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Interactive comment on “Organic carbon and non-refractory aerosol over the remote Southeast Pacific: oceanic and combustion sources” by L. M. Shank et al.

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Comment Review on: Organic carbon and non-refractory aerosol over the remote Southeast Pacific: oceanic and combustion sources by L. M. Shank, S. Howell, A. D. Clarke, S. Freitag, V. Brekhovskikh, V. Kapustin, C. McNaughton, T. Campos, and R. Wood

We feel that this is a poorly developed manuscript which seems to contain unsupported bias towards our previous work. The manuscript neglects many important works which provide very strong evidence pointing to a natural source of the discussed marine organics. Inclusion and balanced discussion of these omitted works would render many

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of the arguments presented in this manuscript unsupported.

(1) The manuscript does not reflect the state-of-the-art – in this context, we suggest the submission should not be accepted.

(2) The authors rely on sophisticated measurement technology to present their perspective; however, by omitting critical sampling and data analysis issues relating to the deployment and interpretation of these instruments and their data, it is difficult to have an acceptably high confidence level in the results.

(3) The authors claim the organics seen in clean marine air are anthropogenic, and that what is seen in supposed NE Atlantic studies is tarnished by pollution; however, this is not supported by their advanced instruments that they deploy – see the next point.

(4) The authors should demonstrate that, in the first instance, the AMS is operated correctly: were particles dried or sampled wet? It is normal to operate dry. If so, it is likely that organics internally mixed with sea spray will not be sampled due to sea salt bounce. How was the AMS regularly calibrated? You should be able to provide the mass spectra to support your claim on organics origin and demonstrate what organics are natural and anthropogenic. You should compare with Ovadnevaite et al. (2011) mass spectra. Why is the mass spectra not shown, isn't this the point of such an instrument? The second reviewer also raises these critical points and additional points relating to the sensitivity of the SP2 – we are also surprised to see such high precision data presented without even a mention of the instrument in the instrumentation section.

(5) Any credible progression of this manuscript should include a critical and respectable evaluation of the results in the related key publications listed below and the key technical issues outlined above. We won't go into more detail, Ref 2 has elaborated on many of the key points and provides an excellent analysis of the key short comings of this manuscript both from a technical and scientific perspective so there is no point to repeat the main flaws of this manuscript further.

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(6) To conclude, in our opinion, this manuscript should not be accepted! It is quite far off being an objective and informed scientific document in its current state. We don't believe that the arguments presented on the origin of marine organics can be supported once the works listed below are taken into account. Many of these works provide the most robust evidence relating to the origin of the previously report marine organics (e.g. using multiple techniques ranging from isotope analysis to mass spectrometry to HNMR) – for such experienced scientists, these omissions are quite surprising!

Colin O'Dowd & Darius Ceburnis

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