

Interactive comment on “New particle formation events observed at the King Sejong Station, Antarctic Peninsula – Part 2: Link with the oceanic biological activities” by Eunho Jang et al.

Allan

james.allan@manchester.ac.uk

Received and published: 21 December 2018

This paper represents some interesting observations on what is clearly an important atmospheric phenomenon. However, I feel I should comment on the authors' working hypothesis, which is that DMS emissions are responsible for the new particle formation (NPF) observed. While this is undoubtedly a major source of particulates in the marine environment, there has recently been an amount of evidence in support of iodine compounds also being responsible for NPF in Arctic and Antarctic regions (see references below). It would be highly informative to gain the authors' view of this, specifically whether abiotic or biotic iodine releases from the ice or ocean could also

C1

be contributing to the correlation noted here.

Allan, J. D., Williams, P. I., Najera, J., Whitehead, J. D., Flynn, M. J., Taylor, J. W., Liu, D., Darbyshire, E., Carpenter, L. J., Chance, R., Andrews, S. J., Hackenberg, S. C., and McFiggans, G.: Iodine observed in new particle formation events in the Arctic atmosphere during ACCACIA, *Atmos. Chem. Phys.*, 15, 5599-5609, 10.5194/acp-15-5599-2015, 2015.

Atkinson, H. M., Huang, R. J., Chance, R., Roscoe, H. K., Hughes, C., Davison, B., Schönhardt, A., Mahajan, A. S., Saiz-Lopez, A., Hoffmann, T., and Liss, P. S.: Iodine emissions from the sea ice of the Weddell Sea, *Atmos. Chem. Phys.*, 12, 11229-11244, 10.5194/acp-12-11229-2012, 2012.

Dall'Osto, M., Simo, R., Harrison, R. M., Beddows, D. C. S., Saiz-Lopez, A., Lange, R., Skov, H., Nøjgaard, J. K., Nielsen, I. E., and Massling, A.: Abiotic and biotic sources influencing spring new particle formation in North East Greenland, *Atmos. Environ.*, 190, 126-134, 10.1016/j.atmosenv.2018.07.019, 2018.

Raso, A. R. W., Custard, K. D., May, N. W., Tanner, D., Newburn, M. K., Walker, L., Moore, R. J., Huey, L. G., Alexander, L., Shepson, P. B., and Pratt, K. A.: Active molecular iodine photochemistry in the Arctic, *P Natl Acad Sci*, 114, 10053-10058, 10.1073/pnas.1702803114, 2017.

Roscoe, H. K., Jones, A. E., Brough, N., Weller, R., Saiz-Lopez, A., Mahajan, A. S., Schönhardt, A., Burrows, J. P., and Fleming, Z. L.: Particles and iodine compounds in coastal Antarctica, *J. Geophys. Res.-Atmos.*, 120, 7144-7156, 10.1002/2015JD023301, 2015.

Sipilä, M., Sarnela, N., Jokinen, T., Henschel, H., Junninen, H., Kontkanen, J., Richters, S., Kangasluoma, J., Franchin, A., Peräkylä, O., Rissanen, M. P., Ehn, M., Vehkamäki, H., Kurten, T., Berndt, T., Petäjä, T., Worsnop, D., Ceburnis, D., Kerminen, V.-M., Kulmala, M., and O'Dowd, C.: Molecular-scale evidence of aerosol particle formation via

C2

sequential addition of HIO₃, *Nature*, 537, 532, 10.1038/nature19314, 2016.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2018-1181>, 2018.