

## Responses to the comments from reviewer #1

### **Minor Comments:**

The current work is based on a thorough field investigation of NACs from fine particle samples at the peak of Mt. Wuyi and includes a thorough examination of the seasonal fluctuations in their composition, sources, and significant influencing factors. They manifested a significant rise in overall abundance in the winter and autumn. The transport of contaminants had a significant impact on NACs. Under low-NO<sub>x</sub> conditions, the formation of NACs was comparatively sensitive to NO<sub>2</sub>, suggesting that NACs would become significant in the aerosol characteristics when nitrate concentrations decreased as a result of emission reduction measures. This is a very meaningful work. As such, I am supportive of publication in ACP with a minor revision.

1. Line 101: It is suggested that the title of Part 2 be changed to “2. Experimental design” or “2. Materials and methods”. Here, the introduction of field observation is too simple, please add more details, e.g. the sample preservation, observation of gaseous contaminants...

**Response:** Suggestion taken. We have changed “Experimental” into “Materials and methods”, added descriptions of field observations, and corrected some mistakes. See line 103, 115-124.

2 The QA/QC are only for the analysis methods of organic matter in the Sec.2.4, please add the formation for the model calculation (i.e. PMF and SEM). In addition, I found some introduction has been made in Sec.2.3, and I also suggest to put them in the QA/QC section.

**Response:** Suggestion taken. We have added the formation of QA/QC for PMF and SEM in the Sec.2.4, and moved the relevant descriptions in Sec.2.3 here.

3 Line 119: “48-hour” instead of “48 hour”.

**Response:** Suggestion taken.

4 Line 175: “°C” is advised to be changed to “oC”.

**Response:** Suggestion taken.

5 Remarks in Table 1 should be further elaborated on the numbers in the table. For example, the numbers in the first line indicate mean±std, and the numbers in the second line indicate lowest value-highest value.

**Response:** Suggestion taken. We have added annotations in Table 1. i.e. the numbers in the first line indicate mean±std, and the numbers in the second line indicate lowest value-highest value.

6 The summary and conclusion are mainly a summary of the results. It should be based on conclusive remarks, what it means, and how it might be novel to the field of study.

**Response:** We thank the reviewer's comments. In the revised text, we have made significant changes and improvements to the abstract and conclusion, with adding the new findings and some new thoughts in this paper.

7 Some sentences are too long and need to be condensed (e.g. lines 92-95). Rephrase to improve readability.

**Response:** We thank the reviewer's comments. We have changed some long sentences. At the same time, we have re-edited the full text to make it easier for readers to understand. e.g. See line 30-36, 53-54, 60-62, 96-102, 214-218, 310-311, 480-483.