This study systematically evaluated the impact of improving marine fuel quality on I/SVOC emissions. An innovative finding revealed that transitioning from low-sulfur to ultra-low-sulfur oil led to a significant increase in I/SVOC emissions, which in turn elevated the secondary organic aerosol formation potential (SOAFP). Additionally, it also found that I/SVOC emissions from inland ships are substantial and should not be overlooked. The findings provide valuable insights for the development of future ultra-low-sulfur oil policies. However, several questions still require further elaboration and explanation.

(1) I fully understand the challenges the authors face in conducting ship emission tests. However, from the perspective of improving the quality of the paper, since one of the key innovations is updating the emission factors, there should be further discussion on how the new emission factors impact the pollutant emissions in the inventory or the total amount of SOA formation.

(2) It is suggested that Table S2 be placed in the main text.

(3) Line 243-244: In the study of emissions from different types of ships (OGVs and ICSs), are there any significant differences in the emission characteristics of I/SVOCs between new ships in this study and old ships from previous studies of the same type? If so, what could be the reasons for these differences?

(4) Line 423-425: Considering the importance of fatty acids in ship exhausts, what are the possible sources of fatty acids in the atmosphere besides fuel combustion? And how can their contributions from different sources be differentiated and quantified?

(5) Section 3.5: In the investigation of SOA formation potential, the contribution of different I/SVOC components is discussed. How sensitive is the SOA formation potential to variations in the relative proportions of these components? Could a minor alteration in the ratio of specific I/SVOCs significantly influence overall SOA formation?

(6) In the conclusion section, in addition to summarizing the main findings, it would be valuable to propose potential future research directions based on the limitations identified in this study. For instance, with respect to the UCM analysis, it is crucial to elaborate on the specific enhancements required for the experimental methodology. Are there alternative extraction techniques or advanced analytical instruments that could potentially enhance the identification and quantification of UCM components, such as GC×GC-MS? A more comprehensive investigation into these

aspects would substantially enhance the value of the conclusion and more effectively guide future research endeavors.

(7) It is recommended to review and standardize the unit notations for better readability：For example, in the process of converting original measurement data into emission factors, the presentation of units for each variable in the text is not coherent enough. For the concentration representation of some chemical substances, such as the concentration of certain substances in the gas or particle phase in the description of sampling and analysis processes, there is no explanation in different paragraphs or charts whether different representation methods or units are used. The author should review and standardize the unit notations for better understanding.

(8) Figure 4: It is necessary to improve the readability.

Figure 6: the word “hapones” should be corrected to “hopanes”

(9) The article contains several minor grammatical and expressive errors that require thorough examination and correction to enhance its overall quality.

Line 406-408: “composition” and “compositions” should be unified;

Line 413: “accounting for average of... ” is an incorrect expression and should be changed to “ accounting for an average of... ”