RC1

Review Comments for egusphere-2024-1584
Title: Ensemble estimates of global wetland methane emissions over 2000-2020

Reviewer1: Thanks so much to authors for doing such a nice revision.

Only one technical point needs you to double check:

I see you added the mean CH4 values of the 2000-2010 and 2011-2020 in the Figure 1 caption. But the two horizontal lines you added, one across 6 on Y-axis and one across 0 on Y-axis, could bring a little confusion because they are not crossing at 152 and 158. And the 2000-2010 line is likely covered by the X-axis. Maybe you can consider adding a second Y-axis, or just mention the two mean values without adding the two lines? Or perhaps the caption itself already explains well, and no need to change anything.

Response: Thank you for the positive comments. We appreciate your recognition of the significance of our findings. In response to the reviewer's comments, we have modified Figure 1a to use absolute values instead of ΔeCH_4 to avoid confusion. Please see the revised Figure 1 below.
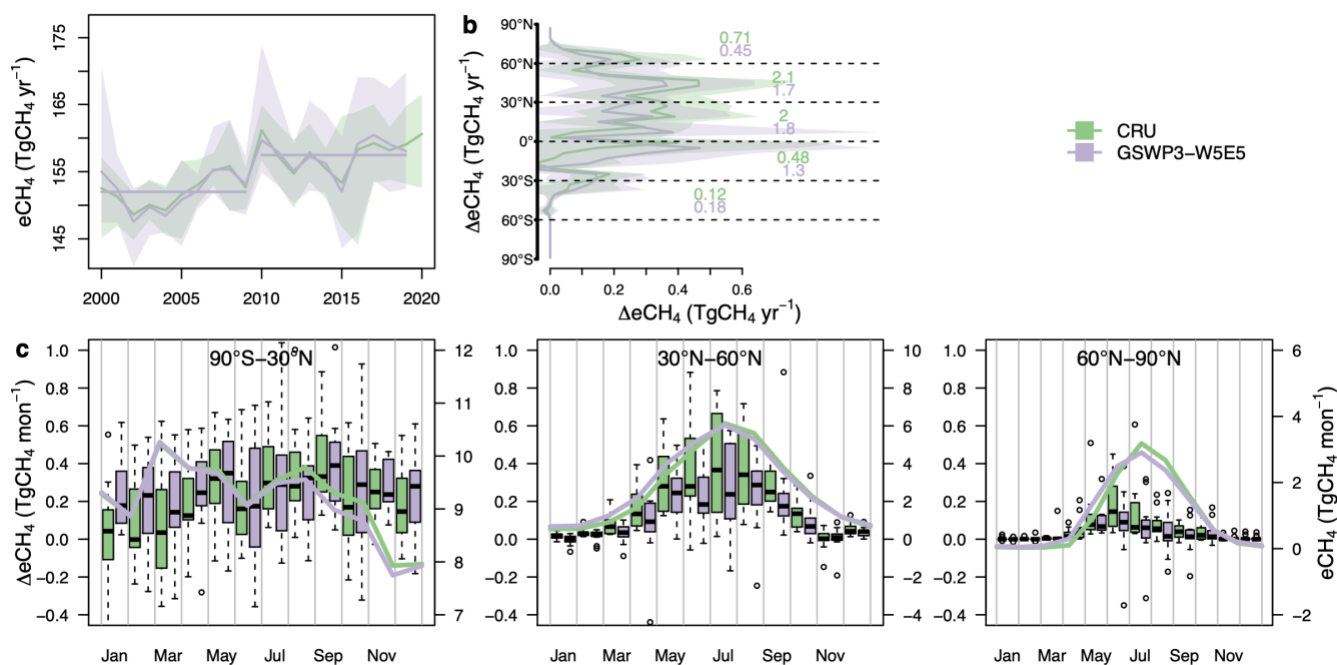

Figure 1: Simulated global wetland CH_4 emissions from the model ensemble for 2000-2020. a, Time series of annual total emissions during 2000-2020, with the shaded area

representing the range between minimum and maximum modeled emissions. The horizontal lines represent the ensemble means of 2000-2009 (152 Tg CH_4 yr^{-1}) and 2010-2019 (158 Tg CH_4 yr^{-1}), respectively. b, Latitudinal gradient of eCH_4 difference (ΔeCH_4), with the mean annual total ΔeCH_4 for each of the 30° latitude bins from the two sets of simulations shown. The change is calculated relative to the mean of the 2000-2009 level from the two sets of simulations with prognostic wetland emission models grouped by different climate datasets, CRU and GSWP3-W5E5. c, Boxplots of mean seasonal ΔeCH_4 for the three regions. The central mark and the bottom and top edges of the box indicate the median, and the 25th and 75th percentiles of the ensemble, respectively. The colored lines represent the average seasonal cycle of 2000-2009 from the simulations grouped by two climate datasets, CRU and GSWP3-W5E5.