Authors response

We apologize for not addressing this comment sufficiently before. This was caused by the confusion on our part as to whether the Reviewer asks about the impacts from or on the PSC; we have previously mistakenly answered the former question. Below we now address the question whether there are any differences in the simulated PSC fields between the DEST and StratTrop simulations:

We have now considered the differences in the simulated PSC fields between the timeslice year 2000 DEST and StratTrop simulations. Unfortunately, we have not outputted the diagnostics required to look at type I NAT PSCs in one of the simulations, and so we could only examine changes in the type II ice PSCs. As shown in Figure R1 and the right column of Figure R2, we do not find substantial and/or consistent changes in the simulated concentrations of ice PSCs in our runs. This arises partially because of the seasonality in the associated differences in the polar lower stratospheric temperatures and water vapour (Left and middle columns in Figure R2).

Given the above, we have not modified the manuscript compared to the previous round of revisions.
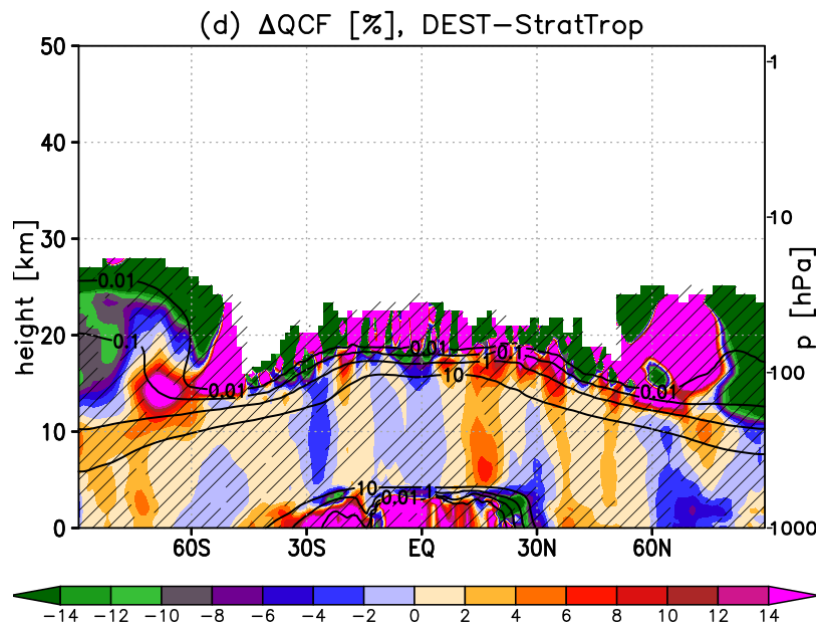

Figure R1. Shading: Annual mean difference [%] in simulated mass fraction of ice cloud in air between DEST and StratTrop for the year 2000 conditions. Hatching denotes regions where the difference is not statistically significant, here taken as being lower than ±2 standard errors. Contours show the corresponding values in DEST for reference [kg-ice/kg-air; only the 0.01, 0.1, 1, and 10 kg-ice/kg-air contours shown].
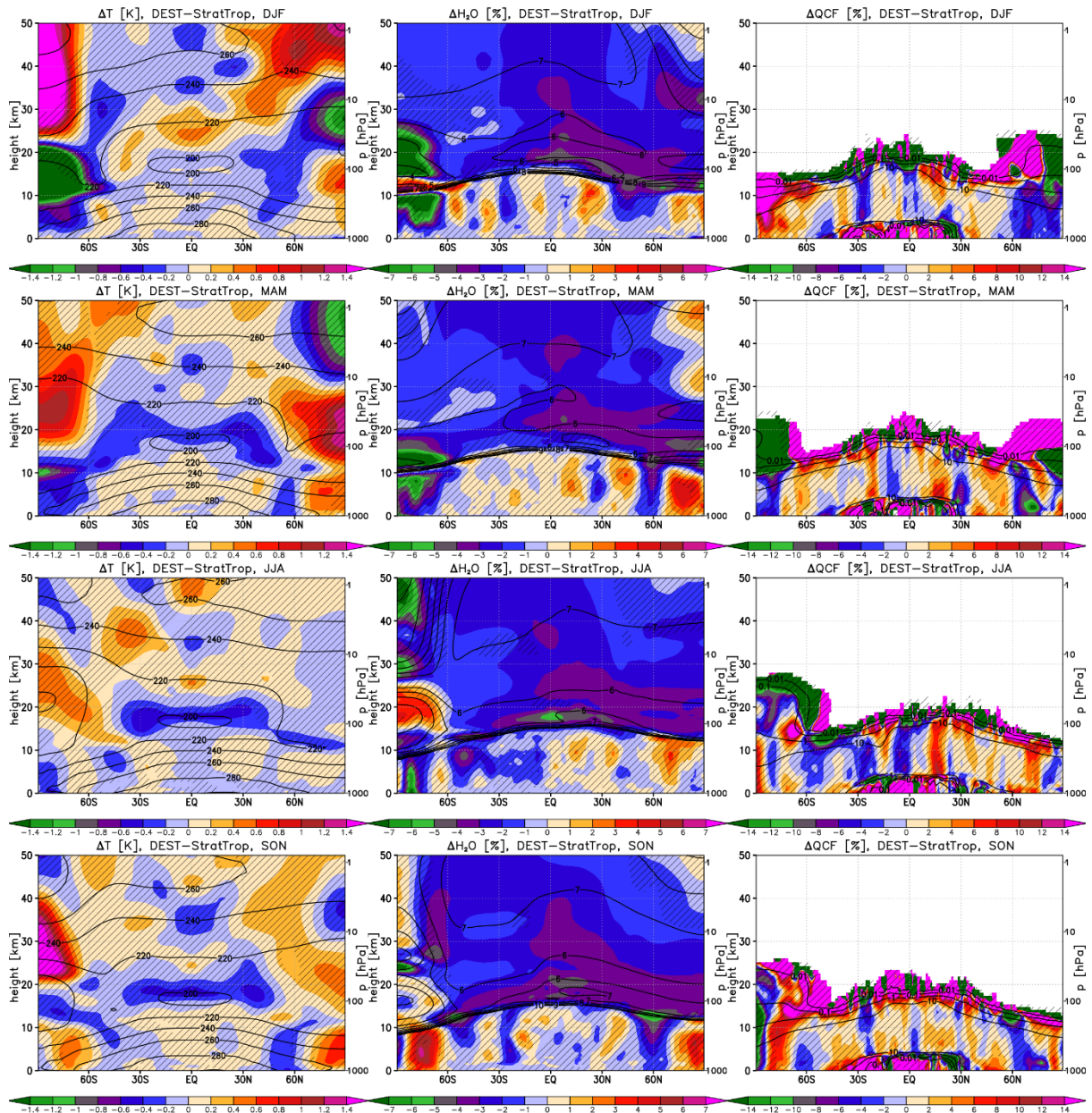
Figure R2. Shading: Seasonal mean differences in (a) temperature [K], (b) specific humidity [%], and (c) mass fraction of ice cloud in air [%] between DEST and StratTrop for the year 2000 conditions. Hatching denotes regions where the difference is not statistically significant, here taken as being lower than ±2 standard errors. Contours show the corresponding values in DEST for reference.