Author's responses to editor's comments follow. A copy of the reviewer comment is given (with comment 'number') followed by a response (blue font).

Public justification (visible to the public if the article is accepted and published):

I do not agree with your response to reviewer #2 stating:

"We understand what you mean but when air is collected by flasks, we consider it is well-mixed air. This means flask air samples reflects baseline airmass rather than the polluted local air. And the baseline also reflects the air not only in northern hemisphere but also in the region. Therefore, the levels can be different from global values, but growth rate can be similar to those of global (...)"

Air collection by flasks can be affected by high levels of local pollution and air sampling does not per se result in baseline data. For this reason the background selection method described in section 2.4.2 is vital. Samples would only then well-mixed if sampling times are very long, depending on the location of sampling and the local meteorological conditions during the sampling.

I am in general fine with the manuscript now, but since this issue came up, I ask the authors to add information about the typical sample collection time in the method section. Although stated elsewhere in literature, I think this detail should be mentioned in the current text.

Thank you for your review and comments.

I agree your comments. Since we described the sampling method already "Samples were collected weekly between 1200 and 1800 (Korea Local Time), when boundary layer height (BLH) was maximum", we tried to explain why the flask sample data we used do not include local impacts.

L17 P8: Samples were collected weekly between 1200 and 1800 (Korea Local Time), when boundary layer height (BLH) was maximum to reduce local impacts.

L8 P9: Observed $\delta^{13}C_{(CH4)}$ are selected by the cluster analysis (section 2.6).

L17 P9: Among clusters, 25% of samples are derived from under the stagnated condition which might be affected by local pollutions. Therefore, we did not consider this sector.