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Discussions

Interactive comment on "Identification of platform exhaust on the RV Investigator" *by* Ruhi S. Humphries et al.

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Received and published: 11 December 2018

We would like to thank the referee for their insightful comments. By responding to the referee's comments in the revised manuscript, we expect the manuscript to be significantly improved. In responding to the referee's concerns, we will respond to each comment specifically.

1. We agree that an overview schematic of the ship will be useful in the presentation of the manuscript, and this will be included in the revised version. If the referee could provide clarification of the "chimney-aerosol inlet distribution" comment, we would appreciate it.

2. While we understand the referee's concerns about the lack of signal in some of the

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parameters, we respectfully disagree with their conclusions. While all the parameters will respond equally well to very strong exhaust strikes, their response differs to minor exhaust strikes. The referee particularly notes the MAAP using the optical method, however we note that the specification of the MAAP states clearly the minimum detection limit of a 2 minute average of data is 100 ng/m3. Since we are utilising 1 Hz data, it is quite likely that weaker exhaust signals just won't be seen above the noise of this instrument. We will undertake a case study of the exhaust period around 0000 on May 19 in the revised manuscript to try to investigate why the other tracers don't response, and rule out any other sources of strong aerosol particle counts.

3. The choice of the 70 ng/m3 threshold, as well as the choice not to use a rolling window method is discussed quite clearly in section 3.1. Consequently, no changes will be made in the revised manuscript.

4. If the referee could provide a reference describing the "rolling window with waving criteria" method for outlier identification, we would be happy to test this method as we have tested a number of other methods. The case study that will be undertaken for the revised manuscript in response to the referee's second point will address their other concerns in this point.

5. The referee's comments here are quite valid, and this could be the case. We had chosen CCN as it was readily available for that voyage, is measured at the same high frequency as the exhaust was calculated (1 Hz) and has a clear exhaust signal. We also had real-time aerosol composition and aerosol size distributions that were measured during this voyage, which were measured at lower time resolutions. We agree with the referee that the showing the algorithm's application to other datasets will dramatically increase the evidence for its robustness and so we will apply the filter to these datasets in the revised manuscript.