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*Supplement of*

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

**Archie Cable et al.**

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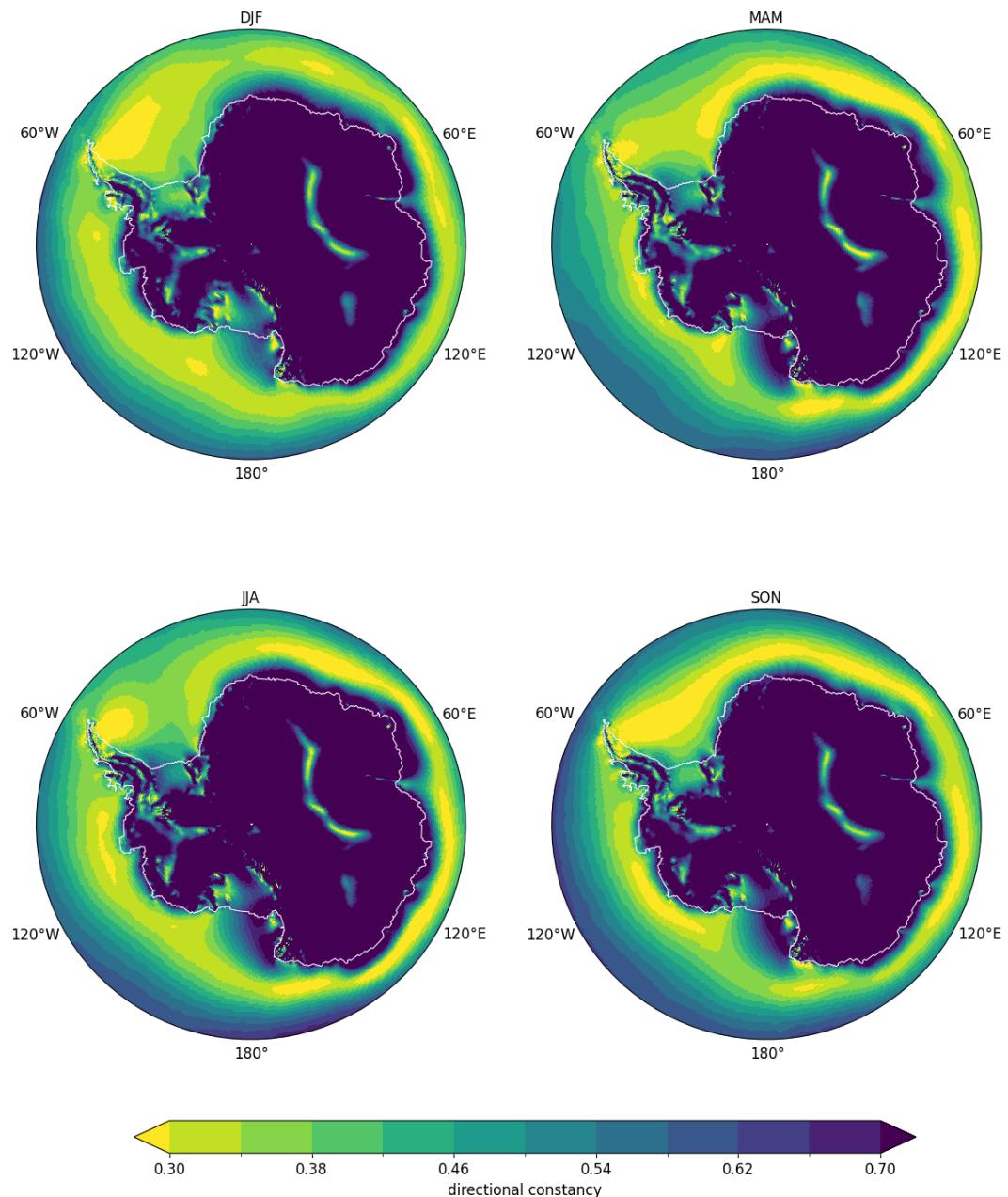
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## 1 List of CMIP6 models used

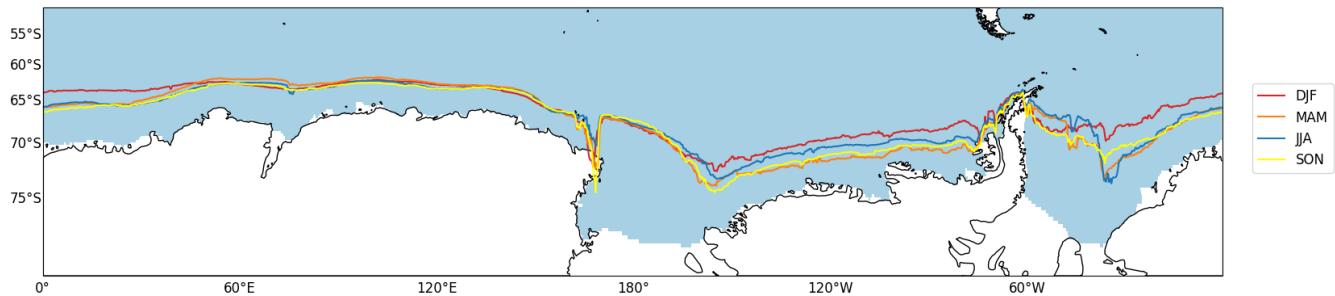
**Table S1: List of CMIP6 models used**

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

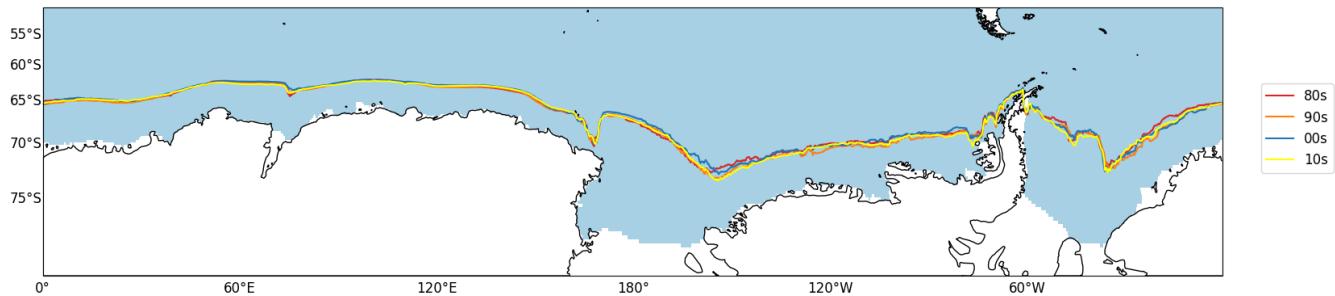
## 2 Seasonal and decadal average plots of directional constancy from ERA5



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

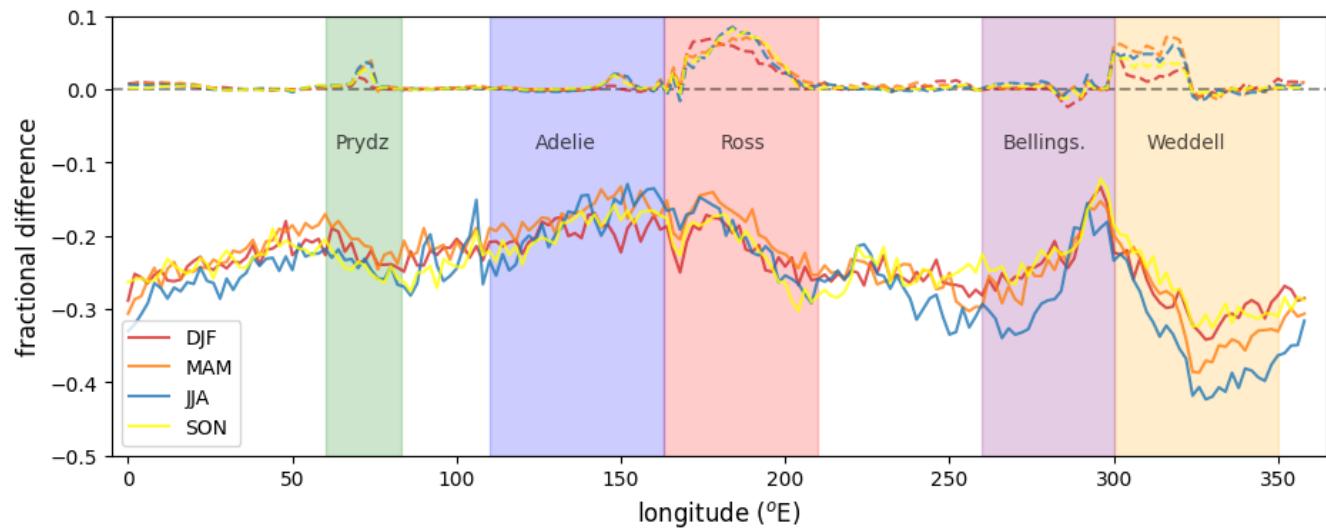


**Figure S2.** Seasonal position of the ACWB, calculated by taking the seasonal-average over monthly ERA5 wind data from 1980-2023.



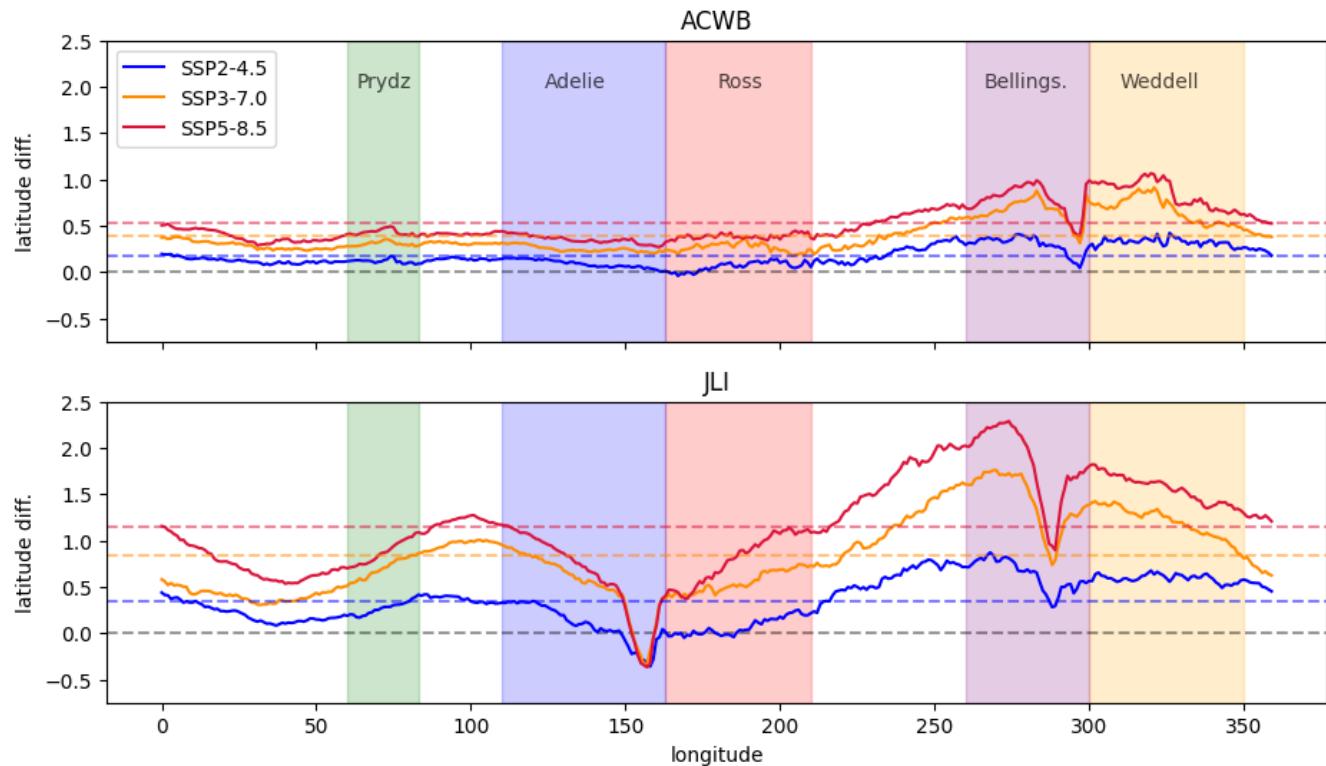
**Figure S3.** The decadal average position of the ACWB calculated using monthly ERA5 wind data from the 1980s through to the 2010s.

### 5 3 Seasonality of ACWB against other climate indices



**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.