

Response to Editorial Comments

Editorial Comments:

"using a leapfrog time differencing scheme to forward the temperature and salinity so as the overturning rate". - It appears a verb is missing from "so as the overturning rate"?

RE: Thanks for your careful checking. We have revised this sentence in L355-356.

L355-356:

we use a leapfrog time differencing scheme to forward the temperature and salinity to obtain the time series.

"a small perturbation on the solution will grow exponentially (Shen et al., 2011), so it is rather than a physical solution" - not clear what you mean by " so it is rather than a physical solution", please clarify.

RE: Following your suggestion, the sentences have been rewritten (L356-359). Thanks.

L356-359:

For an unstable solution obtained by setting the time tendency to zero, a small perturbation on the solution will grow exponentially (Shen et al., 2011), so it cannot be obtained by using the time differencing scheme. Thus, the equilibrium states resolved through integrating time tendency equations in this study do not include the unstable solution described by Shen et al. (2011).