

Comments for amt-2023-237 by Bart Dils, et al.

Revised version

1) General comments

This study validates the accuracy of methane (CH₄) concentration data from IASI sensor data retrieved with two retrieval algorithms (RAL and LMD). The data from RAL and LMD are compared with each other, with independent observations, and with model data, and their accuracy is examined not only by direct comparison of values but also by focusing on seasonal variations and trends.

The revised version presents the validation results and carefully summarizes the accuracy and problems with each algorithm's data. These are significant findings that are indispensable for the use of IASI CH₄ data. Therefore, it is well worth publishing in AMT. In places, there are errors of citation in not a few places in the revision, but they are all minor issues.

In conclusion, I recommend that this paper should be published after making very minor corrections.

2) Specific comments

P14L24-29: edge viewing value vs. nadir value

Why is the value for the edge viewing in case mtCH₄ LMD larger than that for the nadir viewing, but the nadir value is larger in case XCH₄ RAL?

P19L24-25: "Both results are close to the mtCH₄ annual growth of 5.3 ppb/yr ..."

What does "Both results" refer to? RAL_LMD_{avk} and RAL_LMD_{avk} (2 periods)?

P21L10-17: in Section 6

It would be better to clearly state in this part that the RAL data used here is bias-corrected.

3) Technical corrections

• Please unify abbreviations in the text.

NLIS (P1L4, P2L22) or NILS (P3L19, P4L2, P4L9, P7L8)

DOFs (P3L29, P6L7, P21L20) or DOFS (P15L15, P29L13) or DOF (P15L23 and L24, P16L13) or DOF's (P30L16)

P4L23: "((Karion et al., 2010))" should be "(Karion et al., 2010)".

P5L12: IAGOS CARIBIC should be "IAGOS-CARIBIC" .

P11L10: "(Rodgers and Connor, 2003)" should be "(Rodgers and Connor, 2003)" .

P13L11: "A0" and "A1" should be "A₀" and "A₁" , respectively.

P16L16 and P18L8: "mayor" may be "major" .

P18L33-34: References on TransCom and Carbon Tracker are needed.

P19L22: "Table 6" should be "Table 3" .

P22L30: "Table 3" should be "Table 4" .

P24L5: "Table 4" should be "Table 5" .

P24L12: "/textitin" may be "in" .

P28L26: "Table 5" should be "Table 6" .

P30L19: "Figure 11" should be "Figure 10" .

Table 6: The values for LMD differ from those in the text. Please check once.

Table 7: This table is not quoted in the text. Please delete the table or quote it appropriately in the text.

Figure 6: In the figure caption, "-20 deg to 20 deg" should be "-60 deg to 60 deg" .

Figure 11: In the caption, "Figure 12" should be "Figure 10" .

Figure 14: In the figure caption, "Figure 10" should be "Figure 13" .

Figure 15: The two plots (6-12 km and 0-6 km) on the left should be replaced.

Figure 15: Since N is not used in the figure, the figure caption does not need to explain it.