

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-212

Anonymous Referee #1

Referee comment on "Ship emissions around China under gradually promoted control policies from 2016 to 2019" by Xiaotong Wang et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-212-RC1>, 2021

This paper presents the development of an emissions inventory for ship emissions from the coastal and river waters around China, based on the Ship Emission Inventory Model (SEIM), using a comprehensive set of AIS data to produce a high temporal and spatial resolution inventory. It uses the inventory, along with changes in emissions due to policy interventions as part of the domestic ship emission control (DECA) policy, to assess how ship emissions around China have changed from 2016 to 2019. Emission from ships play an important role in air pollution in China (as they do globally) and as a result studies like this are important in order to fully understand the effect. This work is novel, interesting and reasonably well written. I believe it should be published in ACP if the authors can address the following minor points.

General comments:

I found the description of how the AIS data of number and position of ships is actually turned into emissions of air pollutant a bit lacking. What emission factors are used for this? Connected to this, the authors use the China domestic ship emission control (DECA) policy to alter emissions throughout the study period but do not quote any evidence as to how effective the policy has been or how much compliance there has been with the emission reductions. Are there any measurement studies that could be quoted to show whether ships are sticking to the DECAs?

Could the authors comment on how much the emission from ships actually affects air pollution in populated areas in China? They quote percentage contribution to emissions but a more useful number would be how concentrations are affected. I realise this is not part of this studies but maybe there is some literature on the subject?

The authors consistently talk about the high spatial and temporal resolution inventory without actually stating clearly what the resolutions are. Please add this prominently in the manuscript.

Minor editorial points:

Line 8: pollutions should be pollution.

Line 107: use different language to 'figure out'.

Line 129: 'hardly unified standard' does not make sense.

Line 150: replace 'averagely' with 'on average'.

Line 381: 'proportions' does not need the 's'.

Line 472: replace 'on' with 'to' and 'effect' with 'effects'.

Throughout the whole manuscript NO_x needs to have a subscript x.