

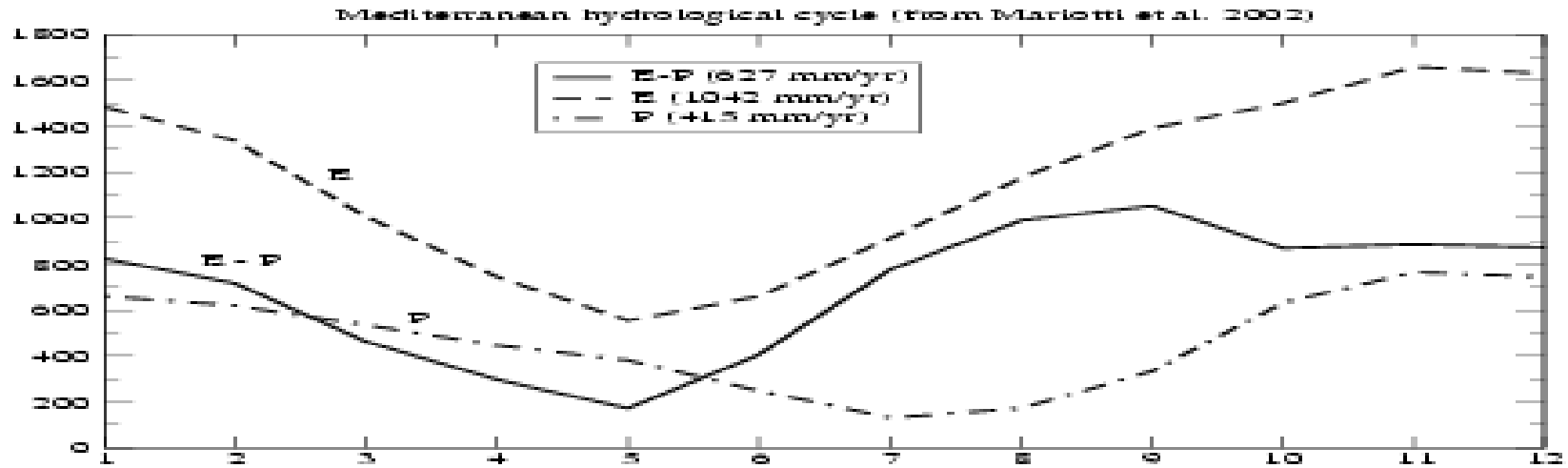
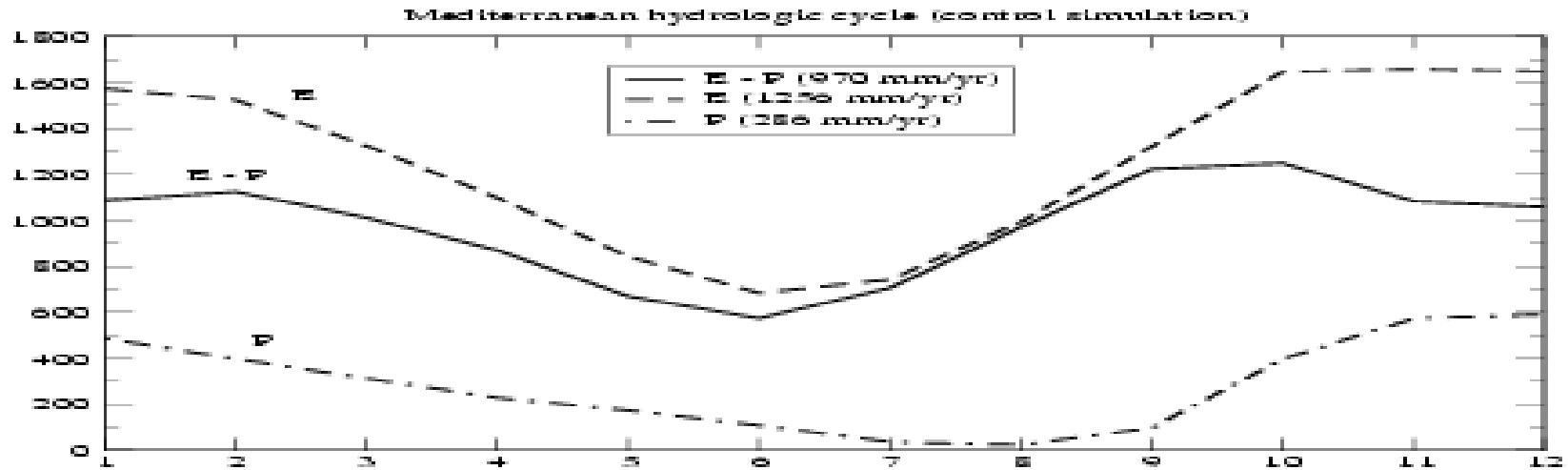
GICC-MedWater

Impacts of anthropogenic climate change on the water cycle of the Mediterranean basin.

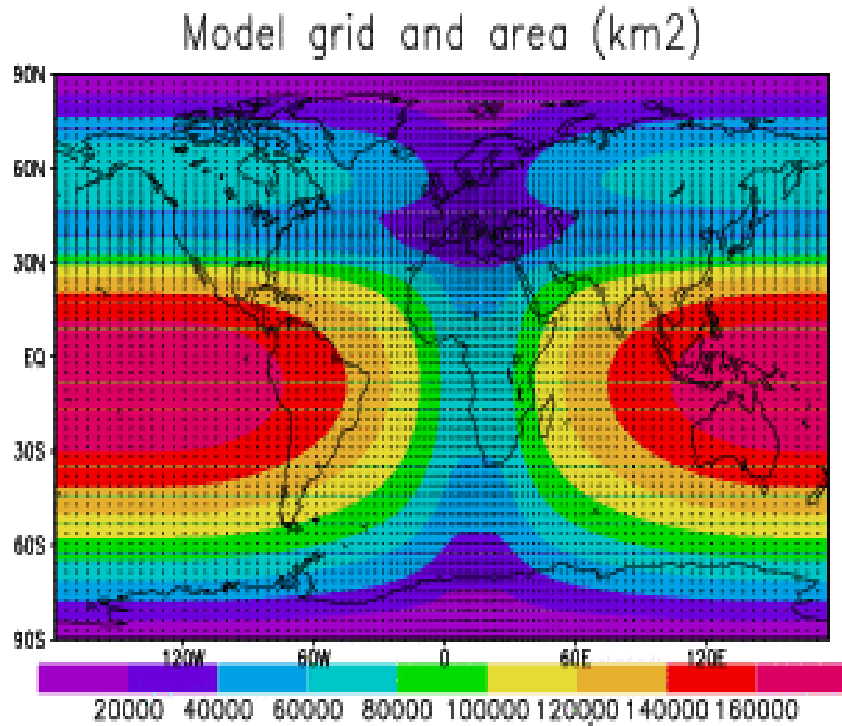
A project supported by the French National programme GICC (Gestion et impact du changement climatique) 2003-2006

Mediterranean Sea hydrological cycle

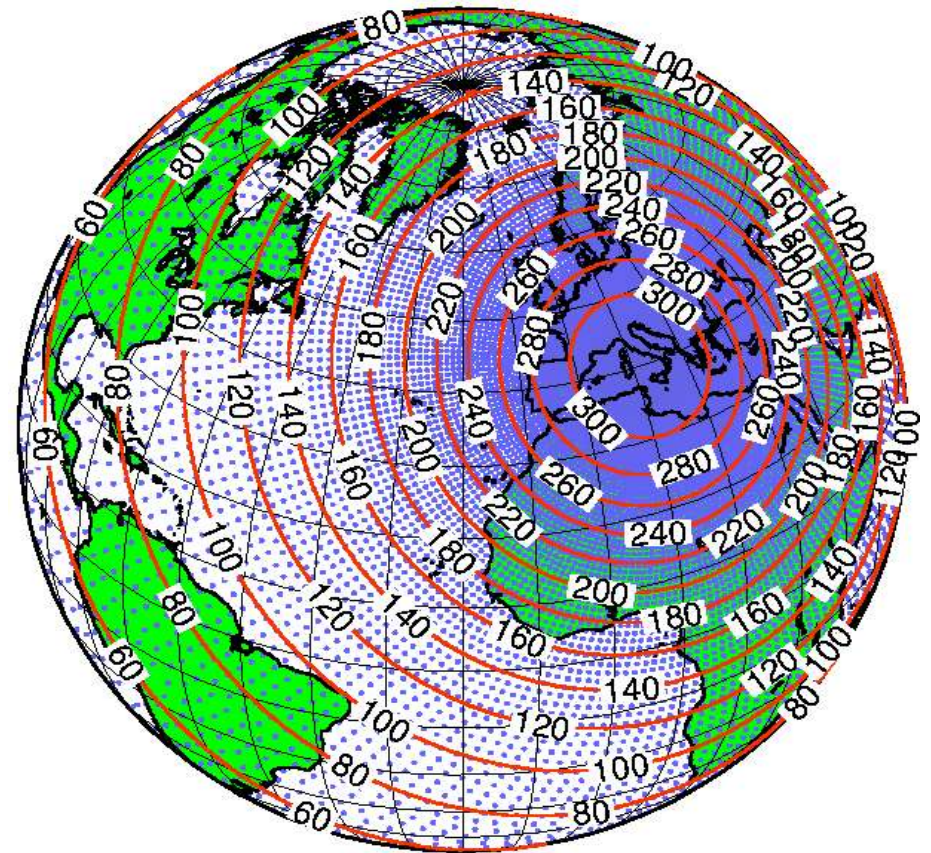
LMDZ and observation-based estimation (Mariotti et al. 2002)



Regional projections of climate scenarios

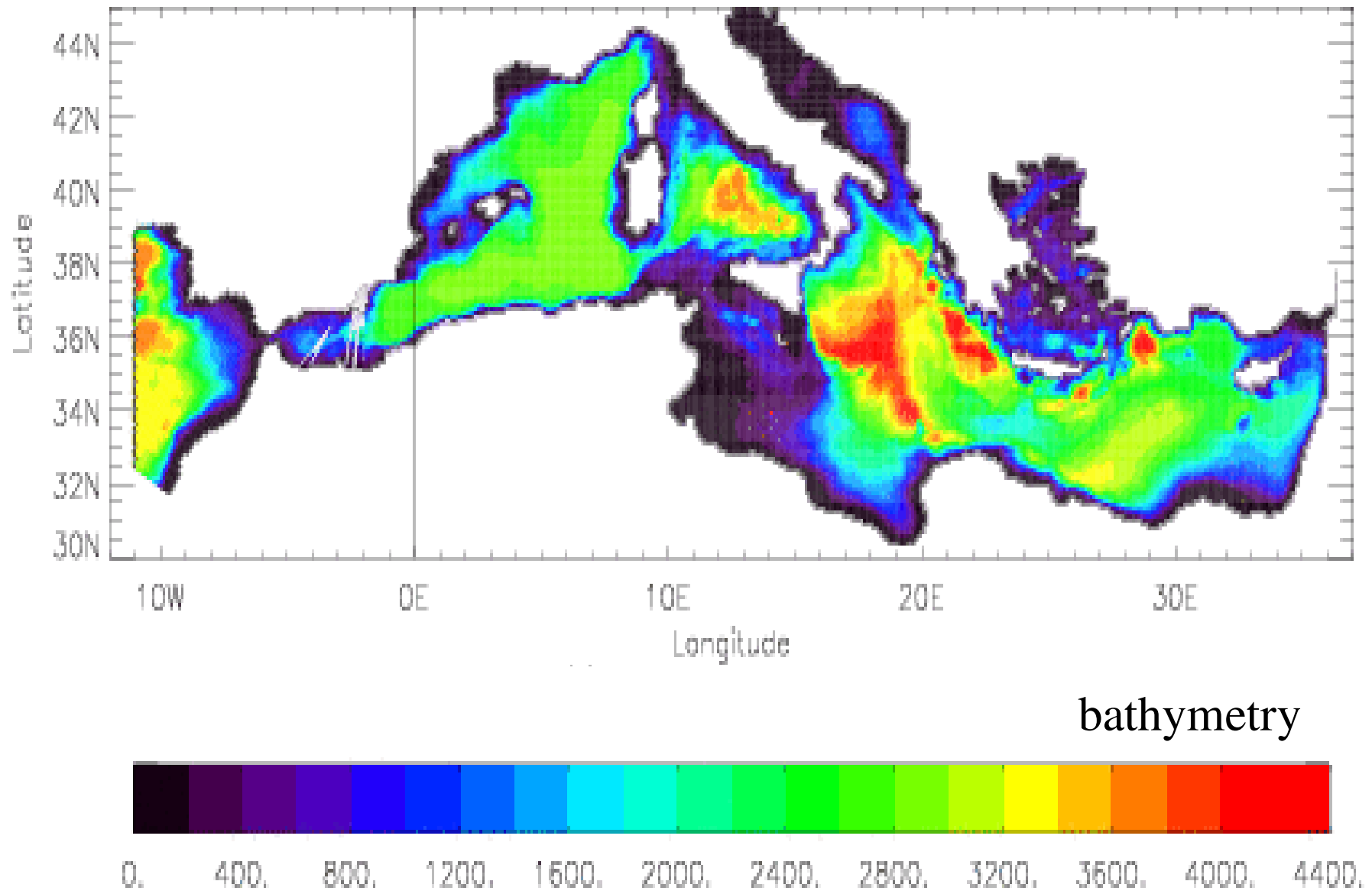


LMDZ-Mediterranean
(IPSL, Paris)



Arpege-Mediterranean
(Météo-France, Toulouse)

MED8: $1/8^\circ$ (12km), 43 vertical levels



Changes of surface air temperature and precipitation in LMDZ

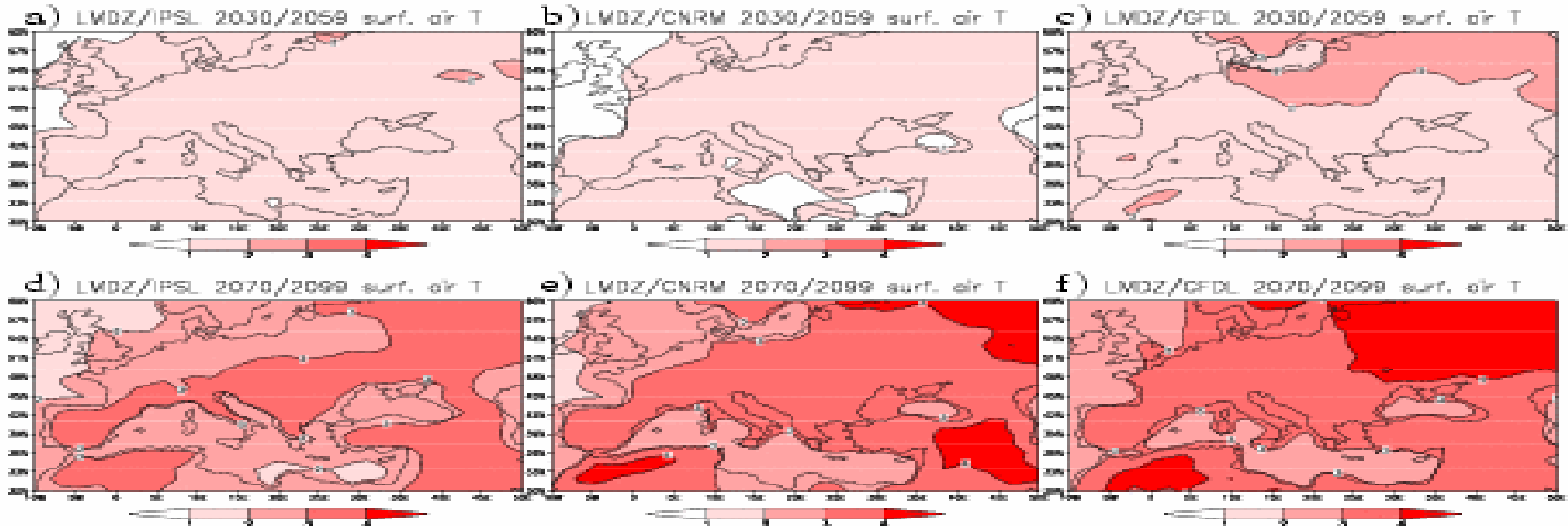
IPSL

CNRM

GFDL

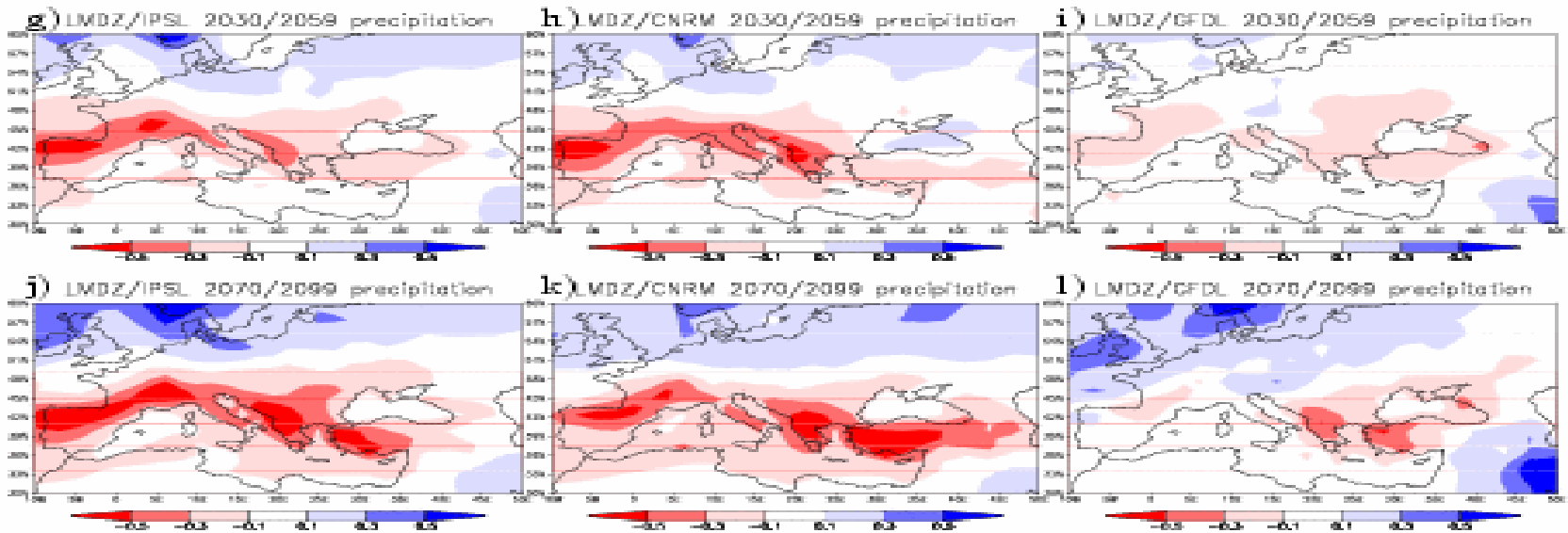
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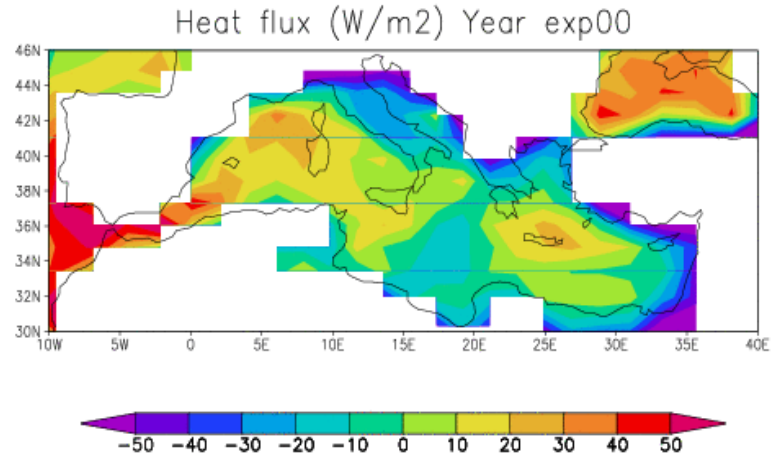
2050



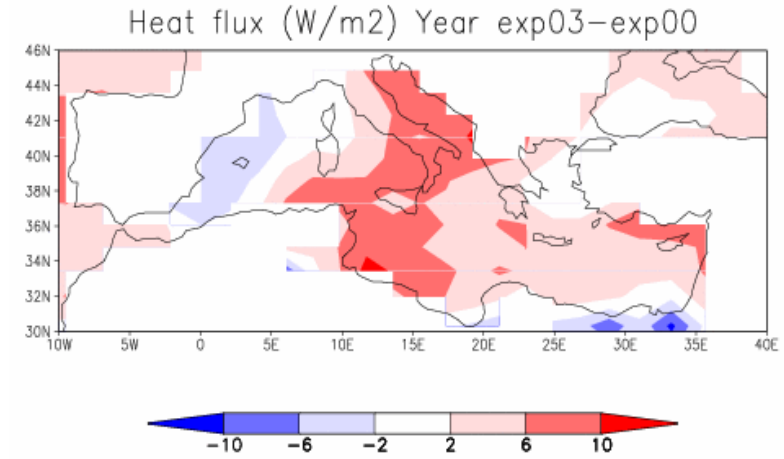
P

2010

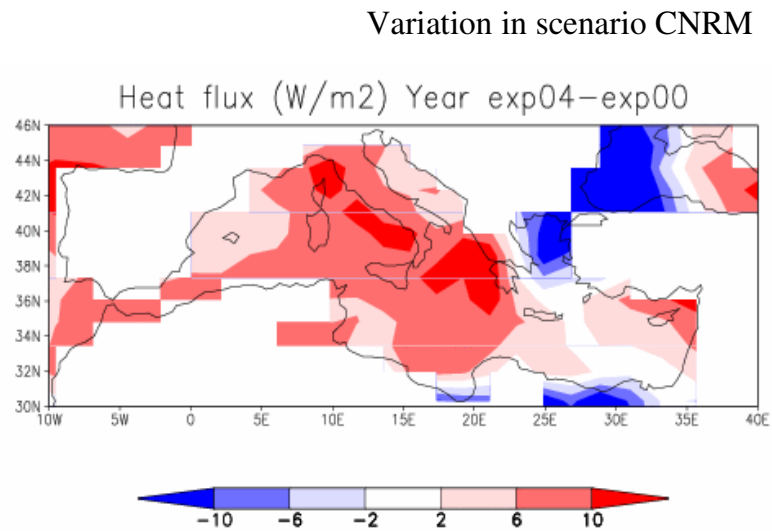




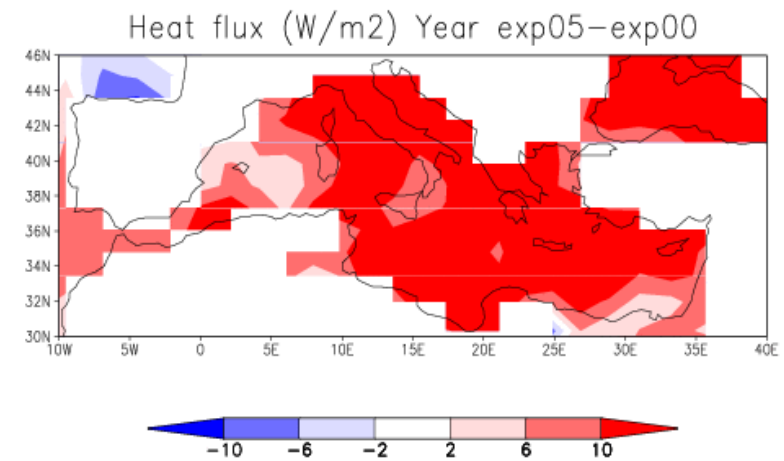
Control

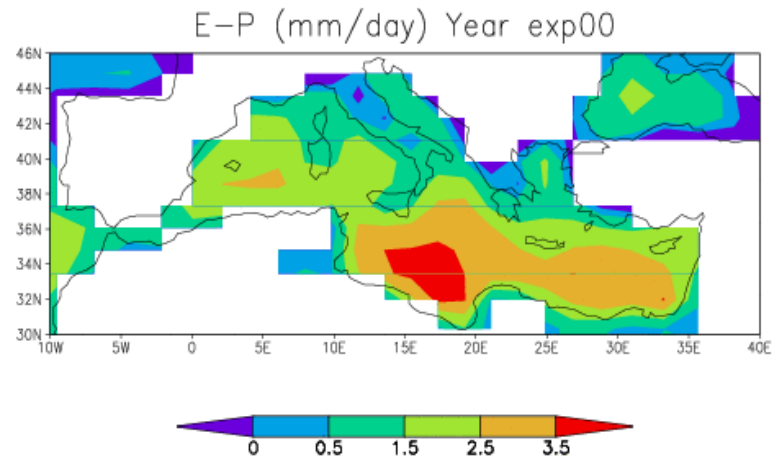


Variation in scenario IPSL

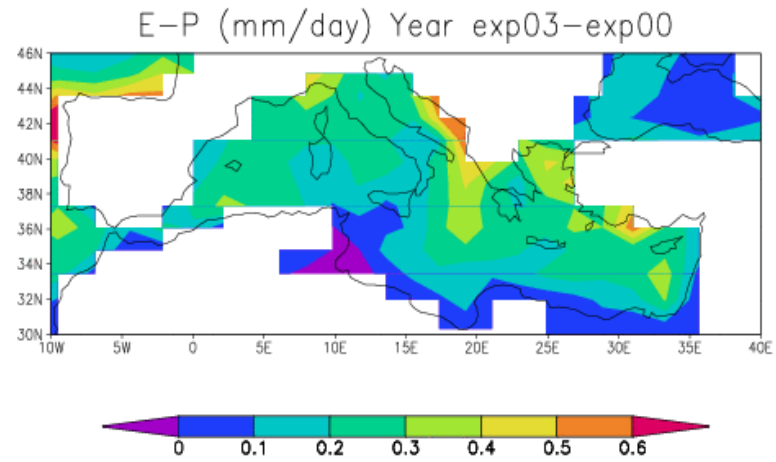


Variation in scenario GFDL

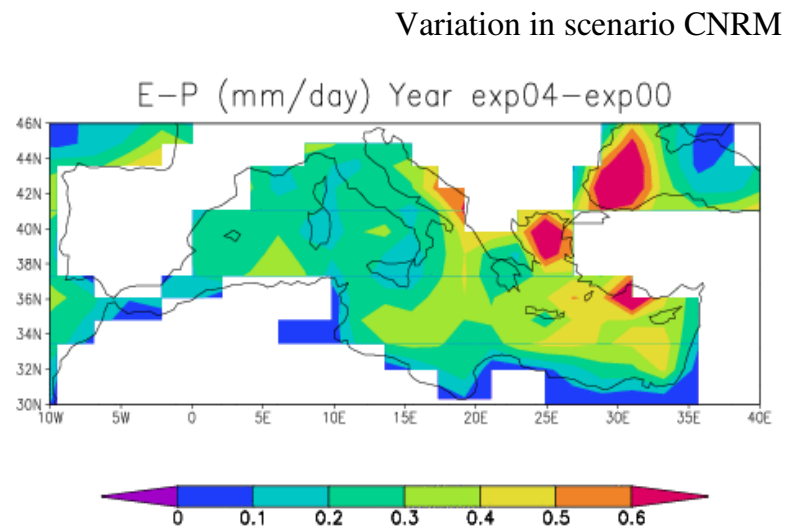




Control

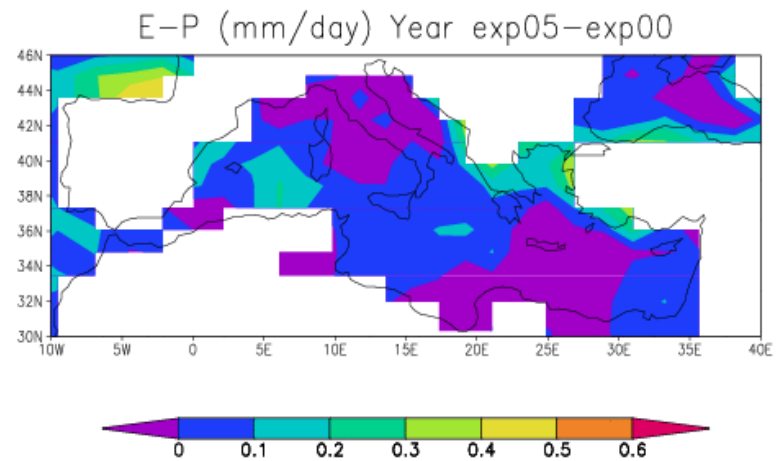


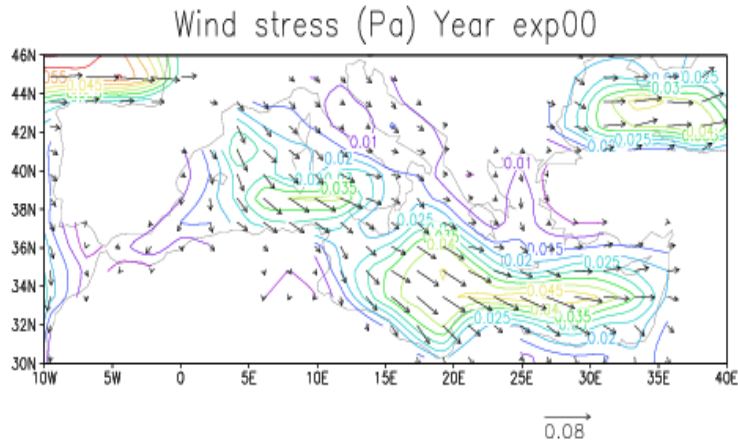
Variation in scenario IPSL



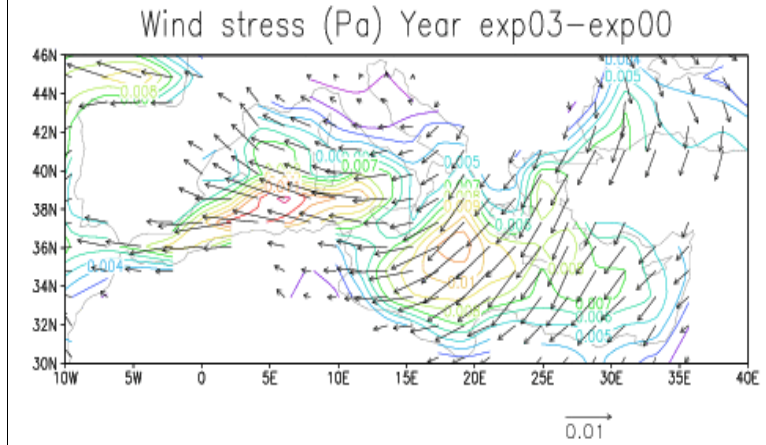
Variation in scenario CNRM

Variation in scenario GFDL

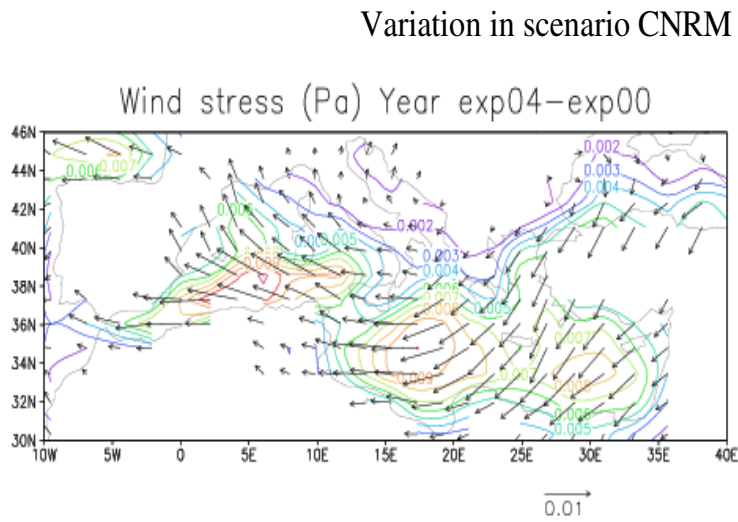




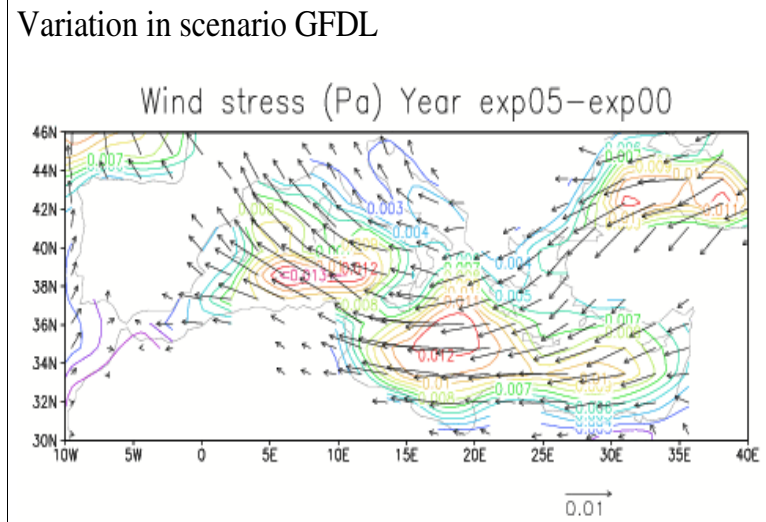
Control



Variation in scenario IPSL

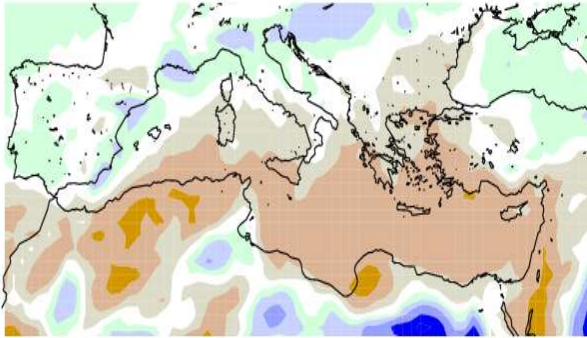
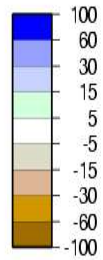


Variation in scenario CNRM

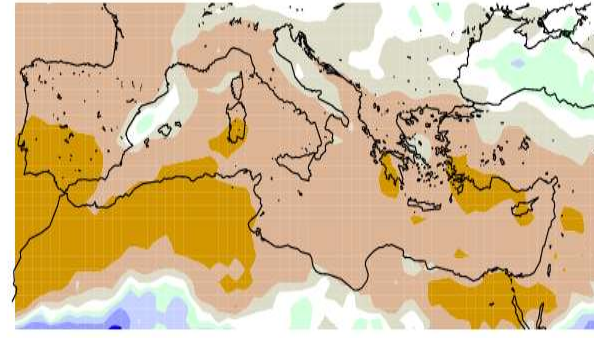
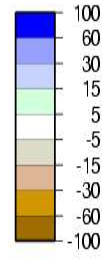


Variation in scenario GFDL

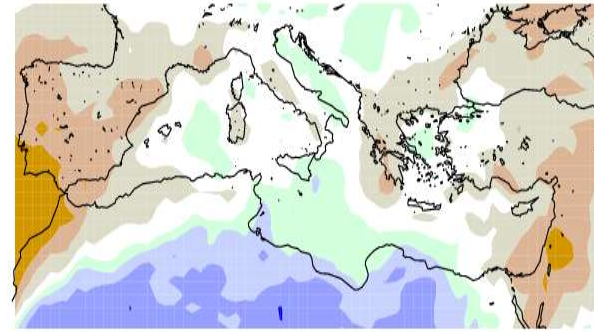
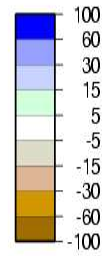
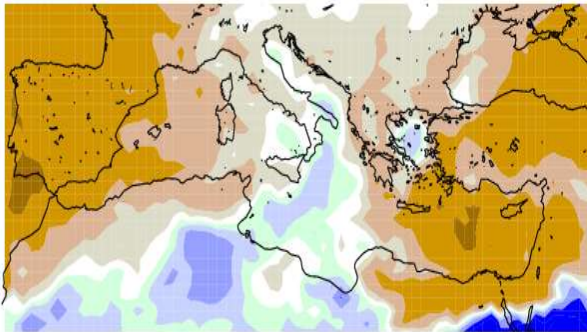
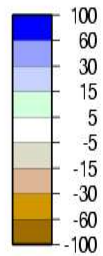
Relative changes of precipitation in Arpege for 2100

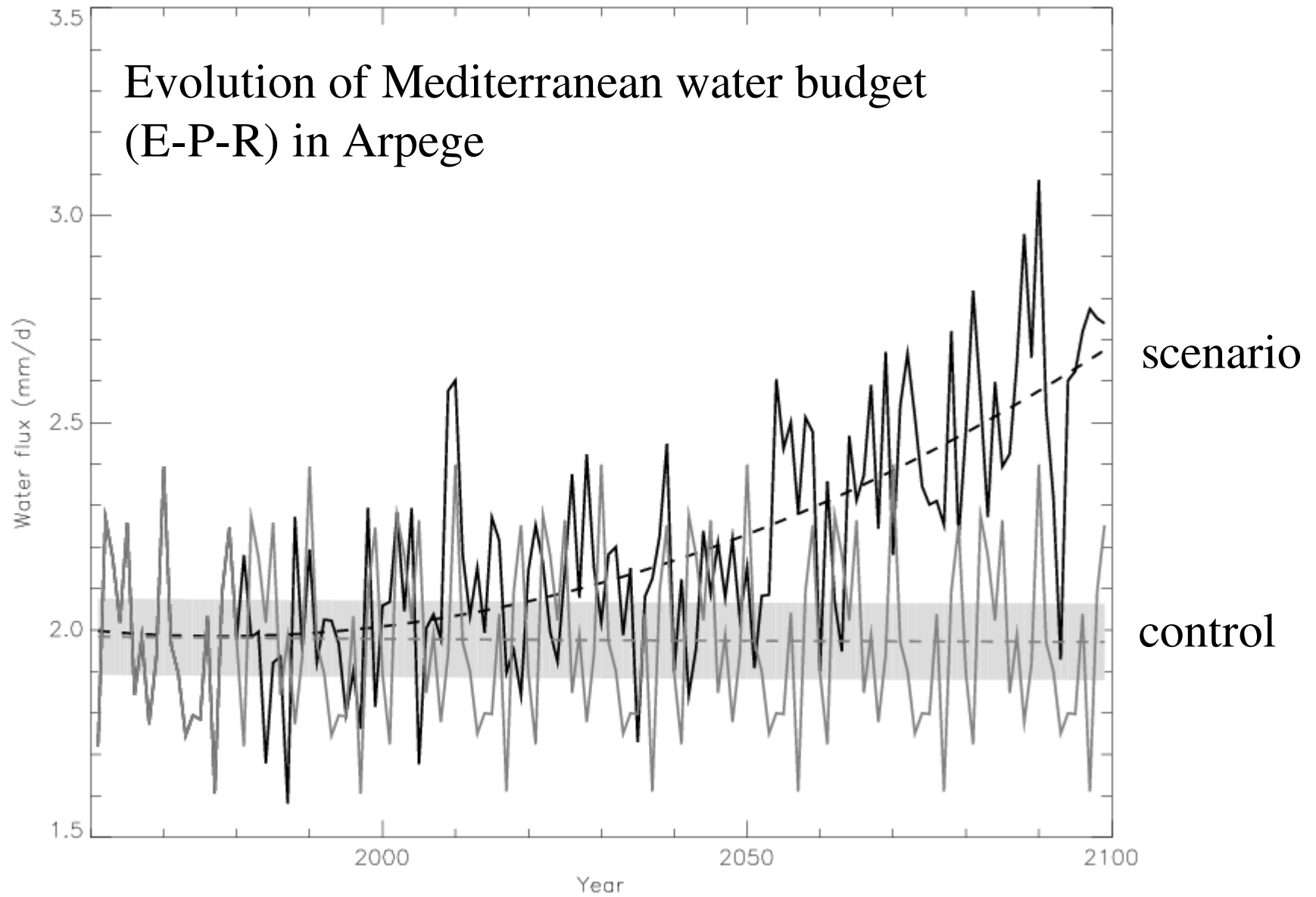


Winter Spring



Summer Automne

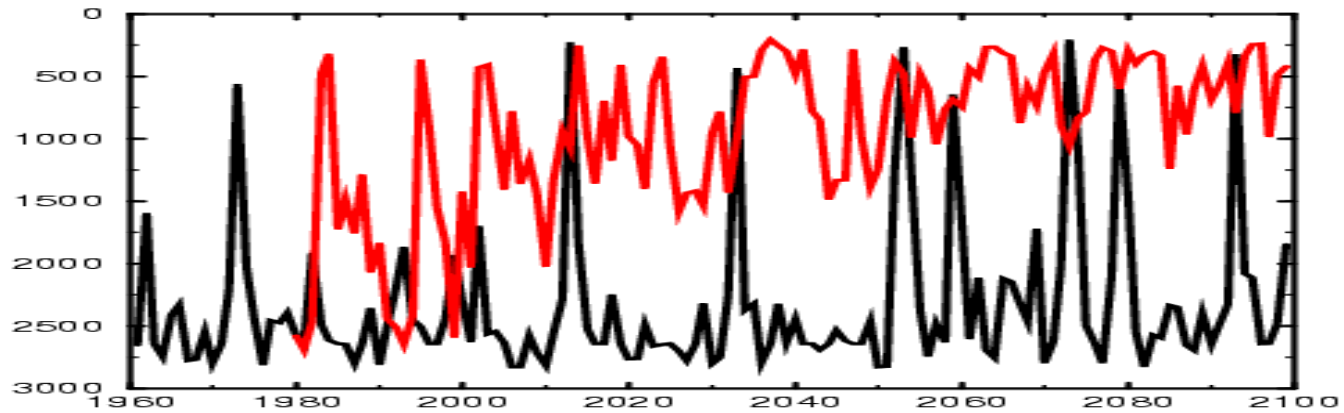
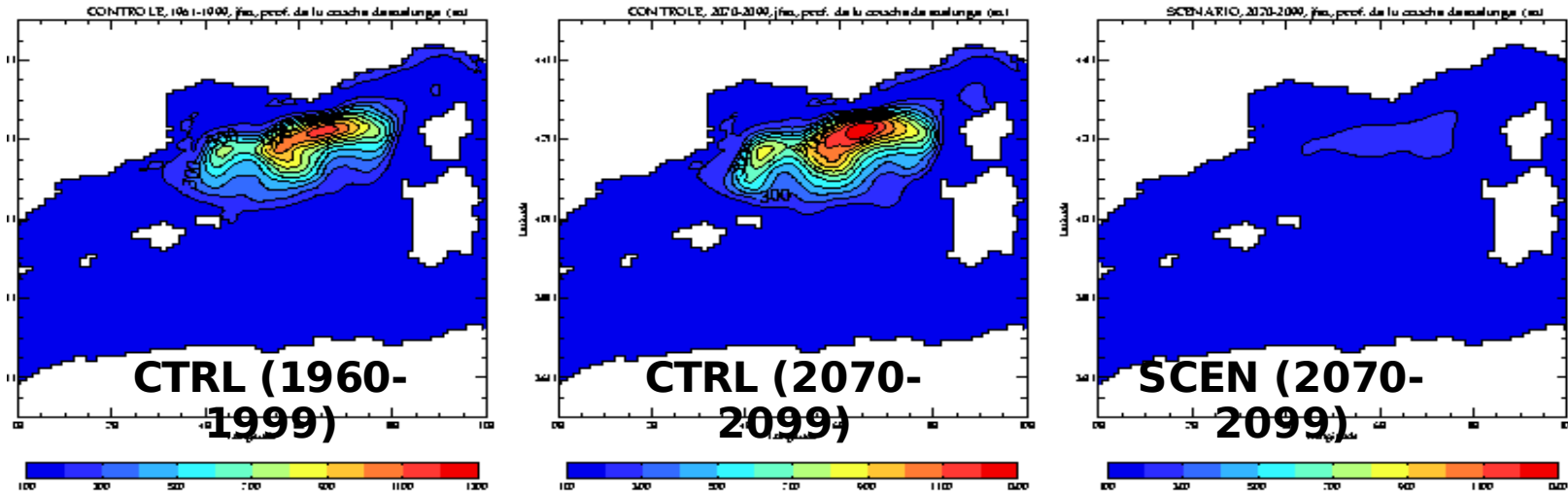




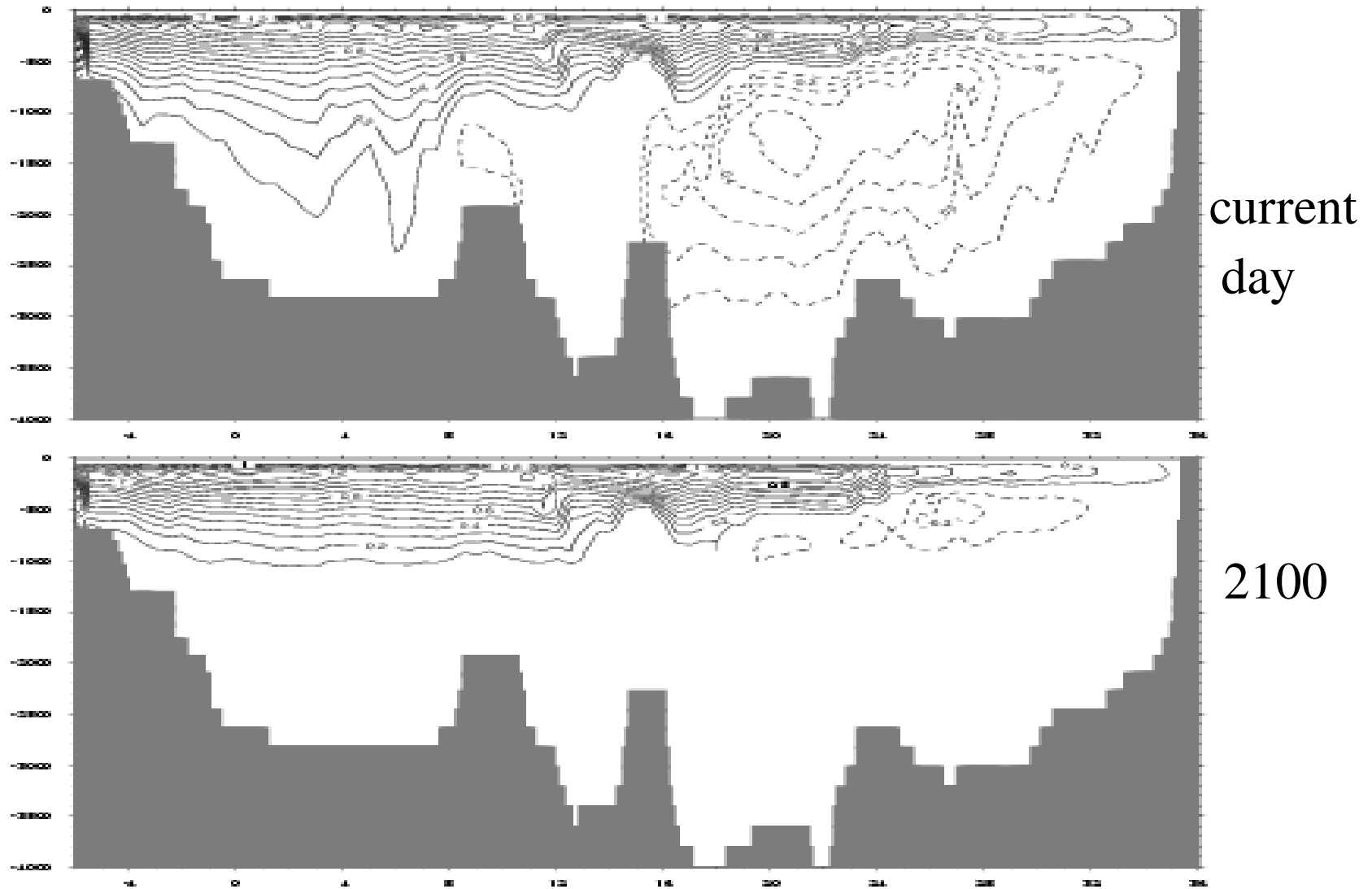
	temperature (°C)			salinity (PSU)		
	surface	0/500m	500m/bot.	surface	0/500m	500m/bot.
Present	18,7	13,8	13	38,18	38,44	38,66
2100	21,7	15,9	13,9	38,61	38,84	38,84
Difference	+3	+2,1	+0,9	+0,43	+0,4	+0,18

Temperature and salinity of the Med Sea in Arpege scenario

Mixed layer depth in the Gulf of Lion



Mediterranean zonal overturning stream function



	Surface inflow			Deep ourflow		
	transport	temper.	salinity	transport	temper.	salinity
Control	0,656 Sv	16,44°	36,45 psu	0,656 Sv	13,53°C	38,256
IPSL	0,586 Sv	16,46°	36,45 psu	0,586 Sv	14,68°C	38,41
CNRM	0,529 Sv	16,60°	36,44 psu	0,529 Sv	15,10°C	38,39
GFDL	0,506 Sv	16,69°	36,44 psu	0,506 Sv	15,37°C	38,35

Water fluxes in the Gibraltar Strait and their properties
in control run and the three scenarios for 2100

Future development
(MedWater-II):
Regional coupled climate
system modelling

Possible Cooperations:

- 1) Extension to other models (atmosphere and ocean)
- 2) Extension to other communities
(impact-oriented and academic research-oriented)