

Supporting Information for "The Southern Ocean Radiative Bias, Cloud Compensating Errors and Effective Climate Sensitivity in CMIP6 Models"

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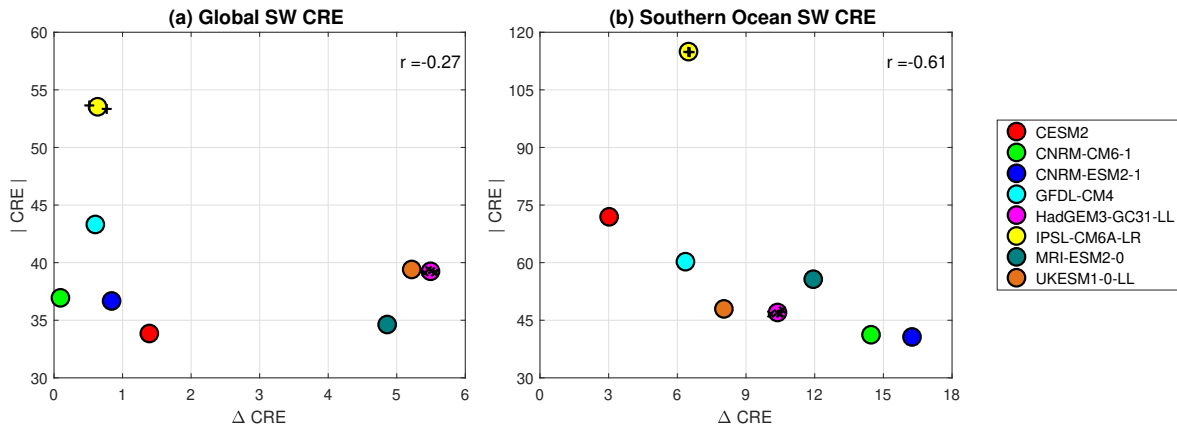


Figure S1. The $\Delta \text{SW CRE}$ and $|\text{SW CRE}|$ for each of the models. Subplot (a) shows the global average values while subplot (b) covers the entire Southern Ocean region, defined here as between 40°S and 70°S . This figure is the same as figure 2 from the main body of the paper but generated with the data from 2009 and 2010 instead of 2007 and 2008.

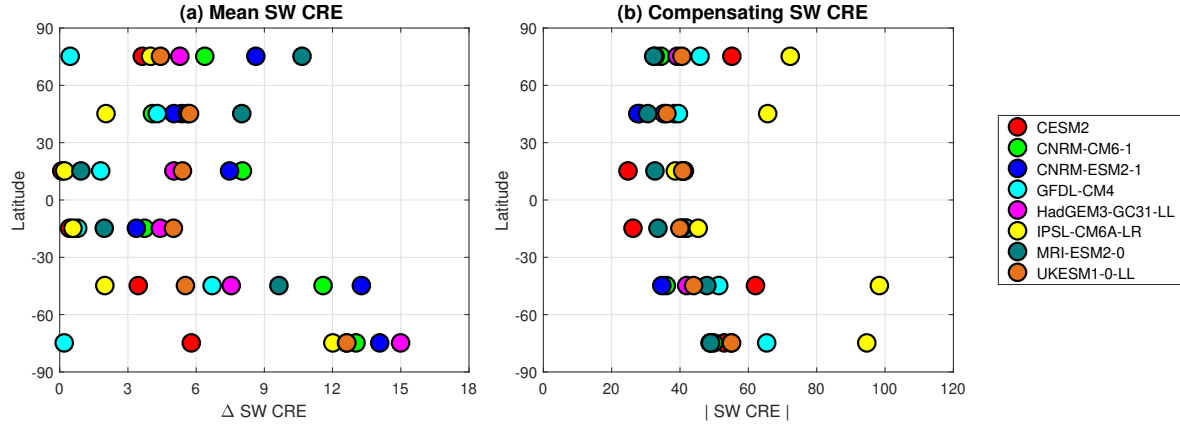


Figure S2. The Δ SW CRE and $|\text{SW CRE}|$ for each of the models across a wide range of latitudes. Subplot (a) shows the Δ SW CRE in six different latitudinal regions while subplot (b) shows $|\text{SW CRE}|$ over the same region. The six latitudinal bands are $90^\circ S$ to $60^\circ S$, $60^\circ S$ to $30^\circ S$, $30^\circ S$ to $0^\circ S$, $0^\circ S$ to $30^\circ N$, $30^\circ N$ to $60^\circ N$ and $60^\circ N$ to $90^\circ N$

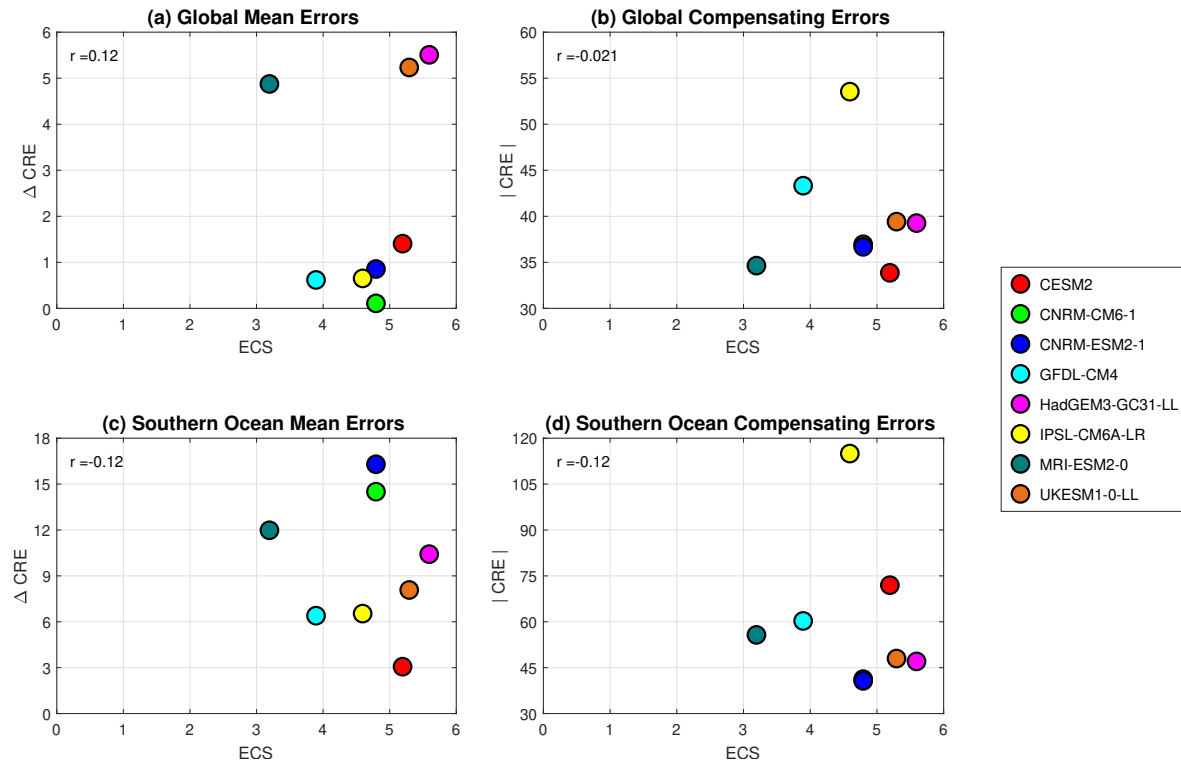


Figure S3. The ECS and the mean and compensating SW CRE errors of the included CMIP6 models. This includes both global and Southern Ocean data, defined here as between 40°S and 70°S . Subplot (a) shows the global $\Delta\text{SW CRE}$, subplot (b) shows global $|\text{SW CRE}|$, subplot (c) shows the Southern Ocean $\Delta\text{SW CRE}$ and subplot (d) shows Southern Ocean $|\text{SW CRE}|$. This figure is the same as figure 3 from the main body of the paper but generated with the data from 2009 and 2010 instead of 2007 and 2008.

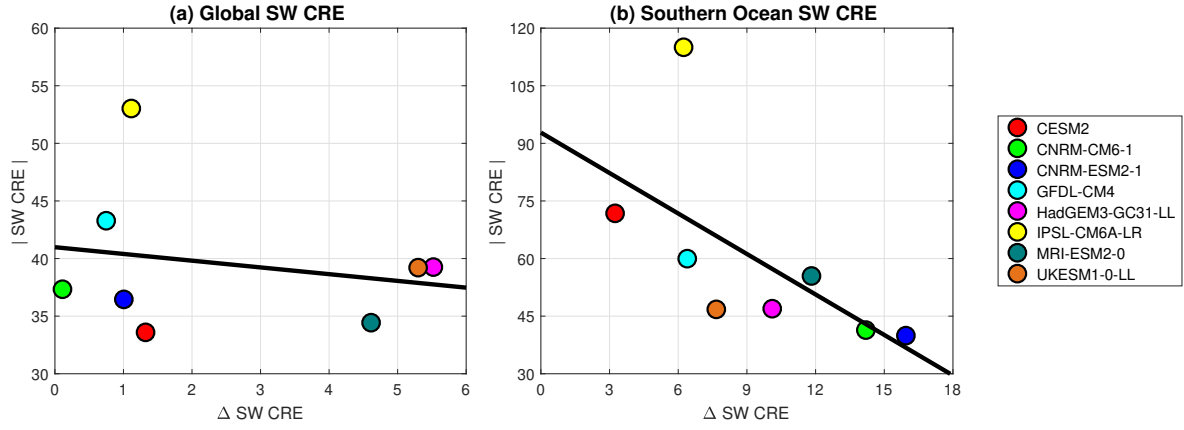


Figure S4. The Δ SW CRE and $|$ SW CRE $|$ for each of the models. Subplot (a) shows the global average values while subplot (b) covers the entire Southern Ocean region, defined here as between $40^{\circ}S$ and $70^{\circ}S$. Included is a line of best fit determined with a simple linear regression.

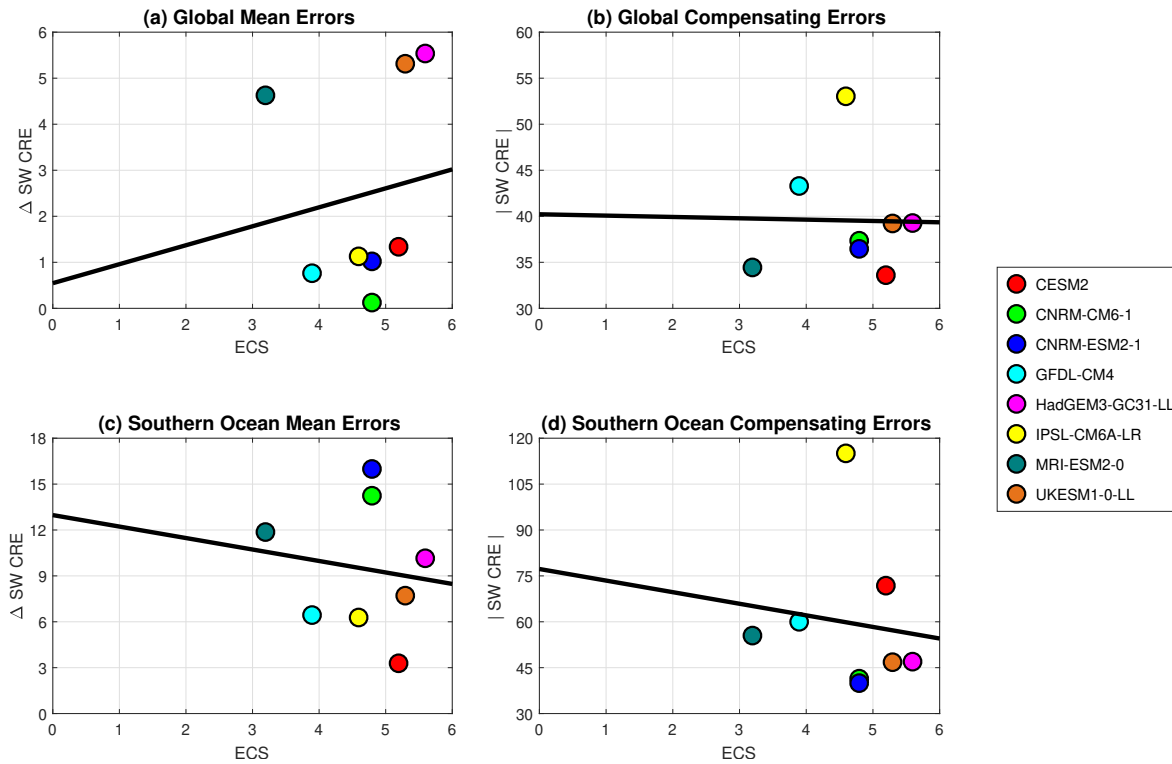


Figure S5. The ECS and the mean and compensating SW CRE errors of the included CMIP6 models. This includes both global and Southern Ocean, defined here as between $40^{\circ}S$ and $70^{\circ}S$, confined data. Subplot (a) shows the global Δ SW CRE, subplot (b) shows global $|$ SW CRE $|$, subplot (c) shows the Southern Ocean Δ SW CRE and subplot (d) shows Southern Ocean $|$ SW CRE $|$. Included is a line of best fit determined with a simple linear regression.