We would like to thank the reviewer for the helpful comments on the manuscript. A point-by-point response to the comments can be found below.

1. Section 2.2
Since you retrieved the scaling factors of H2O and HDO independently, the error in the retrieved δD depends on errors of H2O and HDO. How large are the random/systematic errors of H2O as a fraction of those of δD? Also, it might be helpful to show the degree of freedom for signals of H2O and HDO when you discussed about the systematic errors.

Figure 3 has been revised to include the systematic errors in the HDO and H2O retrievals and we have modified the text to include the errors in the HDO and H2O. We also changed the text to provide information on the random error estimates and the degrees of freedom for the HDO and H2O retrievals. Note that the retrieval is a scaling retrieval where an assumed a priori profile is scaled so that the maximum value for the degrees of freedom is limited to one.

2. Section 3, p.6654, l.19-p.6655, l.11
I think you have to take special care when you compare GOSAT data with other data under the small spatial co-location criterion. Smaller criterion becomes meaningless, because GOSAT observes same observation point repeatedly with a distance between adjacent observation points of ~150 km (Kuze et al., 2009). GOSAT observes TCCON sites by specific observation mode for validation, but there might be only one or two observation points within a 100 km distance from each TCCON site. It is helpful to add figures which show the observation locations of the coincident data.

We have included a figure that gives the locations of the soundings. It is of course correct that with a very small co-location criterion, only a few different locations are probed, but even for the smallest co-location criterion we still have at least 2-3 different locations with the exception of Ny Alesund.

3. Section 3, p.6655, l.24-l.26
The retrieved δD changed 50‰by changing the retrieval spectral window. How change did H2O and HDO? Also, it is helpful to show difference in the degree of freedom for signals.

We have included the information on the changes in the HDO and H2O retrievals, specifically that the H2O decreases by approximately 2.5% and the HDO increases by approximately the same amount when changing from the TCCON to the GOSAT fit window, resulting in the 50‰ change seen in δD.

The TCCON retrievals are also profile scaling retrievals so that the degrees of freedom are not very meaningful. For direct sunlight retrievals the degrees of freedom for the scaling factor of the profile is typically very close to unity with the excepting of very large solar zenith angles. However, the TCCON retrieval software does not calculate the degrees of freedom for the retrieval and we have thus not includes this parameter in the manuscript. However, we have included figures of the column averaging kernel for the TCCON retrieval of H2O and HDO for the TCCON fit window and the GOSAT fit window - these show the different sensitivity of the retrievals for the different choices of wavenumber range. The HDO kernel changes very little with the change of fit window but the H2O kernel changes in the free troposphere (and indeed becomes similar to the GOSAT H2O kernel). However, the

contribution of the free troposphere to the total column of H2O is very small as the bulk of the water column resides in the boundary layer.

4. Table 1
wavelength range => wavenumber range

Done

5. Figs. 1, 2, 4, 5, and 9
Please unify the unit of horizontal axis of these figures. (wavenumber is preferable)

We have changed the figures and the text in the manuscript to wavenumber.