



Effects of the depth to coral height ratio on drag coefficients for unidirectional flow over coral

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ABSTRACT: We investigated the effects of the ratio of water depth (H) to coral height (h) on the drag coefficient (C_d) for unidirectional flow over the coral species *Porites compressa*. C_d , measured in a laboratory flume at several different flow rates and depths over a coral canopy, varied from 0 to 1.68 with a clear dependence on $H:h$. At higher Reynolds numbers C_d was inversely proportional to $H:h$ and showed signs of becoming Re-independent. C_d was dependent on both Re and $H:h$ at lower Reynolds numbers, indicating laminar or transitional flow within the coral canopy. The relationship between C_d and $H:h$ at the highest available Re for each depth ratio is described by the power law: $C_d = 1.01(H:h)^{-2.77} + 0.01$. This result should be applied with caution, however, as different coral species and bottom roughness may cause a deviation from this relationship.

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