**Response to Editor**

**Thank you for your consideration of the referees' comments. I find the manuscript improved and that the referee comments have been largely addressed. I think that after attention to the following points, the manuscript will likely be suitable for publication.**

Response: Dear editor, thank you so much for your precious time and great works. We have revised the manuscript following your comments. The point-to-point response and revised part in the manuscript has been given in the

**1) Please add some additional text (no additional figures are required), that address Referee 1's comment regarding removing the first two years of data and the resulting impact on the trends. The text in the author response document contains important information that should be included in the main text.**

Response: Thank you so much for your comments. We added the corresponding text in the page 7, line 23 in Section 3.1 as:

"We also tested the impact of first two years on the trend estimation of the national scale BVOC emission. After removing the first two years, the scenarios other than S2 didn't show statistically significant trends for most of species, however, the scenario S2 with the fixed climate inputs of 2001 and the annually updated land cover still showed statistically significant increasing trends for all species ($p<0.05$), which means the change of land cover is not dominated by the first two years."

**2) Please add the information included in response to Referee 1's comments about the main reason for selecting the six regions to the main text. With some minor editing, the text in the author response document is sufficient.**

Response: Thanks for your comments. We have added the information about how we chose 6 regions at page 8, line 32 in the Section 3.2 as:

"Our selection is based on the changing trends we found from Figure 5 and Figure 6. We didn't use the geographical boundaries as the criteria to select the regions of interest, and we chose the hotspots with positive trends and investigated the drivers of trends in these regions."

**3) Please add to the main text a version of discussion in the author response document regarding Referee 2's point about the trends not adding up to the full model simulation trend.**

Response: Thank you so much for your comments. The discussion we provided in the author response document has been added at page 7, line 18 in Section 3.1 in the revised paper as:

"The changing trend of BVOC in the full scenario cannot be treated by the linear summation of trends in other one factor scenarios. On the one hand, the response of isoprene emission to meteorological conditions are nonlinear (Guenther et al. 1993). On the other hand, the calculation of national scale total emission amount is affected by the spatial variabilities of vegetation types as well as climatic conditions, and it should not be a linear combination of the two aspects."

**4) In the abstract line 30 (track changes version) the wording "since the absence of chemical and physical processes" is unclear (perhaps words are missing). Please rephrase.**

Response: Thanks for your comments. This part has been revised as:

"This result may support our estimation of the variability and trends of BVOC emission in this region, however, the comparison still has large uncertainties since the chemical and physical processes, including transportation, diffusion, and chemical reactions, were not considered."

**5) I disagree with the addition of the word "nationwide on page 8 lines 11 and 14 (track changes version) since the trends decrease in some areas. Do you mean that only the statistically significant trends are increasing? The wording needs to be clarified.**

Response: Thank you for your comments. We agreed that the current expression is not very accurate, and it is true that some regions are showing a decreasing trend. Therefore, we summarized the regions with statistically significant positive trends in c, i, o and u of Figure 5 and revised this part at page 8, line 17 as:

"The spatial distributions of trends of different species in S2 all show a significantly increasing trend in the regions including the northeast, central and south of China since the vegetation development is the main driver of the increasing trend of BVOC emission (c, i, o and u in Figure 5)."

**6) Figure 6 caption – add "total" before "BVOC".**

Response: Thanks for your comments. "total" has been added before "BVOC" in the caption of Figure 6.