

Comments on revised version.

I would like to thank the authors for the changes they made. I am appreciated that the authors took into account my previous comments. The manuscript is more clear and completed now.

Comments:

Lines 38-44: New sentence is too long with repetitions, please modify it: “However, due to large uncertainty in estimates of surface ocean partial pressure of CO₂ (pCO₂), the long-term average global ocean sea-air CO₂ flux during 2001-2015 estimated based on sea-air pCO₂ difference differ from -1.55 to -1.74 PgC yr⁻¹, and the maximum difference between global sea-air CO₂ flux in individual years reached nearly 0.6 PgC yr⁻¹ (Rödenbeck et al., 2014; Iida et al., 2015; Landschützer et al., 2014; Denvil-Sommer et al., 2019)”. It can be something like: However, due to large uncertainty in estimates of surface ocean partial pressure of CO₂ (pCO₂), the long-term average global ocean sea-air CO₂ flux during 2001-2015 differs from -1.55 to -1.74 PgC yr⁻¹ with the maximum difference in individual years nearly 0.6 PgC yr⁻¹ (Rödenbeck et al., 2014; Iida et al., 2015; Landschützer et al., 2014; Denvil-Sommer et al., 2019).”

Line 123: Need a space between “Interim” and “(Dee et al...”

Line 128: You use here a word “parameters” to call “predictors” or “indicators”. It appears further in the text as well (for example, in Conclusion, line 498). I think it can be misunderstood as parameters can be used to explain FFNN architecture. Please keep using words “predictors” or “indicators” throughout the text.

Line 138: Please indicate which method you used for downscaling.

Lines 184-187: Please change this sentence, it is difficult to read: “The mean absolute error (MAE) difference that before and after adding or removing one indicator in the input of FFNN calculated using a K-fold cross validation method was used to estimate the performance of each indicator in the FFNN predicating.”

Lines 318-320: Please combine these two sentences, it sounds like a repetition: “For example, month was considered as a recommended predictor in most provinces. Especially in the province P4 subpolar Atlantic and P5 north subtropical Atlantic, the parameter month was relatively more recommended.”

Line 322: Please add “the sine of latitude”.

Line 404: Remove point between “Table” and “4”.