

# Supplementary Information

## **Response of Southern Hemisphere western boundary current regions to future zonally symmetric and asymmetric atmospheric changes**

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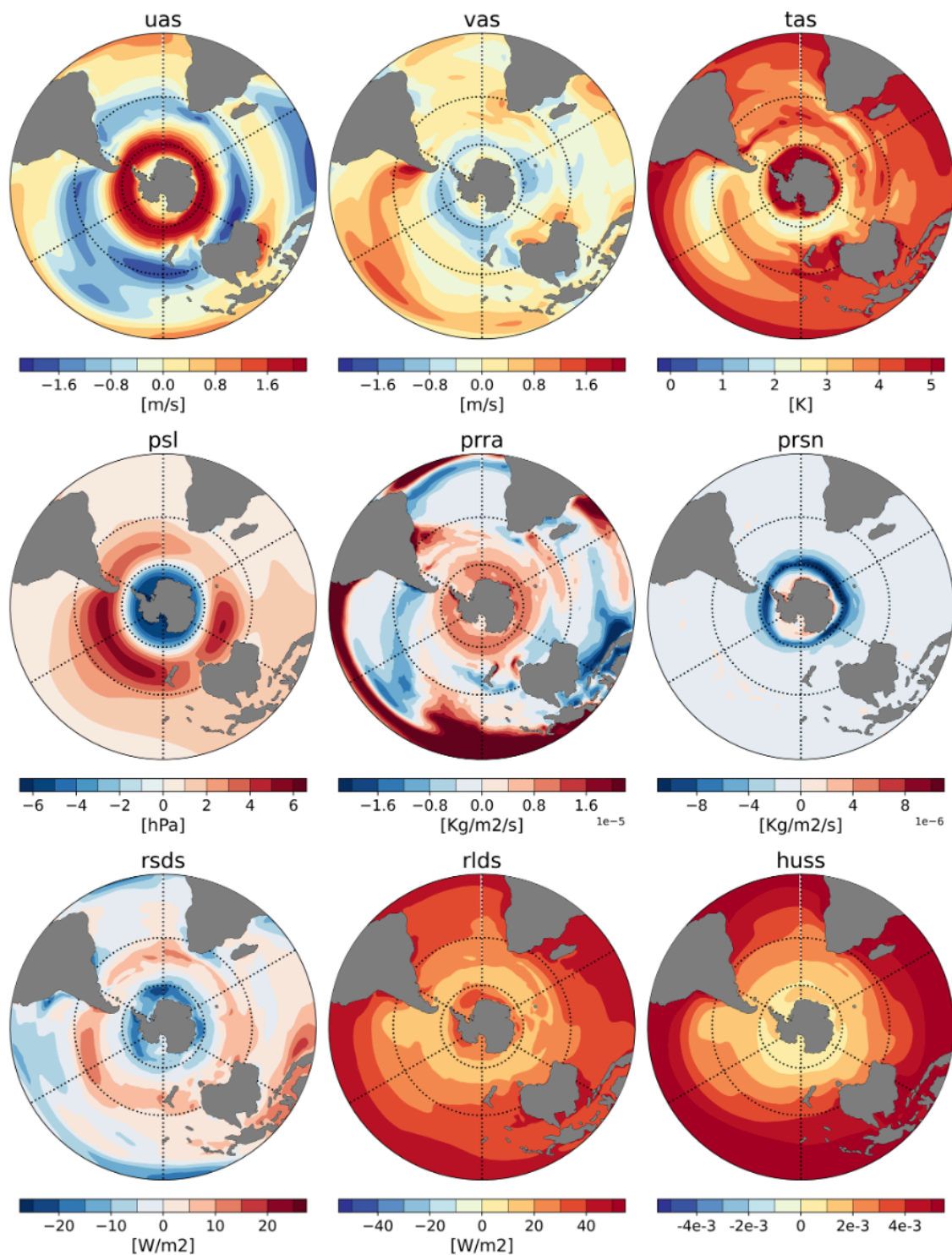
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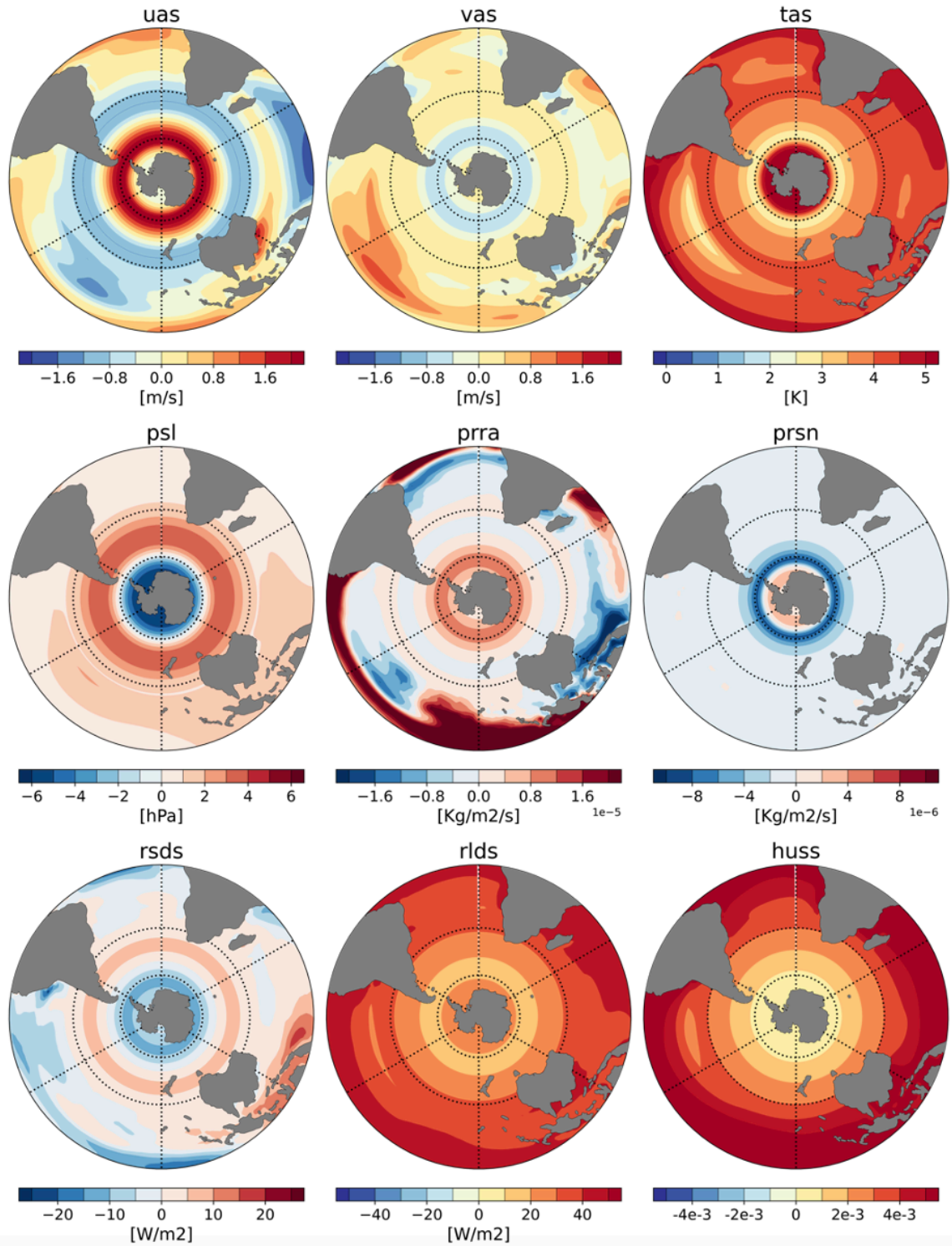
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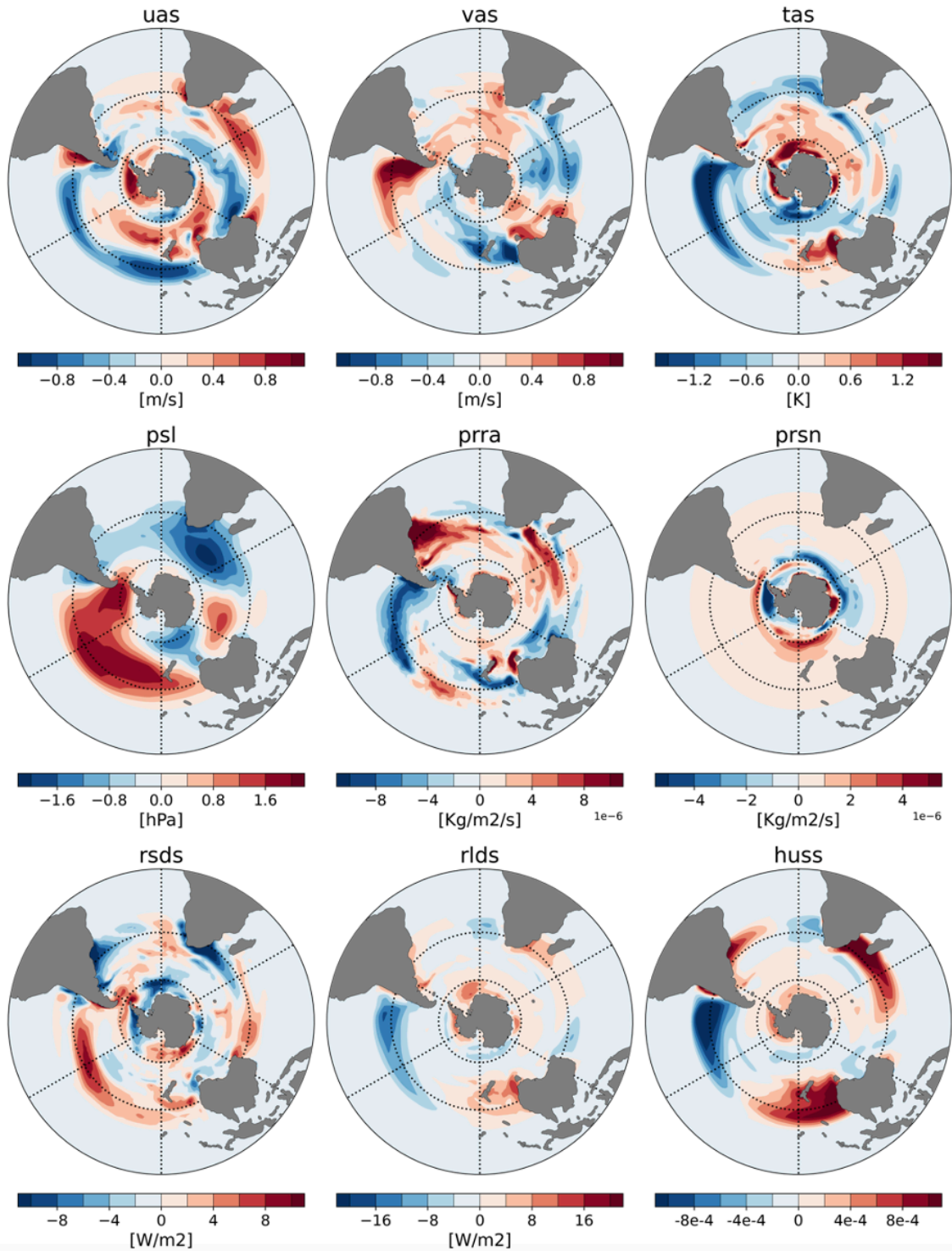
Figures S1 – S5



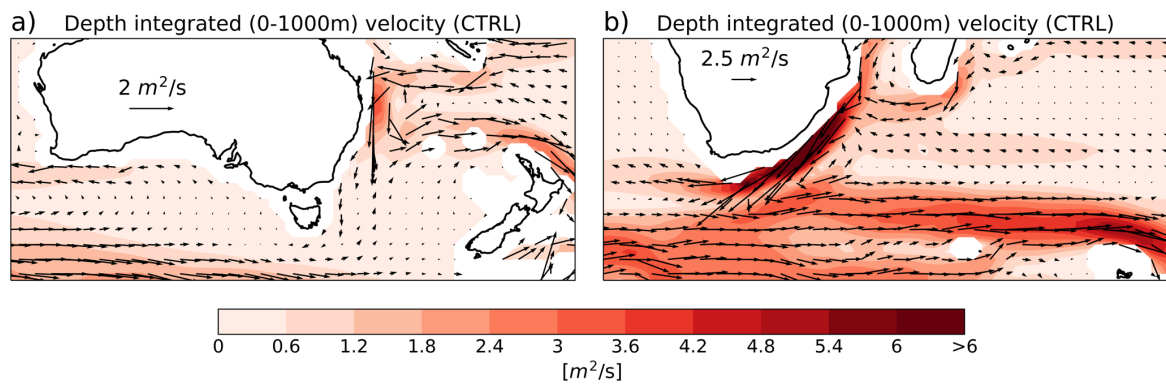
**Figure S1** | End of the 21<sup>st</sup> Century (2081-2100 average) atmospheric field annual averaged anomalies computed from the ACCESS-CM2 simulations for the *Future* simulations. All anomalies are computed from the mean of three ensemble members of ACCESS-CM2. uas – surface zonal wind, vas – surface meridional wind, tas – surface air temperature, psl – mean sea level pressure, prra – convection precipitation rate, prsn – snowfall rate, rsds – shortwave radiation flux, rlws – longwave radiation flux, huss – specific humidity.



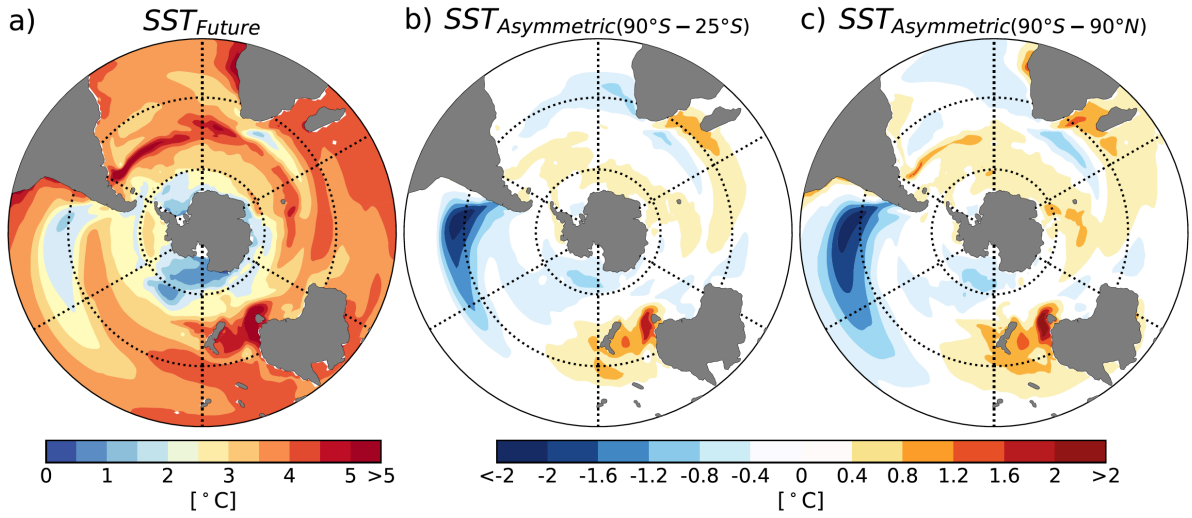
**Figure S2** | Same as Fig. S1 but for *Symmetric* simulation. Zonal mean anomalies are prescribed south of 25°S and full anomalies (same as Fig. S1) are applied everywhere. Linear tapering is provided between 20-25°S.



**Figure S3** | Difference between prescribed end of the 21<sup>st</sup> Century (2081-2100) annual averaged anomalies in the Future (Fig. S1) and the Symmetric (Fig. S2) simulations.



**Figure S4** | Depth integrated (0-1000 meters) ocean current velocities in the Pacific (Panel a) and in the Indian Ocean (Panel b).



**Figure S5 |** Sea Surface Temperature (SST) response in different model simulations. Panel a) shows SST response in the *Future* simulation, panel b) shows SST response because of zonally asymmetric atmospheric changes in the *Symmetric* simulation where zonally symmetric future anomalies are prescribed south of 25°S and full anomalies are prescribed everywhere else (refer to methods for detail) and panel c) shows SST response because of zonally asymmetric atmospheric changes in a simulation where zonally symmetric future atmospheric anomalies are prescribed throughout the globe.