Review of "**Effects of nonlinear rheology, temperature and anisotropy on the relationship between age and depth at ice divides**" by *C. Martín* and *G. H. Gudmundsson*.

In this paper the authors explore the important, and interesting, effects of nonlinearity, anisotropy and temperature on the flow of ice at ice divides using a sophisticated numerical model.

The figures are good, but there should be better labels on the figures themselves. Take Figure 1 for instance, time is marked on x-axis which is distance (which should be labeled, time could be in between the two rows), and α values should be shown as y-labels.

However, the description of fabric is simplified and $\partial_x u + \partial_z w = 0$ assumed, which might be restricting some of the effects of anisotropy. This should at least be discussed (see f.exs. Thorsteinsson and Waddington (2002; Annals of Glaciology)).

Comments
P2222
> L5. "Here, we … effects of ice flow …". This should be turned around a little, and state that "... effects of non-linear anisotropic … ice flow on …", that is, it is the nonlinearity and anisotropy (temperature) that affect the ice flow, and thus the depth-age relation.
> L11. Change "~~We also show that~~ divides …" to "Divides …"
> L19. Somewhat strange wording, "changes in climate fit within a long history of …". Compare to previous changes in climate?
> L24. "... of the ice~~;~~ (e.g. …"

P2223
> L19. "... model used,~~. They~~ which includes …" - as one sentence.
> L21. "... models that ~~than~~ assume …"

P2224
> L2. Nothing in Pettit et al. (2007; 2011), maybe not?

P2227
> Should discuss a bit the assumptions made for the ODF chosen, even though there is a citation.

P2229
> L1-6. Are the authors certain that they are not missing any effects of anisotropy with these assumptions?

P2230
> L10. It would be good if the authors addressed the likelihood of recrystallization occurring at the divide. What is the temperature near the base, total strain, …

P2231.

L14. Strain responsible for fabric, unless recrystallization.

P2235

L14. These effects would move dept-age relations closer to analytical solutions?

P2236

L6. See discussion in Thorsteinsson and Waddington (2002; AG).

L18. Would it be possible to show a "real" example of these effects? Would be a strong move.

P2237

L1. Compared to $\alpha = 0$ or $\alpha = 1$?

Figures
See comment in the beginning; applies to Figure 2 also.

Figure 2. Caption: ".. girdle and ~~at~~ K > 1 …"
Figure 3. Caption: "Vertical velocity (top) and age of the ice (bottom) along …"
Figure 4. Label subplots. Caption also unclear about which is which.