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Interactive comment on "Reconciling the north–south density difference scaling for the Meridional Overturning Circulation strength with geostrophy" *by* A. A. Cimatoribus et al.

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Equations (3) and (4) are given with "∼" rather than a form with an explicit scaling factor, e.g.

$\Psi \sim$ a Δb h**2/(2f)

where a = 1 corresponds to the transport expected if the "usual" thermal wind equation applies. [Here "b" refers to gravitational acceleration x 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 ≈ 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.

Interactive comment on Ocean Sci. Discuss., 10, 2461, 2013.