

Sediment disturbance due to storm wave action on a steep, mixed sand and gravel beach on the Bay of Fundy

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Little work has been conducted on mixed sand and gravel beaches compared to their single sediment-type counterparts, although they are a common occurrence on Canada's shoreline. Understanding the interaction between these beaches and incoming waves in the Bay of Fundy is important due to its potential for tidal power generation. The purpose of this study is to contribute new understanding of mixed sand and gravel beach dynamics and more specifically examine how waves affect the beach profile and the depth of sediment reworking, since this affects burial depths for cables crossing the beach. Energy from storm waves arriving at our study site (Black Rock Beach on the Minas Passage) is dissipated through reworking of the beach sediments, creating an active layer, whose depth is referred to as the depth of disturbance. Post-tropical storm Arthur has been the only wave event to have significant effects on the study site to date; it generated waves with significant heights as high as about 1 m. An array of equally spaced aluminum rods with free-sliding washers are deployed normal to the shoreline up the beach face. The array records the maximum depth of sediment activation and relative changes in bed elevation. The maximum depth of disturbance was observed to be about $42.5 \text{ cm} \pm 0.2 \text{ cm}$ near the high-tide line, with decreasing depths seaward to about $9.8 \text{ cm} \pm 0.2 \text{ cm}$ near the low-tide line. We intend to continue this study through the fall and winter.