

Dear editor and two reviewers,

We sincerely thank the editor for the meticulous review and approval of the article. Meanwhile, we also extend our sincere gratitude to the two reviewers for their painstaking efforts in reviewing the manuscript.

We are deeply grateful to the two reviewers for their affirmation and recognition of the overall structure as well as the language of the paper. We attach great importance to all the modification suggestions they have put forward. Among them, all the suggestions regarding text modification have been fully adopted.

You can make adjustments according to the actual situation. If you have any other requirements, please feel free to let me know.

For the lines you especially pointed out, such as Ln 56, Ln 60, Ln 79 and Ln 180, detailed revisions have been made.

Ln. 29 removed 'been'

Ln. 38 replaced 'facing' with 'to accommodate'

Ln. 39 replaced 'This chapter will give' with 'Chapter 2 provides'

Ln. 53 replaced 'fields' with 'variables'

Ln. 54 replaced 'timeliness' with 'time needed'

Ln. 56 replaced 'and the time spent in having ...' with 'computational efficiency'

Ln. 59 replaced 'In regional, rather than global' with 'Unlike in global models, in regional models ...'

Ln. 61 replaced 'the limited domain' with 'the regional domain'

Ln. 62 replaced 'is crucial' with 'desirable', not crucial.

Ln. 65 replace 'link' with 'linked'

Ln. 65 What is the 'class of data assimilation'?

Different class of data assimilation means we use different data sets and method to assimilate. Sometimes, due to various reasons, such as network issues or problems with the data sets itself, we fail to obtain the observation data on time. In such cases, we have classified these situations.

Ln. 66 replaced 'cimmings' with 'Cummings'

Ln. 74 replaced 'must' with 'can'

Ln. 77 replaced 'among others' with 'such as'

Ln. 78 replaced 'can' with 'may'

Ln. 79 replaced 'including the use of a number of cores to produce the numerical solution that can be released in accordance with the correct forecast lead time' with 'while the number of cores used must be such that the forecast is produced on time'

Ln. 83 replaced 'lifecycle' with 'for'

Ln. 90 removed 'like'

Ln. 91 added 'for' after 'and'

Ln. 96 replaced 'others' to 'other'

Ln. 102 move d'ad-hoc' to after 'coded'

Ln. 108 145 173 replaced 'lifecycle' with 'workflow'

Ln. 179-180 rewrote 'In order to properly reproduce spatio-temporal scale of the ocean processes, there is a need to:' with 'To appropriately handle the spatio-temporal scale of the ocean process that requires reproduction, the following is necessary:'.