

Interactive comment on “A Marine Aerosol Reference Tank system as a breaking wave analogue” by M. D. Stokes et al.

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Received and published: 15 March 2013

Provide additional characteristics of the water sheet, pump intermittency and tank foam coverage. . .

Additional data and text has been added to the revised manuscript, to address this and the comments from Reviewer 2 regarding foam persistence. The 20 cm wide by approximately 1 cm thick sheet (in free fall) creates a bubble plume that penetrates about 25 cm after a 10 cm drop (all these dimensions can be varied in the tank). Above the rising bubble plume, a surface patch of foam is produced, with time-evolving characteristics depending on the water temperature, salinity and presence of surfactants in the tank. By using filtered seawater in a 3 s flowing sheet followed by an 8 s pause to allow

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plume degassing and foam creation, a surface patch of foam cells approximately 10 – 15 cm wide by 30 cm in length was created and decayed in about 5 – 6 s.

How does the particle size distribution from the MART compare to the jets described by Fuentes and Sellegri et al.?

Additional text has been added to the revised manuscript to expand the comparison between systems (Only Fuentes was mentioned directly). As noted, the size distribution of particles generated by the jet in Sellegri et al is similar to that generated by Fuentes. The particle number distribution obtained using the MART system has less pronounced characteristics of sub-100 nm modes, with the dominant number distribution mode around 200 nm, broadly tailing off to both larger and smaller sizes. Similarly, the particle number distribution generated by the plunging jet, or ‘weir’ of Sellegri et al. (2006) peaks at approximately 100 nm, with a secondary peak at approximately 350 nm, similar to their medium-sized glass frit, and without a significant contribution of super-micron sized particles evident in the MART distribution.

Would the authors suggest that MART be a standard design for the generation of SSA's?

We would hope that the MART could be copied as a design standard for future studies by other investigators. However, it has been wisely suggested that we refrain from calling the design a ‘standard’ (the original facility name was, SMART, Standardized Marine Aerosol Reference Tank) until the apparatus has been copied and has proven itself in regular use by other investigators. To date, 4 MART systems have been fabricated and are in use.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 8701, 2012.