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Exploring the mechanisms of rising bubbles in marine biofouling prevention MARK MENESSES, Boston Univ, JESSE BELDEN, NATASHA DICKENSON, Naval Undersea Warfare Center, JAMES BIRD, Boston Univ — Fluid motion, such as flow past a ship, is known to inhibit the growth of marine biofouling. Bubbles rising along a submerged structure also exhibit this behavior, which is typically attributed to buoyancy induced flow. However, the bubble interface may also have a direct influence on inhibiting growth that is independent of the surrounding flow. Here we aim to decouple these two mechanisms through a combination of field and laboratory experiments. In this study, a wall jet and a stream of bubbles are used to create two flows near a submerged solid surface where biofouling occurs. The flow structure characteristics were recorded using PIV. This experimental analysis allows for us to compare the efficacy of each flow relative to its flow parameters. Exploration of the mechanisms at play in the prevention of biofouling by use of rising bubbles provides a foundation to predict and optimize this antifouling technique under various conditions.

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