Corrigendum

Jake Aylmer,[a] David Ferreira,[a] Daniel Feltham[b]

[a] *Department of Meteorology, University of Reading, Reading, United Kingdom*

[b] *Centre for Polar Observation and Modelling, University of Reading, Reading, United Kingdom*

Corresponding author: Jake Aylmer, j.r.aylmer@pgr.reading.ac.uk

We have become aware of a calculation error in Aylmer et al. (2020; hereafter A20). For the mean ice thickness, $\langle H_i \rangle$, and mean heat transport convergences, h_o and h_a, the area-weighting factor was omitted. This has not had a substantial impact and the main results and conclusions of A20 are unaffected.

Figure 2b shows the corrected time series of $\langle H_i \rangle$ (*c.f.* Fig. 2b of A20). The annual-mean ice thickness was stated to be 1.44 m in the EBM; this should be 1.21 m, which remains a reasonable value. Using the unweighted average in Eq. (13) of A20 amounts to a 1% difference in the estimate of s_o/s_a compared to using the correct average. Testing of Eq. (13) of A20 with different values of B_{OLR} and B_{dn} (appendix B of A20) still yields estimates of s_o/s_a accurate to within 5% of the (corrected) experimentally-derived values.

Because the heat transport convergences are roughly independent of latitude at high latitudes, the impacts on the K_a and F_{bp} sensitivity experiments (Figs. 4 and 5 of A20) are negligible. The sensitivities are affected by a few percent (Table 2).

The K_o sensitivity experiment (Fig. 3) is moderately affected because increases in h_o due to varying K_o are concentrated near the ice edge where the area weighting is greater. The range of variation of h_o is about 3 times larger than given in A20, and the seasonal sensitivities are about a factor of 3 smaller. The reduction in $\Delta\phi_i/\Delta h_o$ between the seasonal and perennial ice cover cases is about a factor of 40 (not 20 as given in A20). We stated that the value of h_o required to give a seasonally ice-free solution when varying F_{bp} was about the same as that when varying K_o—actually, it is about half, which is consistent with our discussion in section 4c paragraph 3. Overall, our qualitative description of the K_o sensitivity analysis holds with the corrected numerical results. Particularly, we concluded that in a seasonally-ice-free climate, enhanced OHTC near the ice edge plays a less dramatic role than in a perennial-ice climate, which is (more-so) consistent with the numbers given here.

REFERENCES

Aylmer, J., D. Ferreira, and D. Feltham, 2020: Impacts of Oceanic and Atmospheric Heat Transports on Sea Ice Extent. *J. Climate*, **33**, 7197–7215, https://doi.org/10.1175/JCLI-D-19-0761.1.

TABLES

p	Ice cover	$\Delta\phi_i/\Delta h_a$	$\Delta\phi_i/\Delta h_o$	s_a	s_o
K_a	Perennial	0.35	—	0.35	—
	Seasonal	0.83	—	0.83	—
	Seasonal*	0.44	—	0.44	—
K_o	Perennial	—	**~1.9**	**—**	**~1.7**
	Seasonal	—	**0.05**	**—**	**0.18**
	Seasonal*	—	**0.06**	**—**	**0.13**
F_{bp}	Perennial	—	0.43	—	0.68
	Seasonal	—	0.52	—	0.82
	Seasonal*	—	0.26	—	0.42

Table 2: Updated summary of results, with significantly impacted values (more than 10% error in A20) in bold.

FIGURES

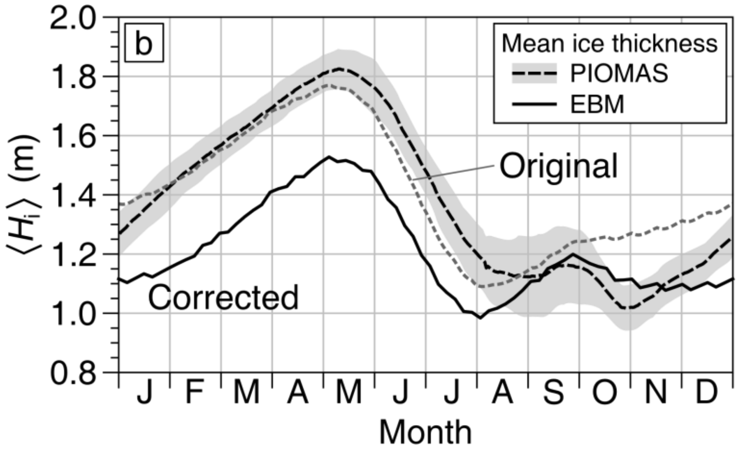

Figure 2b: Area-weighted mean sea ice thickness in the EBM (black, solid), compared to observations (PIOMAS; black, dashed) and the erroneously calculated series without area weighting in A20 (grey, dashed).

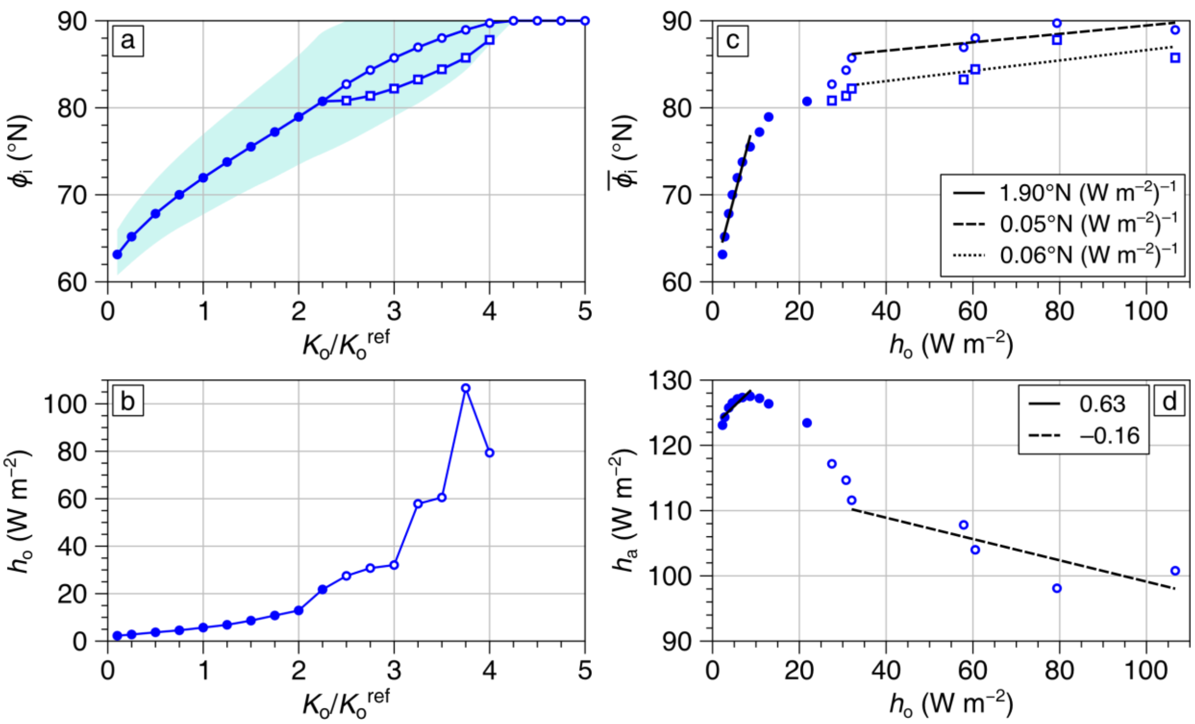

Figure 3: Updated results of the K_o sensitivity experiment. Fits are made to the same subset of simulations as in A20. Note that panel (a) is unaffected.