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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Unravelling airborne polycyclic aromatic hydrocarbons (PAHs) in southern China using tree-rings of 100-yr old *Pinus Kwangtungensis*" *by* Y. W. Kuang et al.

Anonymous Referee #1

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The manuscript presents measurements of PAHs in the tree-rings of Kwangtung pine sampled from Naling Mountains in Southern China. The paper primarily interprets the PAH measurements to determine the sources using principal component analysis method. However, the source apportionment results and their interpretation are speculative and weak. It is useful to apply more than one method and look for consensus among results.

There are many grammar and spelling mistakes. The English writing of the manuscript should be improved.

SPECIFIC COMMENTS:

Page 27364-line 2. Is there any specific reason why sample disc was chosen at the tree height of 1.3 m? Page 27364-line 11. Could you clarify the sample size? In this line the sample size is shown to be 23 chipping samples, whereas the abstract states one hundred records of airborne PAHs. Page 27371-lines 15-18. Figure 3 C and D do not support the conclusions drawn regarding the origin of PAHs . It is stated that FL/Pyr ratios greater than 1 indicate pyrogenic origins of PAHs. Even though there are no FL/Pyr ratios lower than 1 for all the samples before 1950s and on contrary there are some samples after 1950s with FL/Pyr ratios lower than 1, authors still concluded that the origin of PAHs were pyrogenic.

Interpretation of the PCA results is weak and speculative, requires a significant improvement. Authors indicate in Page 27371-lines 25-28 that the dominance of Ant, Flu, PA, FL, Pyr, Chr was identified in PC1. However, Figure 4a shows Acp as the most dominant compound (the highest load for PC1) and other important ones are not mentioned, namely BaA and BkF.

Same speculative interpretation has been done for the data after 1980s and in the related PCA calculations (Figure 4c). BkF, one of the important contributors for the PC1 is not taken into consideration when the authors arrived to the conclusion.

Page 27372-lines 10-13. Authors did not use the most dominant contributor in PC2, BaP, in reaching the conclusion of the possible tracer.

Page 27373-lines 6-8. Authors indicate in previous page (Lines 302-303) that Chr is indicative of diesel emissions, whereas in these lines BkF and Acpy are chosen to reach the same conclusion. There is no consistency in reaching conclusion of possible source.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 27359, 2011.

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Interactive Comment