

ATMOSPHERIC BLOCKINGS IN NORTHERN HEMISPHERE FROM MODEL SIMULATIONS WITH RCP SCENARIOS

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Possible changes of atmospheric blocking characteristics in different regions of the Northern Hemisphere are evaluated from the CMIP5 simulations with the different RCP scenarios for the 21st century. Blocking characteristics were detected similar to (Wiedenmann et al., 2002; Mokhov et al., 2013).

Table 1(a,b) presents characteristics of summer (a) and winter (b) blockings in the Northern Hemisphere at the end of the 21st century (normalized to corresponding values for the 20th century - XX) from the IPSL-CM5B simulations with anthropogenic scenarios RCP 4.5 and RCP 8.5 for the 21st century: total blockings duration (blocking days number), mean blockings duration and mean blockings number for different longitudinal sectors and for hemisphere as a whole.

Table 1(a,b). Characteristics of summer (a) and winter (b) blockings in different longitudinal sectors and for the Northern Hemisphere as a whole at the end of the 21st century (normalized to corresponding values for the 20th century - XX) from the IPSL-CM5B simulations with anthropogenic scenarios RCP 4.5 and RCP 8.5 for the 21st century.

(a)				
Blocking days number	180W-60W	60W-60E	60E-180E	NH
RCP 4.5 / XX	0.92	1.07	1.07	1.05
RCP 8.5 / XX	0.92	1.08	1.04	1.04
Mean duration	180W-60W	60W-60E	60E-180E	NH
RCP 4.5 / XX	0.79	0.93	0.86	0.88
RCP 8.5 / XX	0.97	0.99	1.11	1.03
Mean number	180W-60W	60W-60E	60E-180E	NH
RCP 4.5 / XX	1.14	1.14	1.24	1.19
RCP 8.5 / XX	0.93	1.08	0.93	1.01
(b)				
Blocking days number	180E-60W	60W-60E	60E-180E	NH
RCP4.5/XX	1.19	1.04	0.84	1.03
RCP8.5/XX	0.95	1.07	0.90	1.01
Mean duration	180E-60W	60W-60E	60E-180E	NH
RCP4.5/XX	1.04	0.95	0.56	0.87
RCP8.5/XX	0.91	0.90	0.77	0.89
Mean number	180E-60W	60W-60E	60E-180E	NH
RCP4.5/XX	1.14	1.09	1.50	1.18
RCP8.5/XX	1.05	1.19	1.17	1.14

According to Table 1 it should be expected in the 21st century an overall increase in the frequency (the number of blocking days) and mean number of

summer and winter blockings in the Northern Hemisphere for both RCP scenarios.

Figure 1(a,b) shows the number of years (ordinate) with different blocking days (abscissa) for summer (a) and winter (b) in Euro-Atlantic region (60W-60E) from the IPSL-CM5B simulations for three 30-years periods: 1976-2005 (XX) and at the end of the 21st century (XXI) for the RCP 4.5 and RCP 8.5 scenarios.

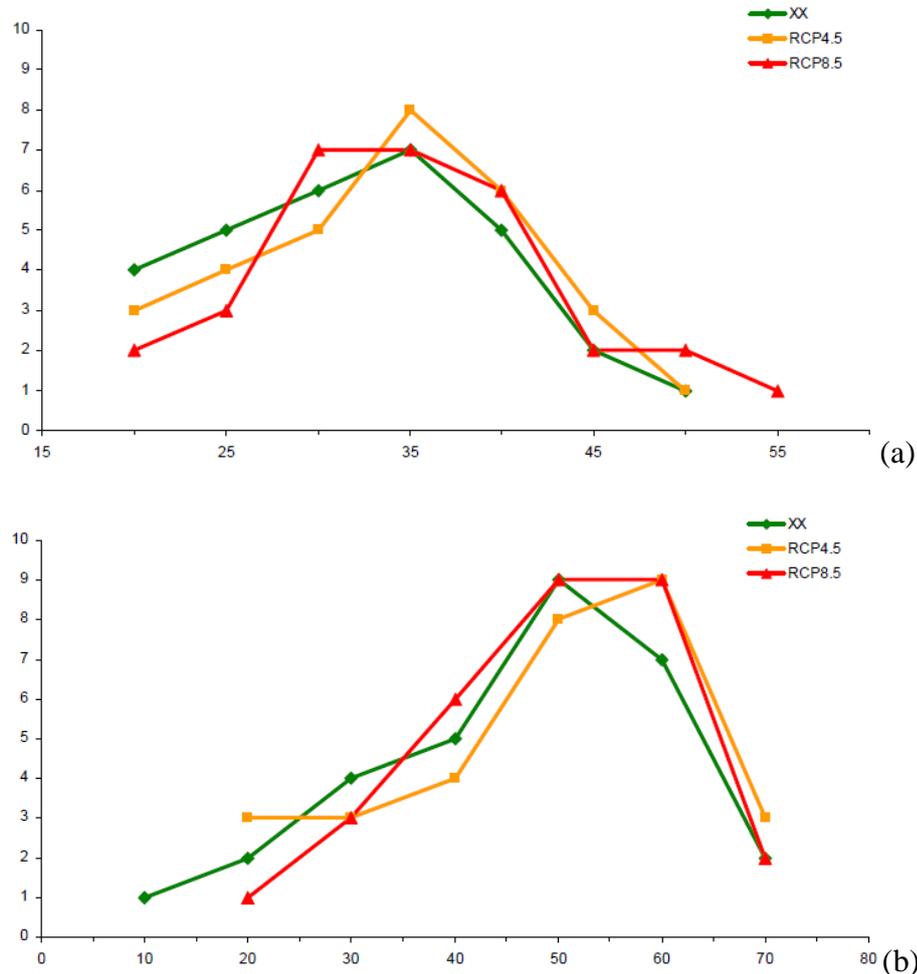


Figure 1(a,b). Number of years (ordinate) with different blocking days (abscissa) in Euro-Atlantic region for summer (a) and winter (b) from the IPSL-CM5B simulations for three 30-years periods: 1976-2005 (XX) and at the end of the 21st century (XXI) for the RCP 4.5 and RCP 8.5 scenarios.

According to Fig. 1 it should be expected in the 21st century more years with a greater number of blocking days in summer and winter in Euro-Atlantic region EA for both RCP scenarios.

References

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