Reply on RC1
François Clayer et al.

Author comment on "Inertia and seasonal climate prediction as sources of skill in lake temperature, discharge and ice-off forecasting tools" by François Clayer et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2022-312-AC5, 2022

Just a final addition to our responses to RC1 comment below:
"Additionally, the river-lake systems chosen contain lakes with very short retention time, i.e. big impact of rivers on water constituents, including temperature. The model method used include the effect of changing lake volume, but not the effect of heat being transferred into the lakes by upstream drainage area (input temperature I could not find). Thereby it is reasonable to assume that the lake models (through calibration) had a better connection between surface and deep waters than is the in-situ case. Could this show up in your analysis of forcing parameter importance ("Tracing of forecasting skill" section 3,4, Fig. 4)? This needs to be addressed/analyzed since you link forcing to lake processes, which in fact could be caused by upstream heat fluxes in the drainage area and not in the lakes themselves."

At least for the Norwegian case study, water temperature of the inflows was simulated using a simple temperature model based on a time-lag behind air temperature (hence highly correlated with air temperature). Hence we will be able to show with a simple analysis whether in-lake surface or bottom temperature is sensitive to that, e.g., with partial correlation coefficient. We will clarify how the water temperature of the inflows was dealt with for each case study and provide an analysis on the impact of these setups on the lake heat budget.