

Dear Editor,

Thanks for your careful reading, below is our response to your comments in blue font.

Comments to the Author:

Line 84 states that "the time step for IFS is 60 minutes". Is it the full time step of IFS, i.e. the time step at which all processes are solved, including the radiation scheme, the soil model, river routing, etc... ?

Same question for NEMO. 45 minutes is the time step generally used in ORCA1L75 for the dynamics (OPA). The ice model (LIM) has generally a longer time step, often synchronised with the coupling ones. That means a 3h time step for NEMO as a whole, with sub time stepping for the ocean dynamics. Please clarify this for both models.

The time step of IFS at T159L62 resolution is 60 minutes except for radiation that is solved only every 3 hours (but updated with cloud cover information in between two full computations). The time step for NEMO at ORCA1L75 resolution is 45 minutes, we use the same time step for the ocean and for the sea-ice.

This is clarified in the text L84-86.

Line 84: "for NEMO is 45 minutes" -> "for NEMO it is 45 minutes"

Revised as mentioned above.

SST, DJF, MAM, JJA, SON, MJJAS and NDJFM should be explicated as the first appearance. Add a white space after semicolon in the lists of citations.

As suggested, all these abbreviations are explicated at the first mention.

Remove a few double spaces remaining in the text.

Checked and removed a few double spaces, some visual large space is due to the "Justify Text" format in Microsoft word, should disappear in the final publication.

Line 110: "two types of the year" -> "two type of year" (??)

Corrected.

Line 149: W/m2 -> W m2 to be consistent with the rest of the text

Corrected.

Line 437: (Hind et al., 2016) -> Hind et al.(2016)

Corrected.

Fig.9: Meridioanl -> Meridional / Zoanl -> Zonal

Corrected.

Fig. 10: bottom left panel  $10^6\text{km}^2$  ->  $10^6 \text{ km}^2$  (add a space)

Revised.