

Interactive comment on “Reconciling the north–south density difference scaling for the Meridional Overturning Circulation strength with geostrophy” by A. A. Cimadoribus et al.

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Equations (3) and (4) are given with “ \sim ” rather than a form with an explicit scaling factor, e.g.

$$\Psi \sim a \Delta b h^{**2}/(2f)$$

where $a = 1$ corresponds to the transport expected if the “usual” thermal wind equation applies. [Here “ b ” refers to gravitational acceleration \times density, otherwise notation is as in the OSD paper].

Moreover, figure 5 is plotted with axis scales normalised to the maximum of Ψ (“ x ” axis)

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and the scaling formula (“ y ” axis).

It would be interesting if the equations (3) and (4) and figure 5 axes could be given with fully explicit scaling so that effective scaling factors “ a ” for (3) or (4) could be estimated. For example, it might be found that $a \approx 1$ for the properly “aligned” equation (3) but that a is distinctly less than 1 for the “mis-aligned” equation (4) – depending on where Δb are taken.

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