



Supplement of

A new index used to characterise the extent of Antarctic marine coastal winds in climate projections

Archie Cable et al.

Correspondence to: Archie Cable (acable@noc.ac.uk)

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1 List of CMIP6 models used

Table S1: List of CMIP6 models used

Model	Institution	Ensemble member used	Native horizontal grid spacing (°)
ACCESS-CM2	CSIRO-ARCCSS	r1i1p1f1	1.875
AWI-CM-1-1-MR	AWI	r1i1p1f1	0.9375
BCC-CSM2-MR	BCC	r1i1p1f1	1.125
CAMS-CSM1-0	CAMS	r1i1p1f1	1.125
CAS-ESM2-0	CAS	r1i1p1f1	1.4173
CMCC-CM2-SR5	CMCC	r1i1p1f1	1.25
CMCC-ESM2	CMCC	r1i1p1f1	1.25
CNRM-CM6-1	CNRM-CERFACS	r1i1p1f2	1.4062
CNRM-CM6-1-HR	CNRM-CERFACS	r1i1p1f2	0.5
CNRM-ESM2-1	CNRM-CERFACS	r4i1p1f2	1.4062
CanESM5	CCCma	r17i1p1f1	2.8125
CanESM5-CanOE	CCCma	r1i1p2f1	2.8125
EC-Earth3	EC-Earth-Consortium	r1i1p1f1	0.7031
EC-Earth3-Veg	EC-Earth-Consortium	r1i1p1f1	0.7031
EC-Earth3-Veg-LR	EC-Earth-Consortium	r3i1p1f1	1.125
FGOALS-f3-L	CAS	r1i1p1f1	1.25
GFDL-ESM4	NOAA-GFDL	r1i1p1f1	1.25
GISS-E2-1-G	NASA-GISS	r2i1p3f1	2.5
INM-CM4-8	INM	r1i1p1f1	2
INM-CM5-0	INM	r1i1p1f1	2
IPSL-CM6A-LR	IPSL	r1i1p1f1	2.5
MIROC-ES2L	MIROC	r1i1p1f2	2.8125
MIROC6	MIROC	r1i1p1f1	1.4062
MPI-ESM1-2-HR	DWD	r2i1p1f1	0.9375
MPI-ESM1-2-LR	MPI-M	r7i1p1f1	1.875
MRI-ESM2-0	MRI	r1i1p1f1	1.125
UKESM1-0-LL	MOHC	r4i1p1f2	1.875

2 Seasonal and decadal average plots of directional constancy from ERA5

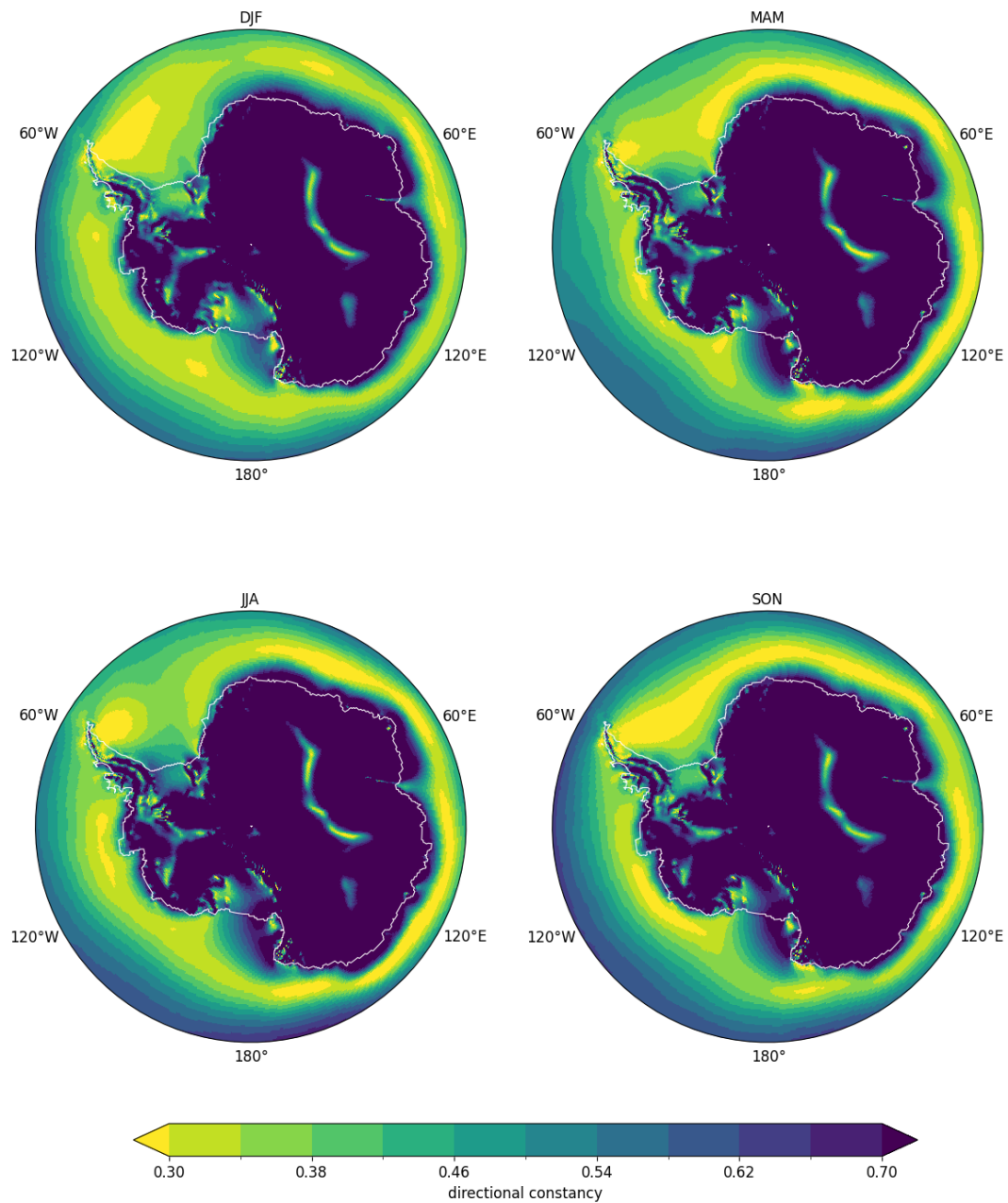


Figure S1. Seasonal plots of directional wind constancy, calculated by taking a seasonal-average over monthly ERA5 wind data from 1980–2023.

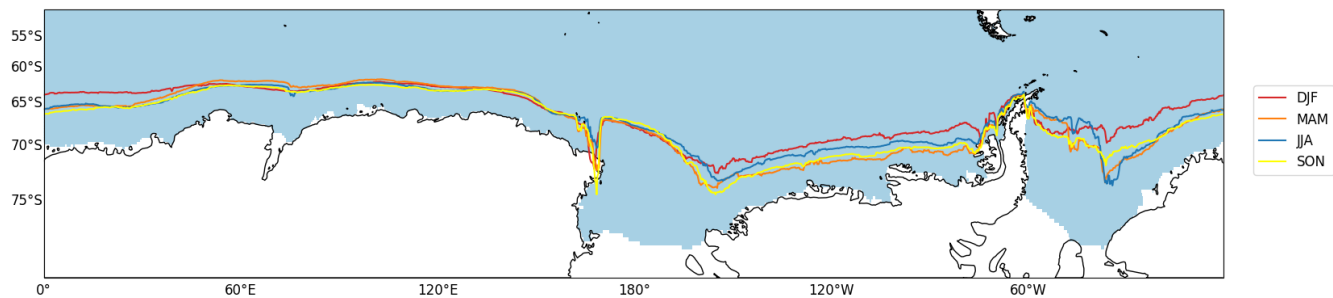


Figure S2. Seasonal position of the ACWB, calculated by taking the seasonal-average over monthly ERA5 wind data from 1980-2023.

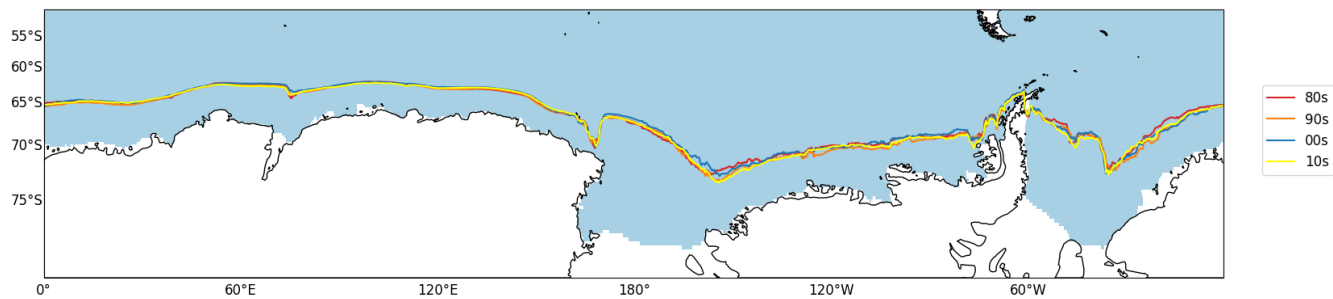


Figure S3. The decadal average position of the ACWB calculated using monthly ERA5 wind data from the 1980s through to the 2010s.

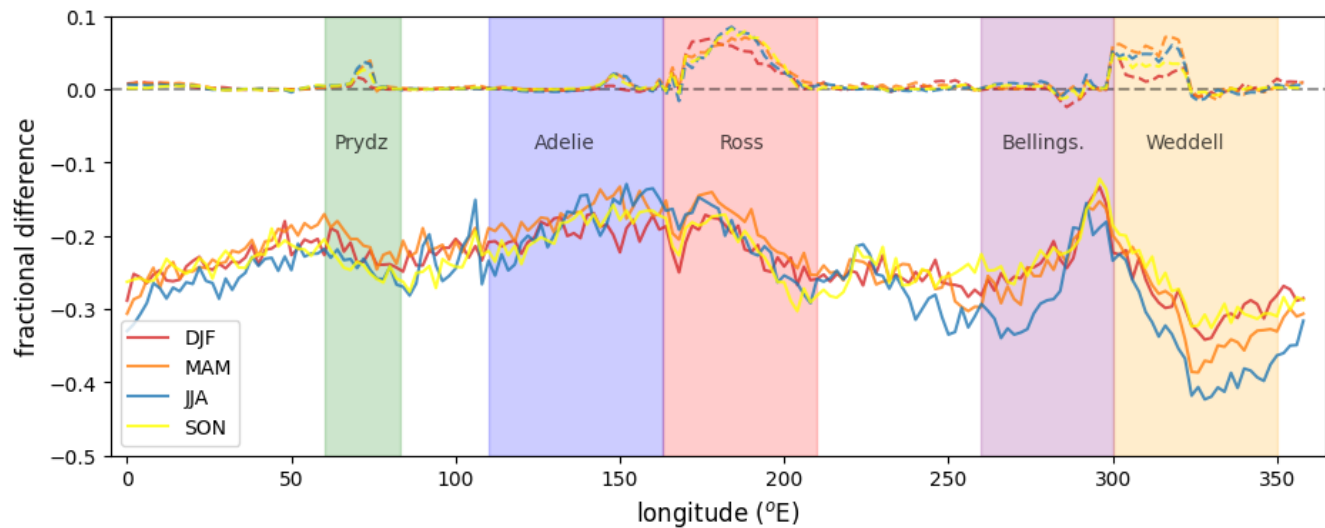


Figure S4. Seasonal plots of the fractional difference (as defined in Eq. 3) between the ACWB and the JLI (bottom, solid) and MZWB (top, dashed) from monthly ERA5 wind data from 1980-2023.

4 Future projections for different emissions scenarios

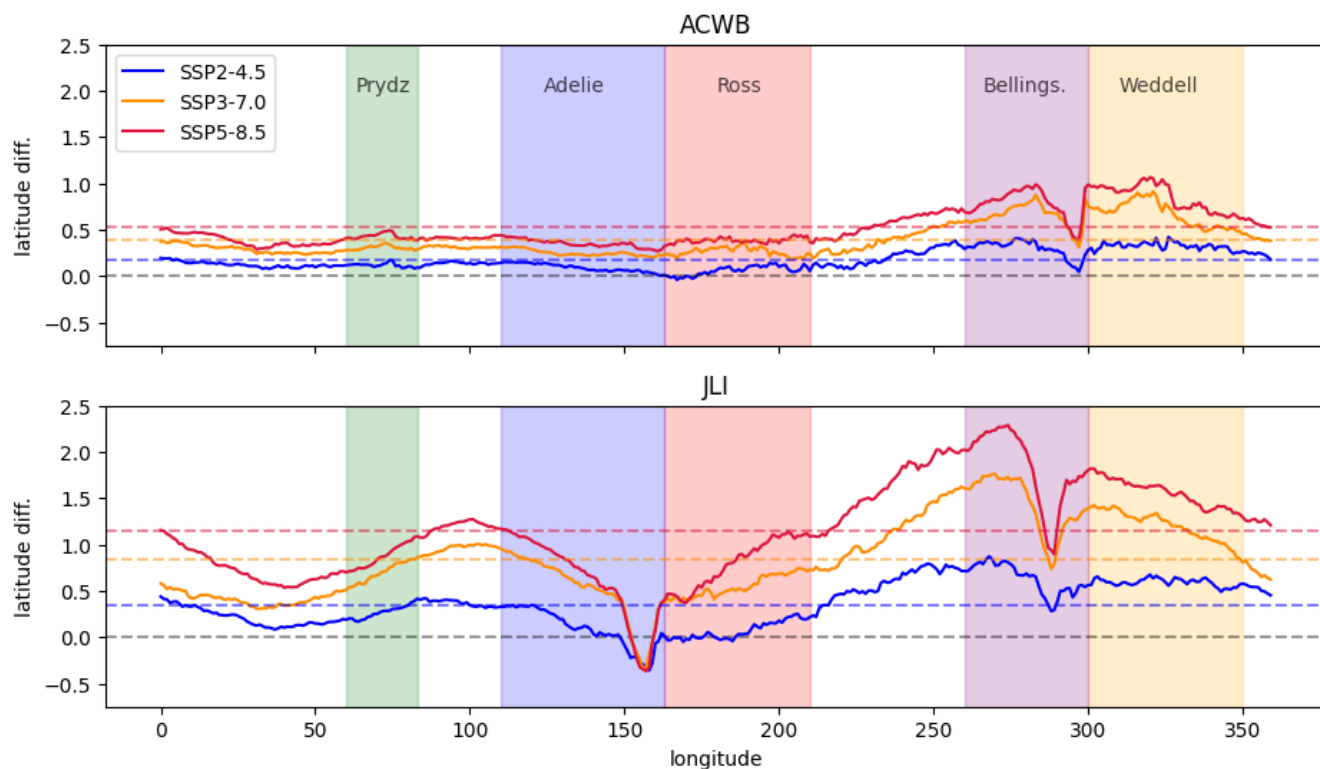


Figure S5. A comparison of future projections based on different greenhouse gas emission scenarios for the ACWB (upper plot) and JLI (lower plot). Plots show the latitudinal difference between the periods 2020-2039 and 2080-2099 for each boundary. Blue, orange and red lines show the SSP2-4.5, SSP3-7.0 and SSP5-8.5 scenarios respectively. Coloured, dashed lines show the longitudinal mean of this difference, while the grey, dashed line runs through 0 difference.