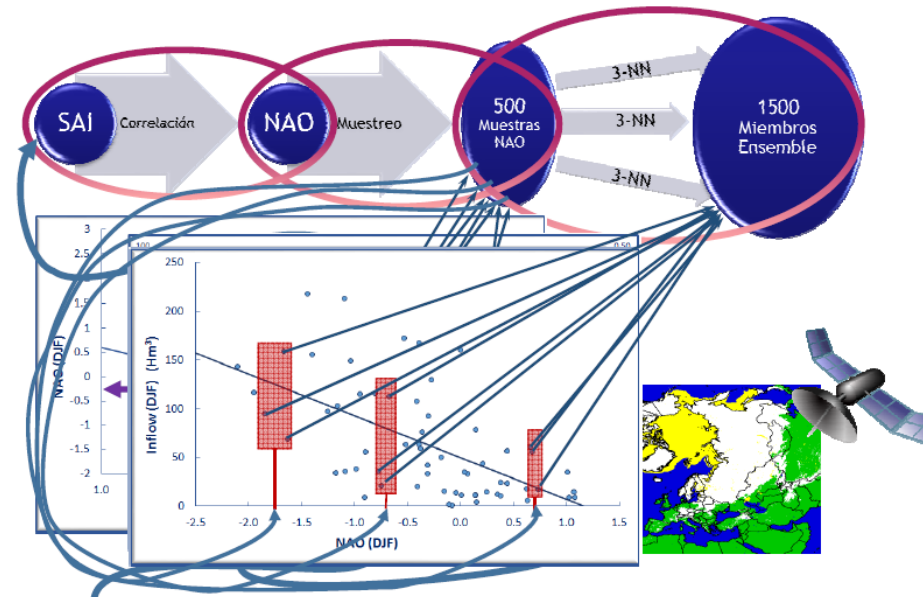
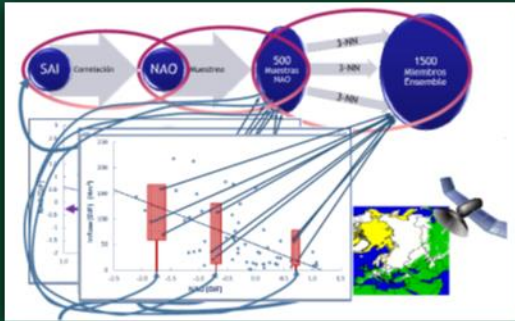


NAO Negative Mode



S-ClimWaRe

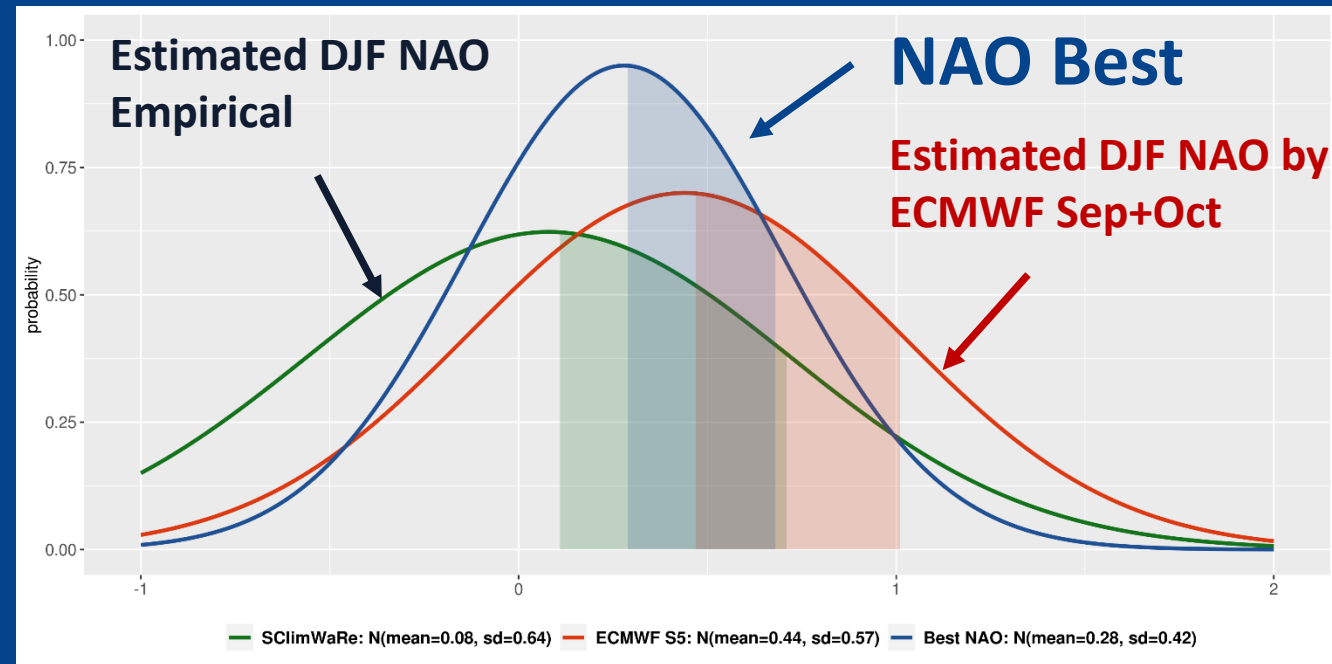
Modelo empírico de AEMET



SYSTEM	CORRELATION
ECMWF S5 (September run)	0.47
ECMWF S5 (October run)	0.43
ECMWF S5 (October +September)	0.56
Empirical (October snow cover)	0.33

BEST NAO WEIGHTING

NAO Best DJF
0.28



Use of NAO Best to weigh ECMWF S5-Oct ens members

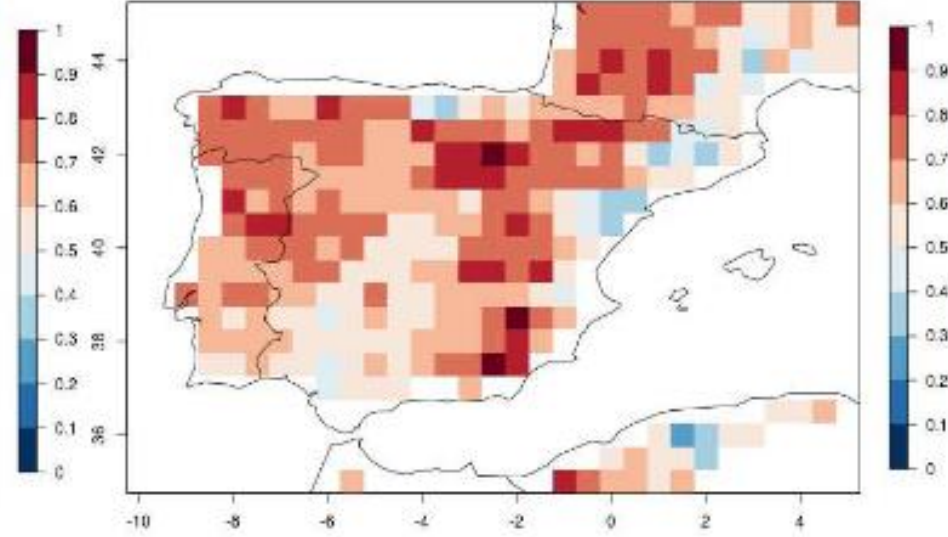
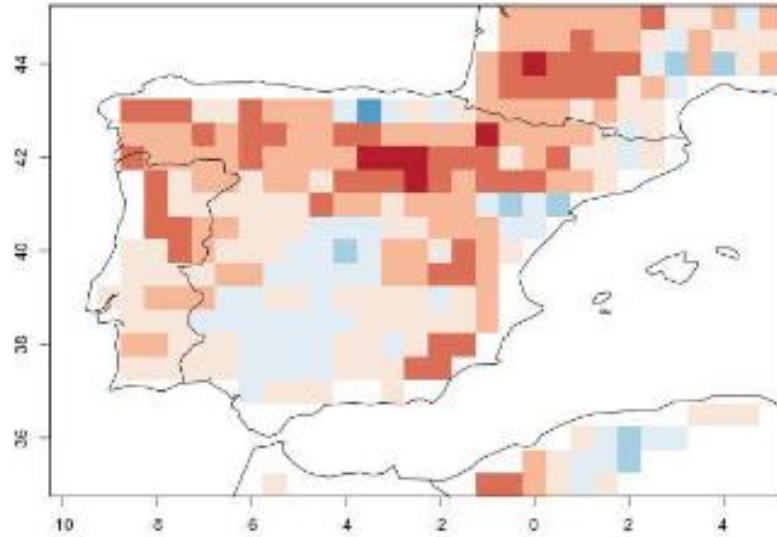


Mejora de skill pensando los miembros (comparando información empírica y dinámica)

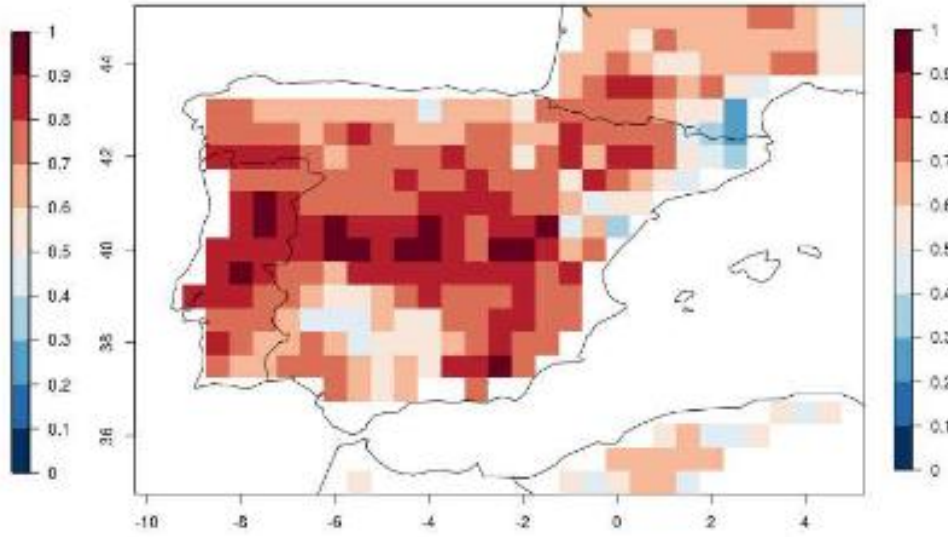
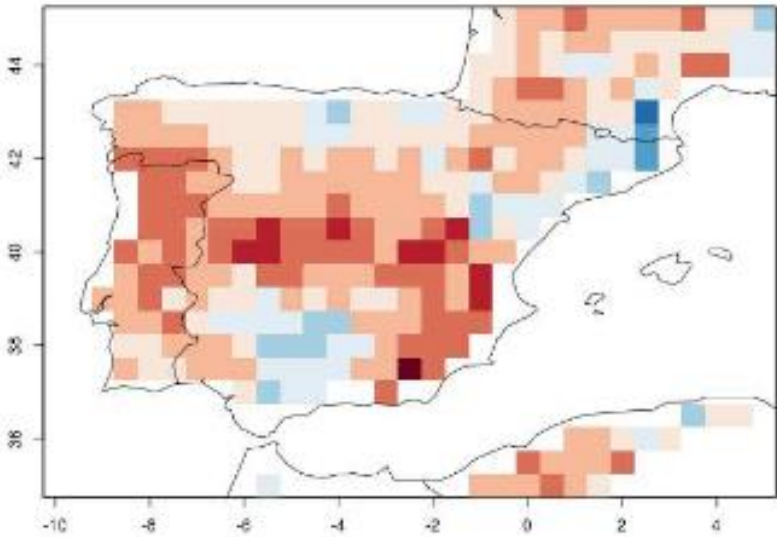
Equiprobable members

Best NAO weighted members

Upper tercile



Lower tercile

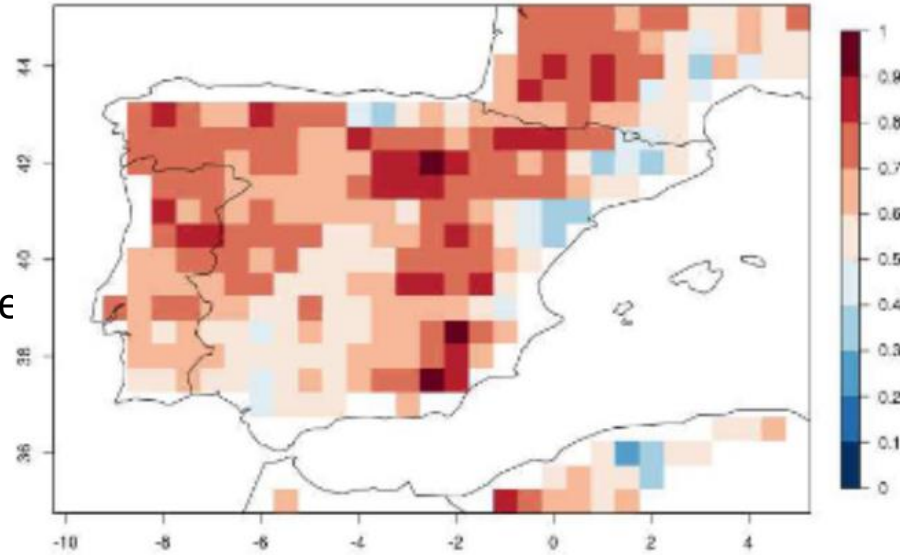


Mejora de skill pensando los miembros (comparando información empírica y dinámica)

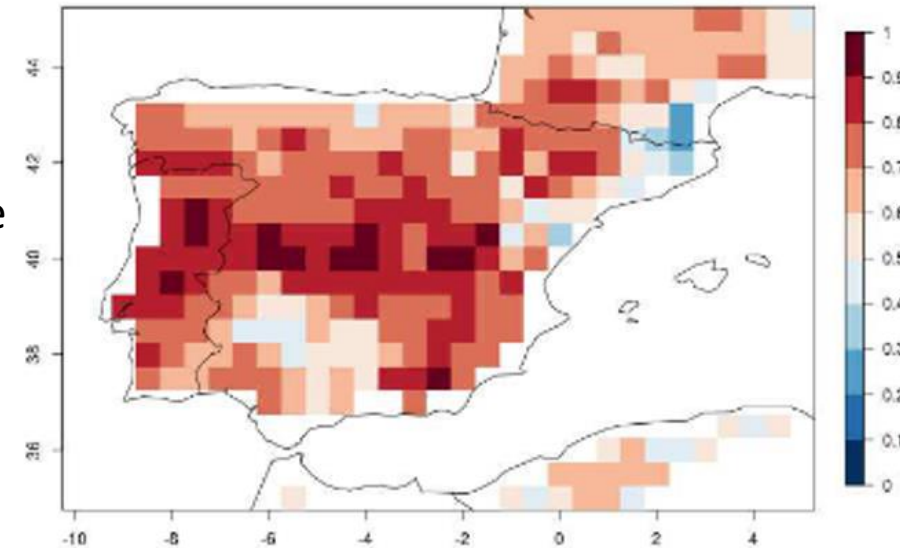
Best NAO weighted and downscaled members

Best NAO weighted members

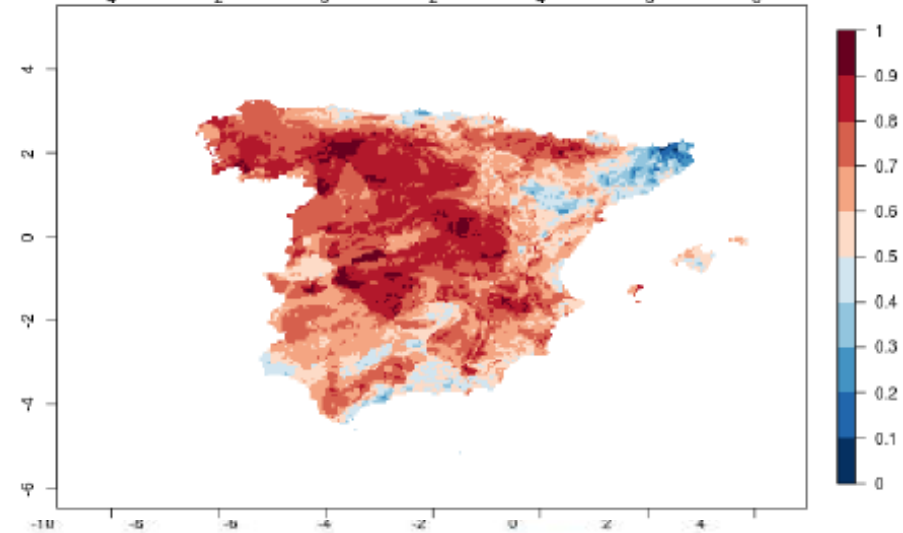
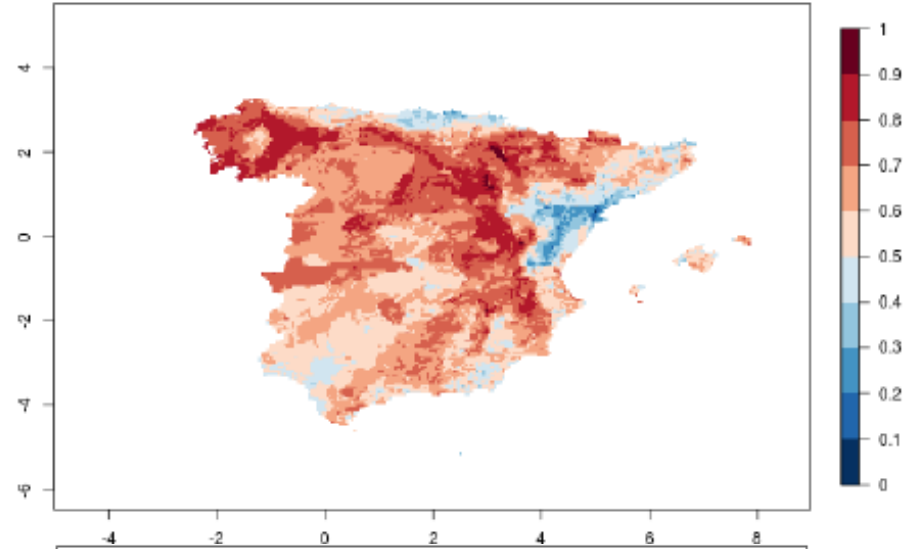
Upper tercile



Lower tercile

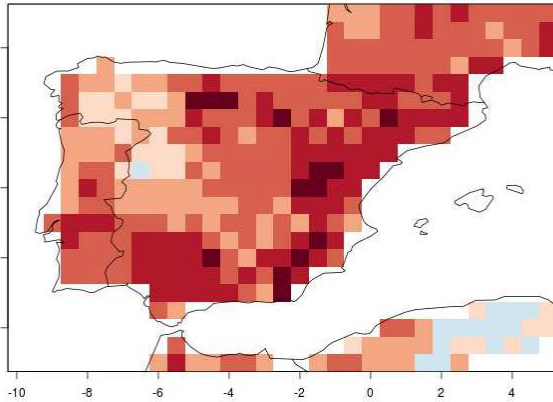


ROC area upper tercile - Total Precipitation [NDJFM] Ensemble members weighted with Best NAO pdf



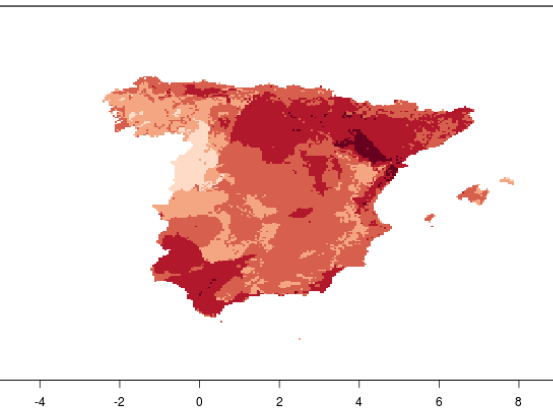
Evaluación de resultados: análisis del skill de partida y de cada elemento de la cadena

ROC area lower tercile - 2m Temperature Mean [AMJ]



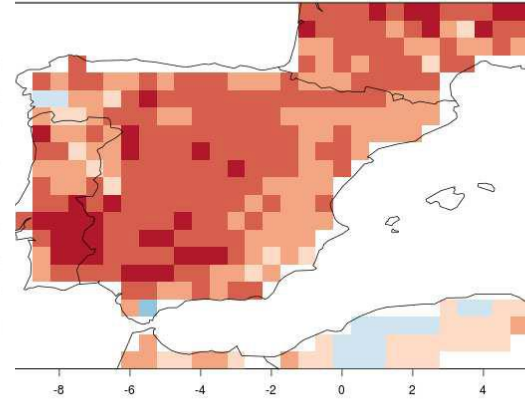
Obs: E-OBSv20 - Fcst: ECMWF System 5 (1997-2018)

ROC area lower tercile - 2m Temperature Mean [AMJ]



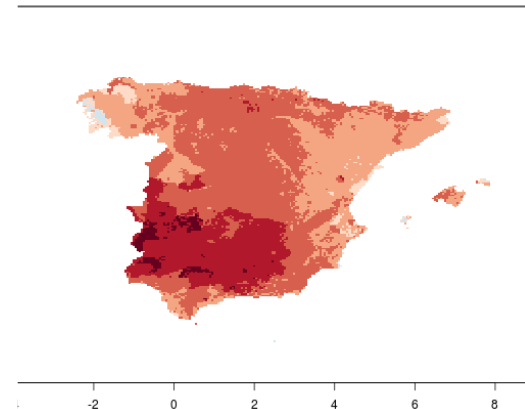
Obs: AEMET - Fcst: Downscaled ECMWF System 5 (1997-2018)

ROC area upper tercile - 2m Temperature Mean [AMJ]



Obs: E-OBSv20 - Fcst: ECMWF System 5 (1997-2018)

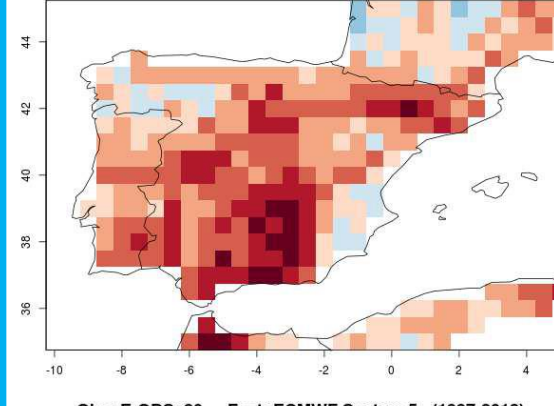
ROC area upper tercile - 2m Temperature Mean [AMJ]



Obs: AEMET - Fcst: Downscaled ECMWF System 5 (1997-2018)

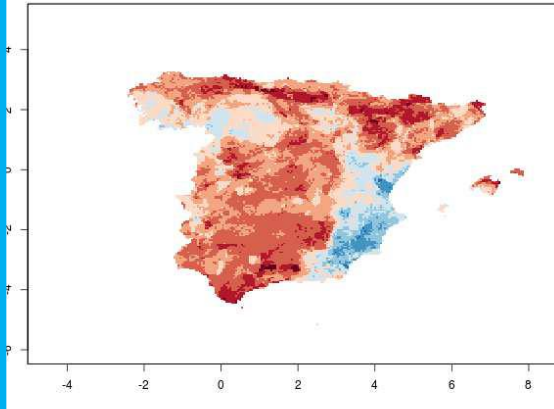
Temperatura

ROC area lower tercile - Accumulated Precipitation [AMJ]



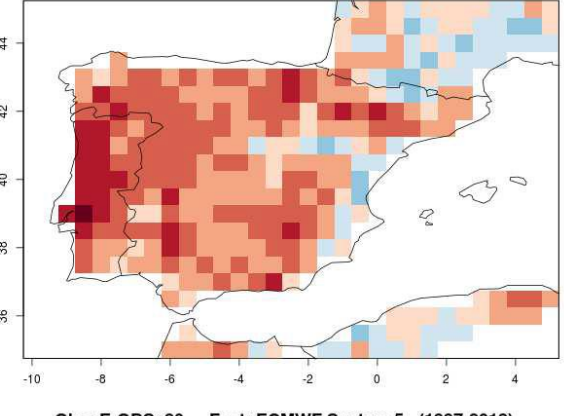
Obs: E-OBSv20 - Fcst: ECMWF System 5 (1997-2018)

ROC area lower tercile - Accumulated Precipitation [AMJ]



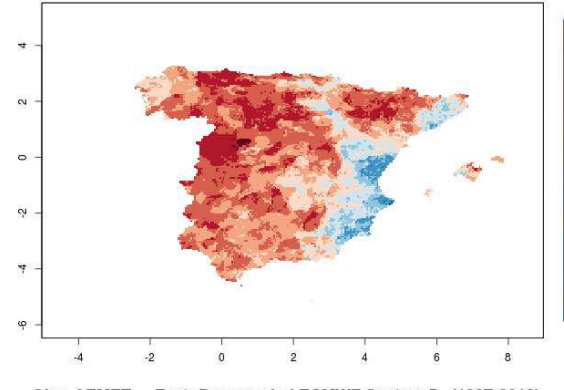
Obs: AEMET - Fcst: Downscaled ECMWF System 5 (1997-2018)

ROC area upper tercile - Accumulated Precipitation [AMJ]



Obs: E-OBSv20 - Fcst: ECMWF System 5 (1997-2018)

ROC area upper tercile - Accumulated Precipitation [AMJ]



Obs: AEMET - Fcst: Downscaled ECMWF System 5 (1997-2018)

Precipitación

VIEWER



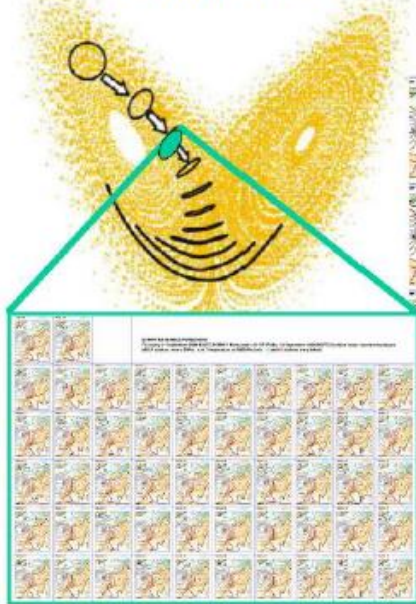
EVALUATION AT BELESAR RESERVOIR



BEST NAO
weighting and
combination

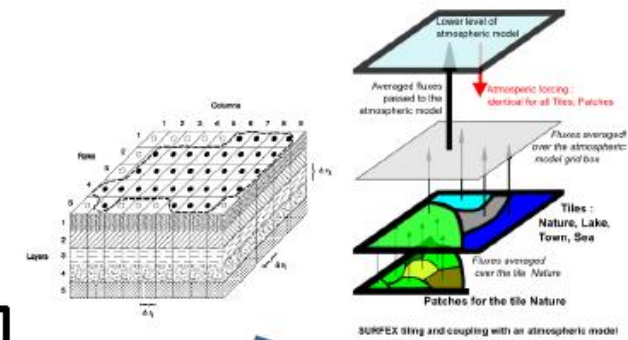
SIMPA SURFEX

ECMWF S5

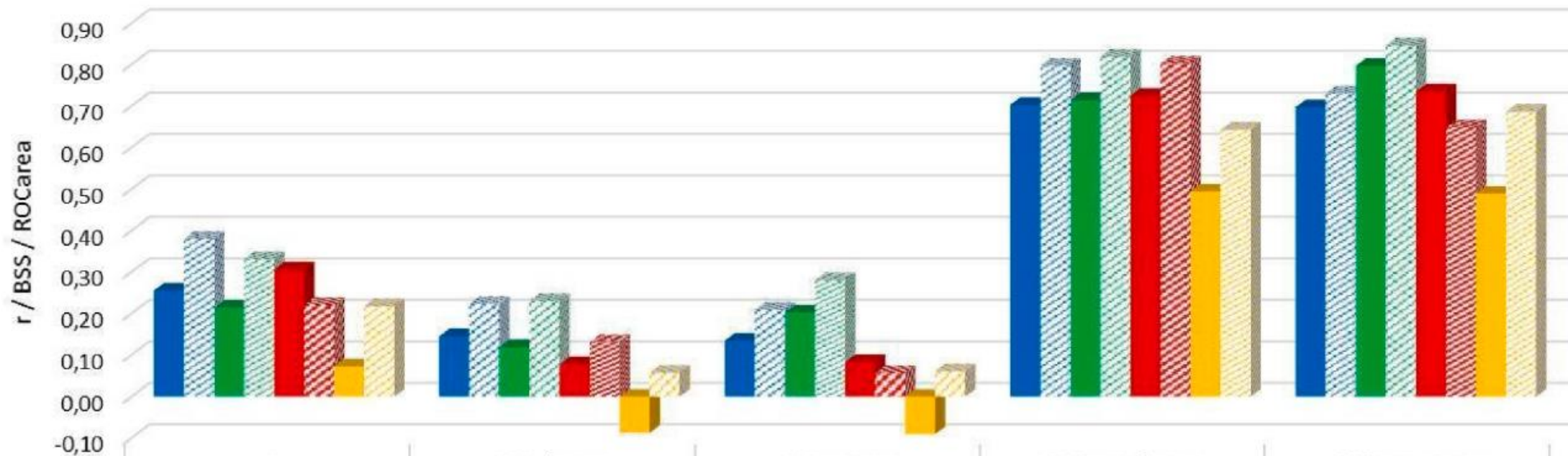


- **Domain of application:** All water reservoirs in Spain
- **Potential user(s):** dam managers
- **Decision making process:** Partition of water resources among main users: agriculture, energy, public supply

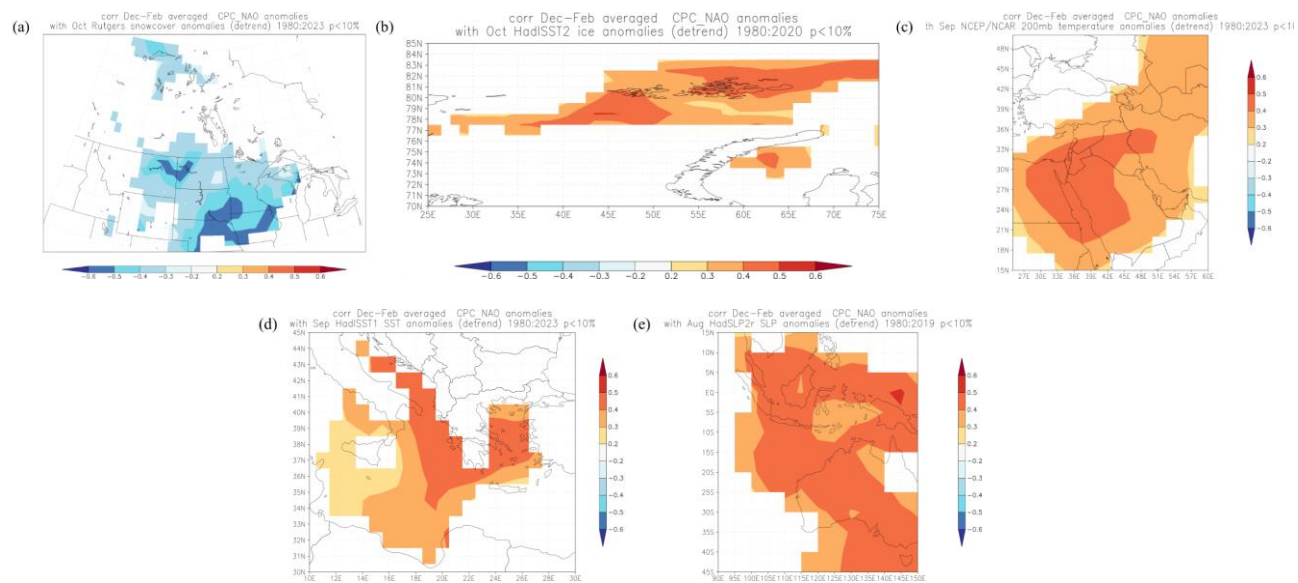
Downscaling based
on ANALOGS

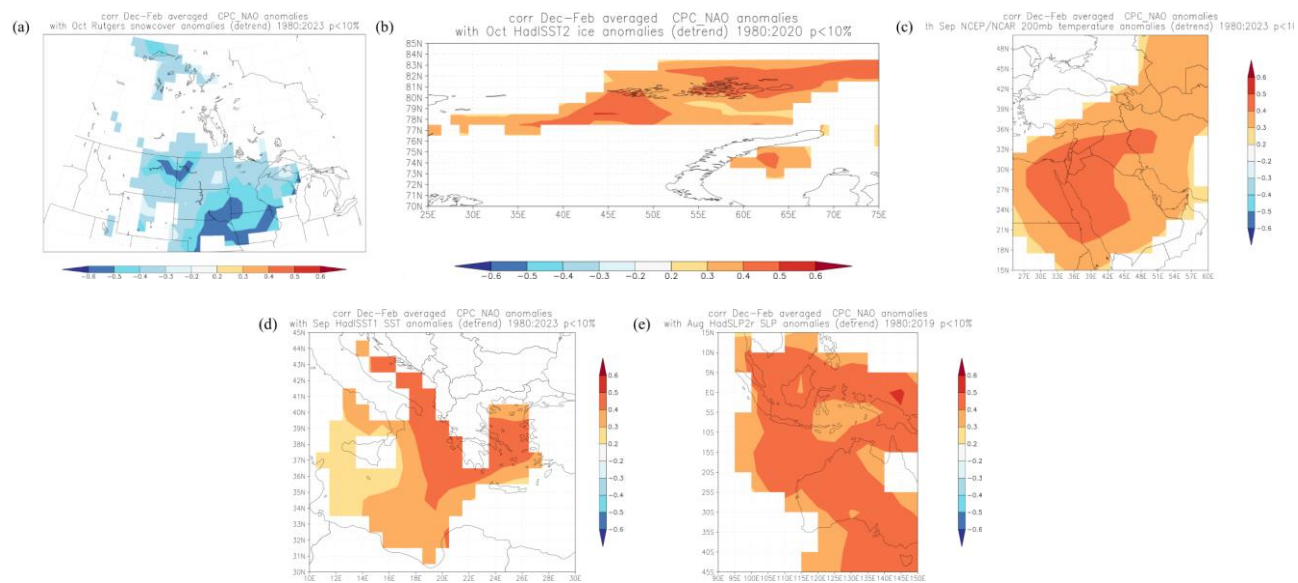


For every component, solid color represents equiprobable members, striped weighted using BestNAO



	r	BSS_lower	BSS_upper	ROCarea_lower	ROCarea_upper
■ SIMPA-EQ	0,26	0,15	0,13	0,70	0,70
▨ SIMPA-W	0,38	0,22	0,21	0,80	0,73
■ SURFEX-EQ	0,21	0,12	0,20	0,71	0,80
▨ SURFEX-W	0,33	0,23	0,28	0,82	0,85
■ SCLimWaRe	0,31	0,08	0,08	0,73	0,74
▨ SCLimWaRe-H	0,22	0,13	0,06	0,80	0,65
■ SEAS5-EQ	0,07	-0,09	-0,09	0,49	0,49
▨ SEAS5-W	0,22	0,06	0,06	0,64	0,69





Índice NAO observado y predicho por el modelo

