

## ***Interactive comment on “Measurements of hydrogen cyanide (HCN) and acetylene (C<sub>2</sub>H<sub>2</sub>) from the Infrared Atmospheric Sounding Interferometer (IASI)” by V. Dufлот et al.***

### **Anonymous Referee #1**

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Dufлот et al. provide a brief description of the HCN and C<sub>2</sub>H<sub>2</sub> retrieval from IASI measurements. In some parts it is too brief. It is of interest for the community because the paper shows that IASI measurements include information of the columns of both gases even at less abundant locations. The restrictions one has to deal with are figured out.

General comments:

\* Since C<sub>2</sub>H<sub>2</sub> is not an NDACC specie, please change the wording in the beginning of the last section of the introduction. It is right that the instruments are part of the network. The way it is written implies that C<sub>2</sub>H<sub>2</sub> is a regular NDACC specie.

\* Without any doubt the following issues are described in the cited papers. But it would be more comprehensible if brief descriptions or at least numbers are added in the text about:

-What is the gain in precision due to the inclusion of the CO<sub>2</sub> line mixing.

-Errors of the FTIR retrievals

-How the retrieval deals with orography?

\* Please figure out that the IASI columns showed are calculated as columns at and above the altitude of the station (as I expect) used for comparison and mention the altitudes.

\* (page,line) 7573,11 and Fig. 4 Is there an indication for the cause of the difference in the magnitude of the annual cycles (C<sub>2</sub>H<sub>2</sub> Jungfrauoch). The AKs seems to be more or less similar in the most relevant altitudes.

\* Fig. 2 What is the reason for the strange behavior of the AKs of C<sub>2</sub>H<sub>2</sub> in (b) at and above 20 km?

Minor comments:

-7570,18 What does “a wide range of atmospheres” mean?

-7572,3 Which error sources are considered? Please mention the most important ones and their portion.

-7573,29 both target species

-7575,2 “very likely” due to performed trajectory calculations or due to typically existing conditions?

-Fig. 1 Please include the factor of 40 in the legend as well.

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