Erratum to "Flow transitions resembling bifurcations of the logistic map in simulations of the baroclinic rotating annulus" by R. M. B. Young and P. L. Read [Physica D, 237, 2251–2262 (2008)]

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The authors regret that there are a number of minor errors in this paper, which should be corrected. None affect the results or conclusions of the work.

(1) The Taylor numbers ($\mathcal{T}$) and thermal Rossby numbers (Θ) quoted in this work are incorrect. Our calculations used the kinematic viscosity $\nu = 1.66 \times 10^{-2}\,\mathrm{cm^2\,s^{-1}}$ ($1.66 \times 10^{-6}\,\mathrm{m^2\,s^{-1}}$) and volumetric expansion coefficient $\alpha = (-1/\rho)\partial\rho/\partial T = 2.86 \times 10^{-4}\,\mathrm{K^{-1}}$ from the "main comparison" in Table 1 of Hignett et al. [1], but the values in this table apply to laboratory measurements. Because we used the equations below that table in our numerical model to calculate ν and ρ as a function of temperature, we should instead have used these equations to find the values of ν and α when calculating the Taylor and thermal Rossby numbers. These equations give $\nu = 1.715 \times 10^{-2}\,\mathrm{cm^2\,s^{-1}}$ ($1.715 \times 10^{-6}\,\mathrm{m^2\,s^{-1}}$) and $\alpha = 2.755 \times 10^{-4}\,\mathrm{K^{-1}}$ at 20 °C. The equations used to calculate the fluid parameters are already included in our model, so just the quoted values are incorrect.

Taylor number varies with ν^{-2}, so to obtain the correct values our quoted Taylor numbers are multiplied by

$$\left(\frac{1.66 \times 10^{-2}}{1.715 \times 10^{-2}}\right)^2 = 0.9372$$

Thermal Rossby number varies with α, so to obtain the correct values our quoted thermal Rossby numbers are multiplied by

$$\frac{2.755 \times 10^{-4}}{2.86 \times 10^{-4}} = 0.9633$$

As well as a few places in the text, this changes the x- and y-axis scales on a few of the figures. New versions of these figures can be found in the Supplementary Online Material.

(2) For the same reason the quoted Prandtl number is incorrect. Using the equations in Hignett et al. [1] the thermal diffusivity is $\kappa = 1.284 \times 10^{-3}\,\mathrm{cm^2\,s^{-1}}$ ($1.284 \times 10^{-7}\,\mathrm{m^2\,s^{-1}}$) at 20 °C, which makes the Prandtl number ν/κ quoted in Table 1 equal to 13.4 instead of 13.1. While this is slightly different to the experimental results we were measuring against, the error in the experimental value of the Prandtl number is large enough for the two to be indistinguishable.

(3) On p. 2257 we state that around $\mathcal{T} \approx 4 \times 10^6$ in Fig. 9 (note this was corrected to 3.75×10^6 above) there is an event characteristic of a boundary crisis. This should be an *interior* crisis. In a boundary crisis the chaotic attractor and its basin of attraction are destroyed by variation of a controlling parameter, while in an interior crisis the size of the chaotic attractor suddenly changes [2].

(4) The delay times τ in the captions to Figs 5, 6, 7, and 8 are incorrect, and should read 52.5, 75, 42.5, and 60 s respectively. The end of line one in column two of page 2256 should read "$0.5 \leq t_s/\mathrm{s} \leq 2.5$", and the end of line four in column one of page 2257 should read "40–120 t_s (20–300 s)".

(5) In the captions to Figs 12a and 12b it should read $\mathcal{T} = ...$ instead of $T = ...$

(6) In Fig. 13 the 0.000 is missing from the y-axis and so the labels do not line up correctly. The major tick marks should be separated by 0.001 (-0.001 through 0.004). The Supplementary Online Material contains a corrected figure.

[1] P. Hignett, A. A. White, R. D. Carter, W. D. N. Jackson, R. M. Small, A comparison of laboratory measurements and numerical simulations of baroclinic wave flows in a rotating cylindrical annulus, Q. J. R. Meteorol. Soc. 111 (467) (1985) 131–154, doi: 10.1002/qj.49711146705.

[2] C. Grebogi, E. Ott, J. A. Yorke, Crises, sudden changes in chaotic attractors, and transient chaos, Physica D 7D (1–3) (1983) 181–200, doi:10.1016/0167-2789(83)90126-4.

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Supplementary online material

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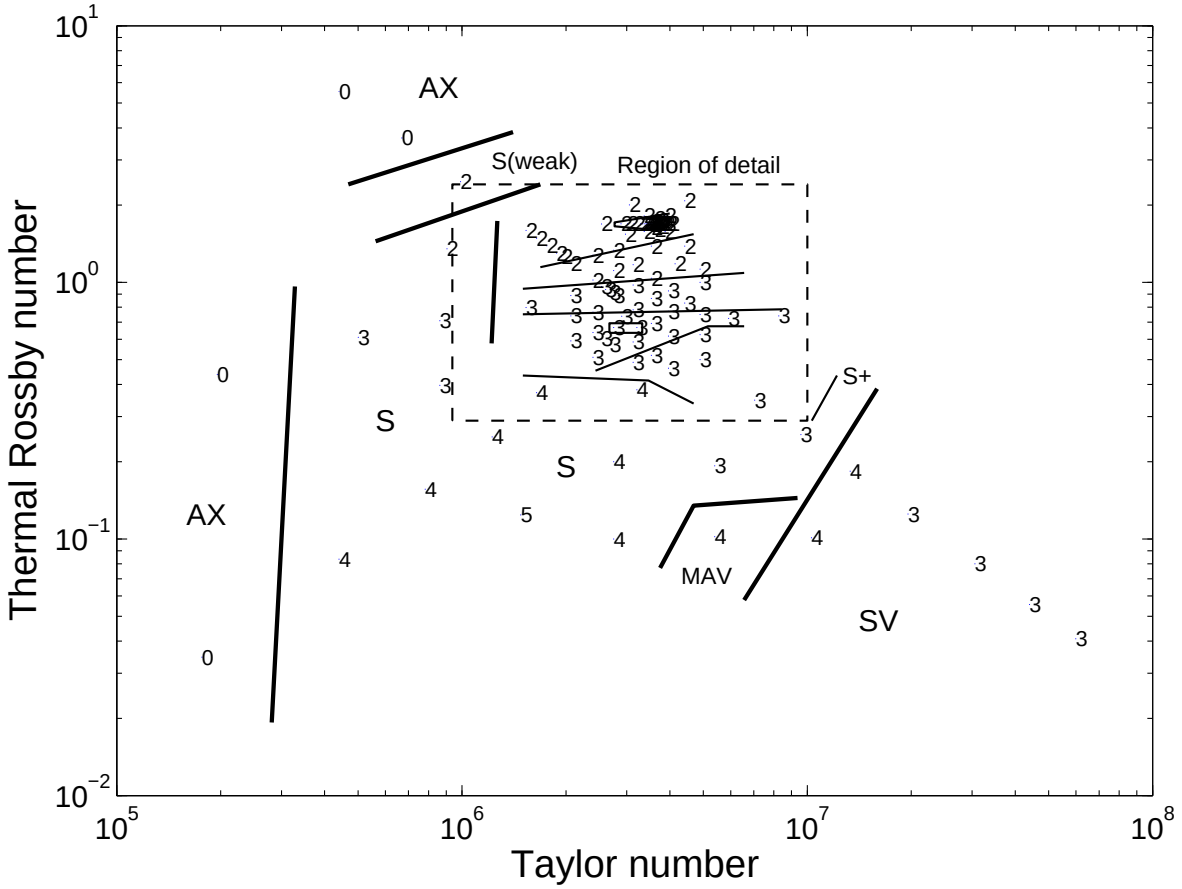

Figure 1: Replacement for Fig. 3a with correct x- and y-axis scales.

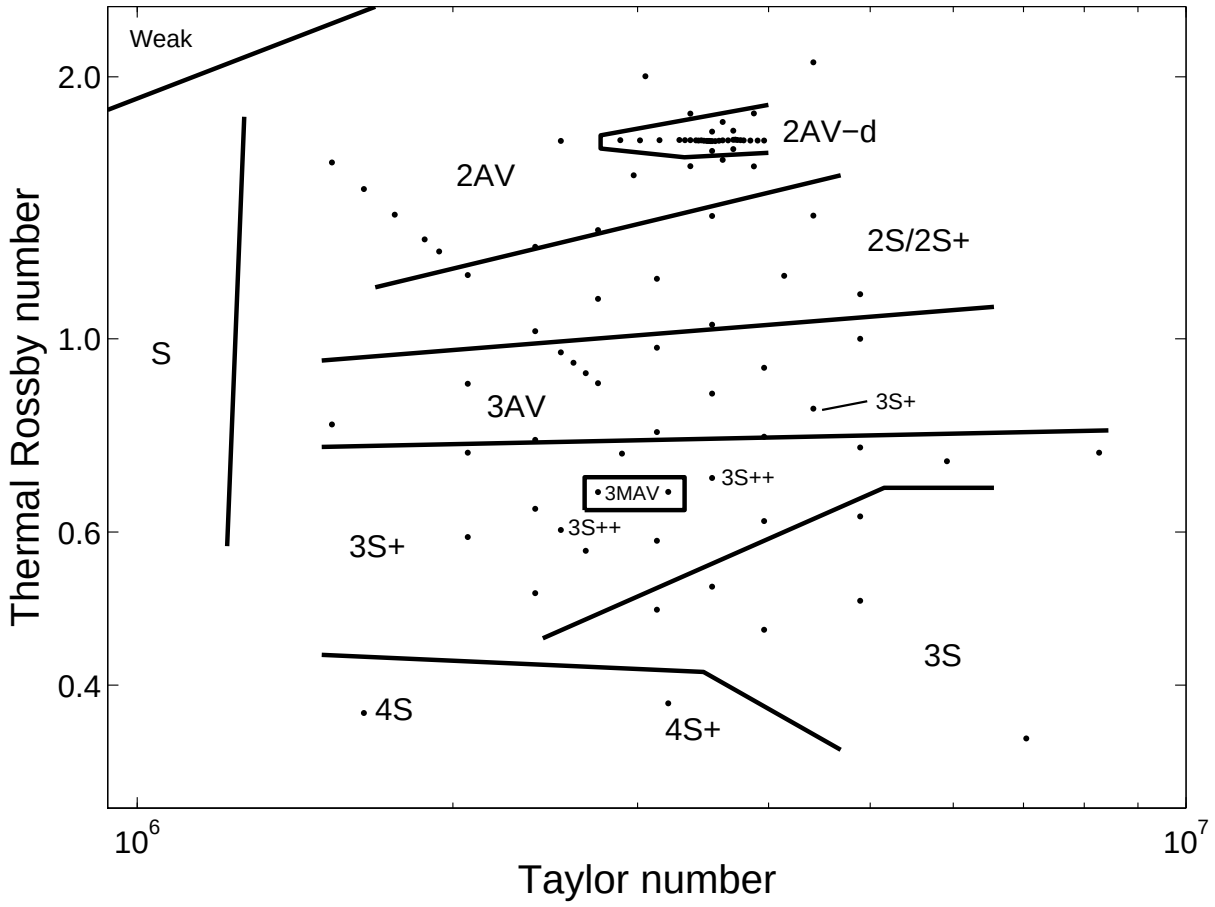

Figure 2: Replacement for Fig. 3b with correct x- and y-axis scales.

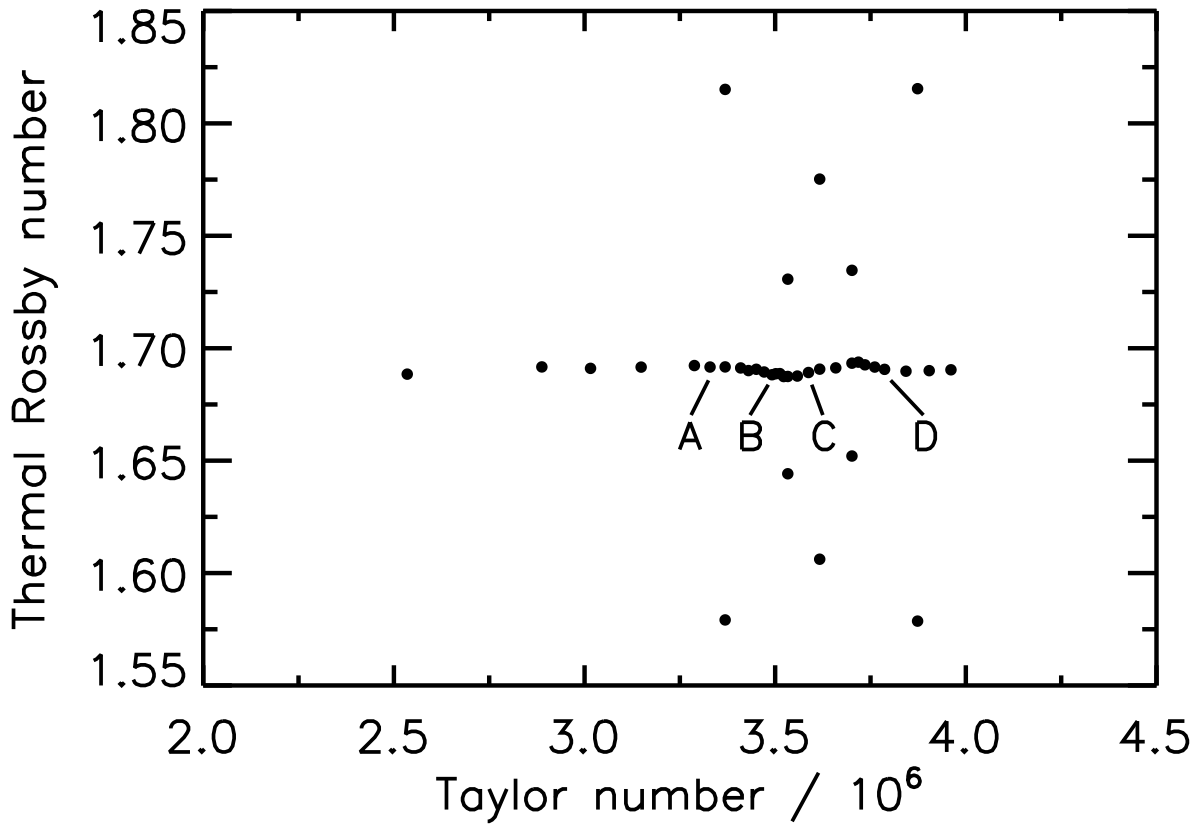

Figure 3: Replacement for Fig. 4 with correct x- and y-axis scales.

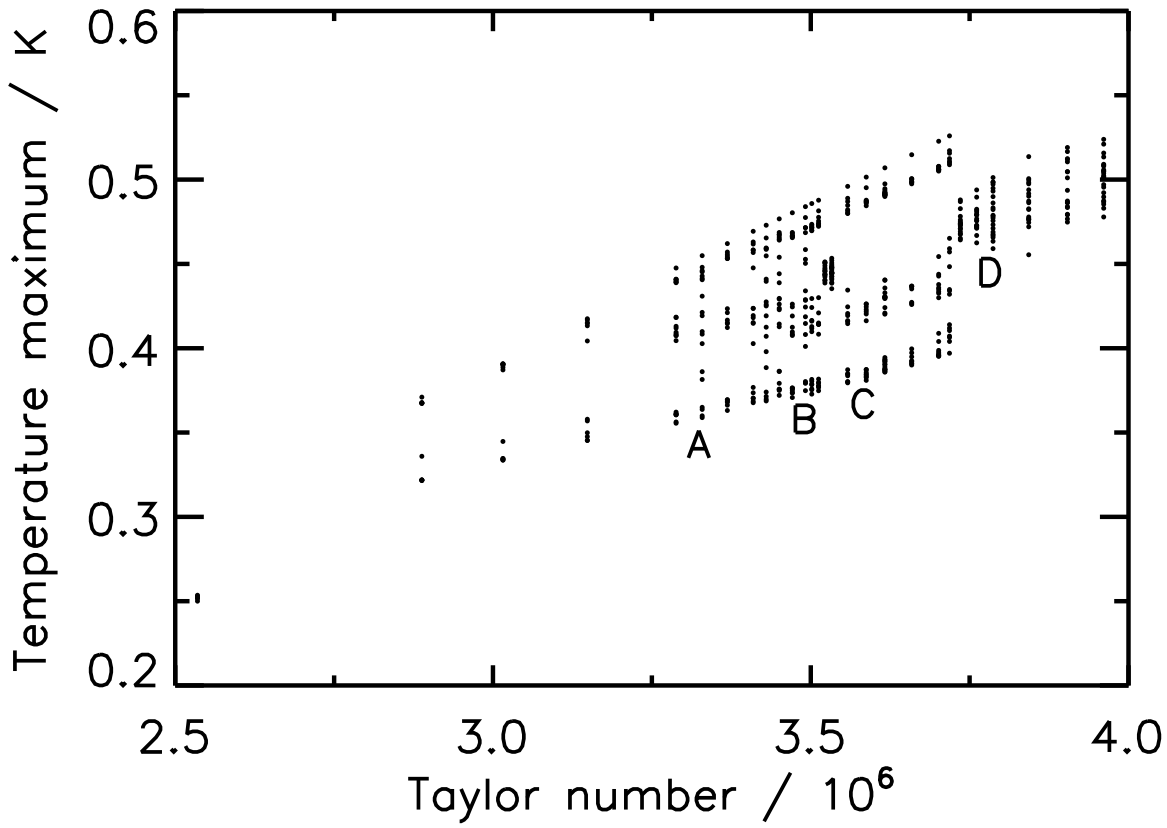

Figure 4: Replacement for Fig. 9 with correct x-axis scale.

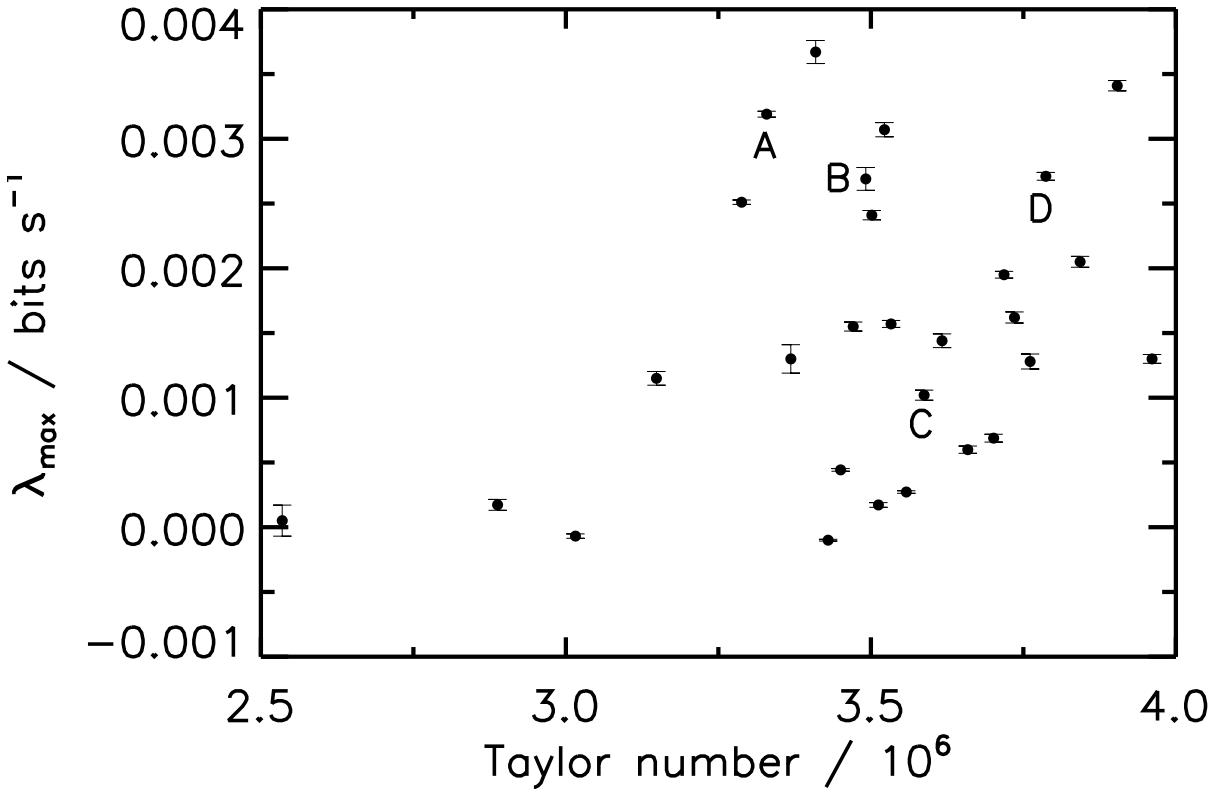

Figure 5: Replacement for Fig. 13 with correct x- and y-axis scales.