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Discussions

Interactive comment on "Background CO$_2$ levels and error analysis from ground-based solar absorption IR measurements in central Mexico" *by* Jorge L. Baylon et al.

Anonymous Referee #1

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This paper reports on an important observation in the area of global climate change and of the techniques used to determine change. The paper is well written. There is a clear objective to be addressed, it is well defined and sufficiently limited in scope to be addressed in a short manuscript. The methods used by the authors to treat errors in the observations are solid and well described. The paper is clear and concise. I present two questions regarding the technique and some small points that might improve the presentation: 1) Is there some reference that supports the validity of comparing the total column amount of CO2, XCO2, with the in situ CO2 amount , as shown in Figure 6. I believe that when averaging kernels and error covariances are taken into account there is little valid overlap. See Rodgers and Connor, JGR, 108, 4116, 2003. 2) Since

one of the main objectives of the work is to compare the error contributions of KBr and CaF2 beamsplitters, which of the error sources in Table 2 might have some physical justification for being different between the two beamsplitters. In Table 3 the largest differences in error for CO2 between the splitters seems to be in the noise and solar line contributions. Is there a reason for this? Minor points

Line 7 define XCO2 Line 17 water vapor contributes more than any other gas to radiative forcing Line 24 it might be good to add some numbers to describe where the near infrared is, various readers may have various ideas about what is near or far (also line 90) Line55 /characterisitc/characteristic/ Line 59 /begun/began/ Line 62 /is part/has been part/ Line 104 comment on how effective the removal of the baseline curvature is wrt the retrieval Line 115 /to assess/an assessment of/ Line 117 /determine where does/determining where/ Line 120 /allows to/allows one to/ Line 154 /ensamble/ensemble/ also in Line 168,215 Line 246 $_2$ also Line 257, 287 Line 254 n/a-n/a also Line 301, 310

Figure 5 which black line is the TCCON goal .1 or .25