We would like to thank reviewer 1 for her/his helpful comments and corrections, whic helped to improve the quality of the manuscript. Reviewer comments are reproduced in italic, our anwers are in plain text.

This paper documents the production of a set of databases designed to simulate IASI and IASI-NG radiances for future use in retrieval and data assimilation studies. It describes in detail how the origin of the "true" atmospheric states used in the calculations and the similarities and differences between the two radiative transfer models employed- RTTOV and 4A.
The paper achieves this goal well and (with some minor suggestions outlined below) can be accepted for publication based on that - although the amount of truly new science is limited.
The final section presents a somewhat simplistic evaluation of the relative retrieval skill from IASI and IASI-NG. I am assuming it is being presented as an example of the sort of thing that could be done with the database, but I do not think it necessarily adds much to the paper.
Reviewer 1 is true, the short retrieval study was given as an example of what could be done with the database. According the reviewer2 comments on these results have been added in the conclusion.

Detailed comments:

- *p.2 lines 13-14: I don't think you should say that "some channels were unsuited" as the real issue is not the channels themselves but that the information is redundant. Maybe say " a subset of channels is preferred"*
  The proposed change will be included in the text.

- *p.4 line 18: "an adequate refractive index" -> "an appropriate refractive index"*
  This will be changed.

- *p.6 lines 4-6: Is the noise added diagonal or is the fact that noise is correlated between channels because of apodisation allowed for? In fact, apodisation is only briefly mentioned - you should state explicitly the apodisation being used.*
  The noise added to the simulations was diagonal, it is a random noise with a zero mean and a standard deviation with the value of NedT. No error correlation between channels were taken into account. No apodisation has been used here. We proposed the following explanation : « *Once the instrument data have been simulated, a random gaussian noise using CNES specifications (Fig. 1) for each instrument and IASI-NG configuration was added to the simulated data. These values are valid at 280K and they were converted at the appropriate scene temperature for each wave number and each profiles. Two different noises were used for the IASI-NG simulations according to the two prism materials currently under consideration. Moreover, no correlation between channels was taken into account.* »

- *p.9, lines 18-20: I think the details on how you do not have some cloud flags because of some processing quirk are confusing and not really relevant.*
  We propose to remove these details in the text.

- *p.12, lines 4-6 and Table 5: I do not think that Table 5 is particularly useful as it aggregates the information in Figure 4 while hiding much of the detail. It is also misleading to say there are no differences in the standard deviations when it is clear from Figure 4 that they do indeed exist. So I would remove this table.*
  We agree with this proposal to remove table 5. The paragraph will start wit « The mean values (biases) present differences that are displayed in Figure 4 ».

- *Figure 6: Why did you choose to plot this in radiance units when everything else is in brightness temperature? It makes it very difficult to compare with the other plots.*
  We thank the reviewer for this point and we have replaced the figure with plots in brightness temperature.

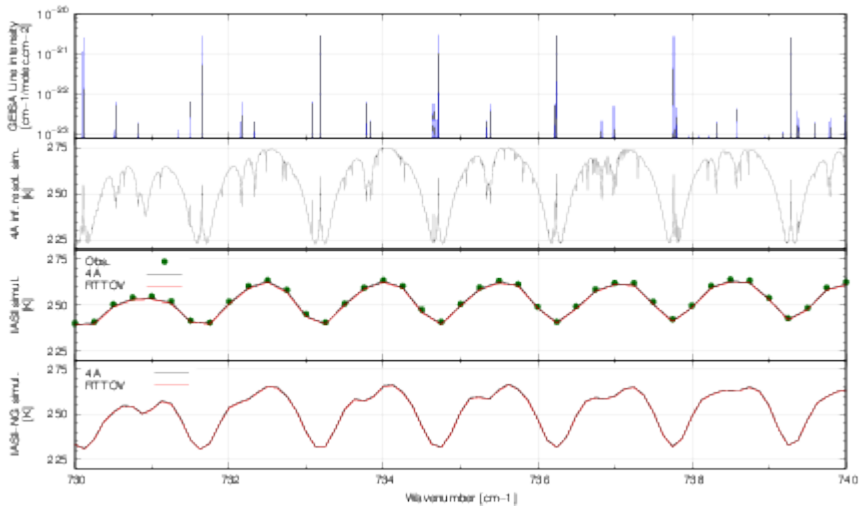

Figure 6. Comparison of IASI/IASI-NG brightness temperature simulations in the 730-740 cm□-1 CO_2 absorption window against the Earth IR spectrum computed by 4A using a spectral resolution of 0.001 cm□1 for one atmospheric description included in the simulation dataset. Upper panel (a) presents the CO_2 absorption lines as obtained from GEISA database, the second panel (b) shows the 4A spectrum calculation. Third and four panels present the simulations of IASI (c) and IASI-NG spectra (d). IASI observations are also included in the IASI simulations panel (green dots).

The text will be changed accordingly : « IASI-NG signal presents a higher variability giving values going from 231.5 K to 266.5 K for the 239.2 to 262.4 K of the IASI range. »

- *Section 5: I think you should make it clear from the start that the retrieval discussion is illustrative. The scene selections (totally clear columns), channel selection (limited to IASI 314); background error (arbitrarily set to 2x the NWPSAF supplied one); simple bias correction and simple assumption that IASI-NG noise is exactly 2x IASI are probably not close to how that data will be used in practice.*
  We fully agree with this suggestion and we propose to add this sentence at the beginning of section 5 : « *To illustrate the potential gain brought by IASI-NG, a short study using 1D-Var retrievals and a small subset of clear-sky observations over sea is proposed in this section. Indeed theses conditions represent an easier way to deal with infrared observations even if in the future the IASI-NG data will be used with different assumptions (e. g. assimilation over land and/or for cloudy sky…).* »

- *p.15, lines 28-30: Please state explicitly that the 4A calculations are going to be referred to as "truth" for the rest of the section.*
  The sentence « These 4A simulations will be considered as the truth in this retrieval study » will be added in the text. »

- *p.17, line 9: Is it really true that the IASI-NG noise is half of IASI noise for all channels?*
  We agree that the IASI-NG noise is not exactly half of IASI noise for all the channels as shown in Figure 1 and there are different scenarii for this noise. However the noise tends to be half of the IASI one especially in bands 1 and 2. We propose to reword this sentence : « As the IASI-NG noise is assumed to be close to half of IASI noise, the values of the associated observation error R matrix were divided by 4 »

- *p.20, lines 9-13: While the channel selection could well be improved, you should be clear that there is a fundamental issue with very low level retrievals in the infrared due to the lack of contrast with the surface.*
  We agree with the reviewer that in addition to the question of the channel sensitivity to the low tropospheric levels, the issue of the lack of contrast with the surface for the retrieval in

the low levels of the atmosphere is a key point. We will change the end of the paragraph by « The worst performance of both instruments in the first atmospheric layers is related to the lack of sensitivity of IASI channels at these levels to the first atmospheric layers in the selection used in Météo-France operational system combined with a possible lack of contrast with the surface. A new channel selection for IASI-NG shall be carried out including channels able to improve this lack of sensitivity, and taking into account the IASI-NG bands 3 and 4 thanks to the IASI-NG noise reduction compared to IASI. The retrieval capability of IASI-NG in the low atmospheric levels shall be also studied with respect to the surface contrast. »

- *p.21: It is unfortunate that the data base is limited to 314 channels. As you mention in the text it is very likely that IASI-NG will be using channels not in this set.*
  We have only the 314 channels for the IASI observations but simulations are made of 8461 channels pour IASI, and 16920 channels for IASI-NG. These 314 observed channels are used for comparison with the IASI simulations. We propose to specify this :
  « - **Simulations:** Radiances of IASI (in 8461 channels), 16282 channels for IASI- NG A (Kbr) and IASI-NG B (ZnSe).
  - Real Observations: 314 IASI brightness temperatures.»