Interactive comment on “Assessing the potential for DMS enrichment at the sea-surface and its influence on air–sea flux” by C. F. Walker et al.

Anonymous Referee #2

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Walker and colleagues present an important study that adds to our knowledge of air-sea interaction and the central importance of microbial assemblages in determining global biogeochemical cycles.

General comments: Bacterioplankton are also an important source of DMS, which they produce from phytoplankton-derived DMSP. This needs to be considered within your proposed paradigm. Did you count bacterioplankton and/or bacterioneuston?

DMS as a source of CCN - has this ever been proven? A more contemporary view of marine CCN sources needs to be acknowledged. What about carbohydrate-based microgels?

I appreciate that cruise-based studies are often ‘sliced’ into multiple outputs/papers, but some expansion on the phytoplankton data would be insightful. Did you quantify...
phytoneuston? Please explain how dinoflagellates, coccolithophores and other phytoplankton were counted and identified?

Given ‘biological conditions’ (Page 10 L24) are a key factor in your conclusions, then I think that some biological data should be included.

Specific comments: Page 1 L25 This statements needs a reference. Page 2 L 20 Natural degassing or methodological degassing? Page 3 L1 What is the ‘challenge’? Please explain. Page 12 L27 Dinoflagellates are DMSP producers. OK, but what about DMS?