Response to reviewer

Thank you for your re-review. We apologize for not addressing the change in NH results from the additional inverse models more carefully. We agree with the review that two of the additional inverse models indicate higher interannual fluxes from the NH, and some of the regional ensemble numbers from the inverse models were not correctly updated to reflect this.

The main difference between the previous and updated results is a stronger contribution from the NH, due to CTE, IAPCAS and MIROC all having notably higher NH contributions than the previous ensemble mean. The variability across the 8 inverse model results is very large even at continental scales although the ensemble results still support the tropics as the most important region for CO2 flux variability (66%). These results highlight that the ensemble means should not be over-interpreted, as they can be misleading by reflecting cancelling contributions from disagreeing products. We have therefore modified the paper text to emphasise the lack of more spatial consistency however and that better methodology and atmospheric data would be needed to make comparisons with the water inferred regional fluxes. Specifically, modified text discussing the NH inversion results can be found at lines 328–331, 366–369, 495–496, 510–514, and 541–543.

Ensemble numbers that were not previously updated to include all eight products have also been corrected (lines 14, 327, 331, 543).

Other changes include updating Figure 6 to use a shared colour bar and removing some text discussing NISMON as an outlier, as this is now less relevant given the large variability across all products.