

Abstract Submitted  
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**Bubble bursting mediated aerosols** HENRI LHUISSIER, EM-MANUEL VILLERMAUX, Aix-Marseille Universite, IRPHE — Wave breaking over the ocean in the surf zone is responsible for a substantial amount of atmospheric aerosols production. The objects mediating their formation are bubbles entrained below breaking waves, and bursting at the sea surface. We describe the mechanisms by which the liquid shell constitutive of a bubble ultimately results into small drops, also called *film drops*. A bubble bursts when a hole nucleates through the liquid shell. The hole grows at the Culick velocity balancing inertia with surface tension and is bordered by a rim collecting the shell liquid. This initially smooth toroidal rim corrugates when the centripetal acceleration caused by the recession motion is strong enough to trigger a Rayleigh-Taylor destabilization. Ligaments then emerge from corrugations crests and resolve by a Plateau-Rayleigh mechanism into droplets. The final most properties are thus solely determined by the shell geometry at the bursting onset. It depends on the ratio of the bubble radius to the capillary length, and on the slow gravity drainage of the liquid on which are superimposed rearrangements due to the marginal regeneration at the bubble foot. Our findings will be discussed in connexion with known facts in that context.

Emmanuel Villermaux  
Aix-Marseille Universite, IRPHE

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