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A Brownian dynamics model for the formation of marine aggregates FRANCOIS BLANCHETTE, CHANGHO KIM, UC Merced — Marine aggregates, the largest of which are called marine snow, play an important role in the oceanic carbon cycle. As microorganisms form, grow, and die near the ocean surface, they tend to cluster and form aggregates. We study numerically the formation of these aggregates using a Brownian dynamics model. The mobility tensor of each aggregate particle, which significantly depends on its shape and size, is computed by a boundary integral method to solve the corresponding Stokes equations. Thus, our model provides a more accurate description of the formation mechanism of aggregates. We investigate the fractal dimension and size distribution of aggregates and also characterize the settling speed as a function of a properly defined size of an aggregate.

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