Incipient rip-current statistics on an open coast

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Over 1000 hours of images were examined in order to characterize the appearance of rip-currents at two locations on the Long Island, NY, open-ocean shore. The camera at East Hampton, NY, allowed a view of up to one kilometer of shoreline while a stretch of coast 280 m long was monitored at Fire Island (FI). Rip-currents were frequently observed, but short-lived. Typically, several rip currents were observed per day per kilometer of shoreline. The average duration was little over a minute, and none lasted longer than five minutes. At East Hampton, there was no preferred location for formation. Multiple rip-currents were observed only twice having a spacing of about 300 m. At the Fire Island Lighthouse, rip currents preferentially appeared at one place along the beach. Multiple rip-currents were observed 14 times with a spacing of about 100 meters. Preliminary wave model results and nearshore wave measurements show no strong connection between the wave conditions and the appearance of rip currents. Although cross-shore circulation cells produced by rip currents are capable of producing shoreline undulations, the observed incipient rip currents could not be associated with small-scale undulations in the shoreline; events at either location do not appear persistent enough to alter the near shore morphology although they could still pose a risk to swimmers. The evidence suggests that, chance positioning of one of many rips along with preexisting morphology may dictate rip persistence.

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