Please find below comments from Reviewer n°1 and corresponding replies.

Duflot et al. provide a brief description of the HCN and C2H2 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 C2H2 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 C2H2 is a regular NDACC specie.*

This is right. The wording has been changed in the introduction.

** 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 CO2 line mixing.

To figure out the precision gained when including the CO2 line mixing effects in the retrievals, we performed a set of retrievals without CO2 line mixing on 500 randomly chosen spectra measured above the two sites. We found that including CO2 line mixing effects in the retrievals reduces the residual of a factor 2 and increases the percentage of converging retrievals from 52 to 86%. Moreover, if CO2 line-mixing effects are not considered in the IASI retrievals, retrieved total columns from IASI spectra do not agree any more with ground-based measurements: for both sites and both target species, IASI measurements become around one order of magnitude higher than the ground-based ones.
These comments have been added at the end of Section 3.

-Errors of the FTIR retrievals

Total errors for ground-based measurements at Reunion Island are 17% for both species and total errors for HCN and C_2H_2 ground-based measurements at Jungfraujoch are 5 and 7%, respectively.
These comments have been added in Section 3.

-How the retrieval deals with orography?

The retrievals are parameterized to fully take into account the orography. For comparison with ground-based station, retrievals start from the ground at the altitude of the ground-based station (see next question).

** 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.*

Abundances retrieved from IASI spectra are calculated as columns above the altitude of the stations: 50m and 3580m amsl (above mean sea level) for Reunion Island and Jungfraujoch, respectively.
These comments have been added in Section 3.

** (page,line) 7573,11 and Fig. 4 Is there an indication for the cause of the difference in the magnitude of the annual cycles (C2H2 Jungfraujoch). The AKs seems to be more or less similar in the most relevant altitudes.*

When considering unsmoothed ground-based measurements and error bars, the C_2H_2 columns magnitudes measured by the IASI and ground-based FTIR agree pretty well (observed amplitude of ~2 x 10^{15} molec cm^{-2}).

** Fig. 2 What is the reason for the strange behavior of the AKs of C2H2 in (b) at and above 20 km?*

Vigouroux et al. (personal communication) suspected that this ground-based FTIR C_2H_2 AK behavior is due to numerical issues when the volume mixing ratio (vmr) becomes too small (10^{-13} -- 10^{-14} ppv), because they observe the same behavior for HCOOH around 32 km, when the vmr of HCOOH also decreases to these small values. We prefer not to include such a remark in the text because 99.8% of C_2H_2 is located below 17 km, so this sharp averaging kernel gradient has no impact on the total columns presented and discussed in the paper.

Minor comments:

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

The CO_2 line mixing effects were calculated for a wide range of pressure-temperature profiles up to 30km in order to cover all kind of atmospheres that can be encountered on Earth.
These information have been added in Section 2.

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

The random (including smoothing) and systematic errors are taken into account. The smoothing error was found to be the most significant for HCN at Reunion Island and C_2H_2 at Jungfraujoch (32 and 54%, respectively), and the systematic error was found to be the major one for C_2H_2 at Reunion Island and HCN at Jungfraujoch (42 and 75%, respectively).
These information have been added in Section 3.

-7573,29 both target species

Corrected.

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

Due to the closeness of the fires and the typical seasonality of such an event, the detected plume originates very likely from those fires.
These information have been added in Section 4.

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

Corrected.