

Effects of marine biofouling on wall-bounded turbulence

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Marine biofouling is a problem that has impacted seafaring since ancient times. The accumulation of marine organisms on a ship leads to a significant increase of the hull's skin-friction drag, and thus an increase in fuel consumption and greenhouse gas emissions.

This presentation will focus on the impact of fouling by barnacles, a form of calcareous macrofouling which has strong impact on the shipping industry. Direct numerical simulations are used to investigate the fluid-dynamic properties of realistic barnacle surfaces which were created using an algorithm that emulates the settlement behaviour of barnacles. In addition to mean flow and turbulence statistics the blanketing-layer concept is applied to understand how the outer flow perceives barnacle roughness of increasing solidity.