Lidar Characterization of Rainsford Island Bluff, pre- and post-Hurricanes Henri and Ida

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Both intense storms and sea level rise are exerting an unprecedented strain on the thirty-four islands and peninsulas of Boston Harbor. While these drumlin islands have experienced tropical and extratropical storms since formation, such storm events are occurring more often and are more intense under present climate conditions. This is leading to increased coastal erosion, particularly along north-northeast facing shores. Understanding the dynamics of coastal erosion is of paramount importance in guiding the design of coastal shoreline protections. However, the episodic nature of these storms makes associated erosion events particularly difficult to quantify and to distinguish from more gradual and continuous incremental erosion caused by seasonal wind and rain, freezing and thawing. Therefore, in order to continually monitor the impact of episodic storms on the coastal bluffs and shores of Rainsford Island, a fixed scanning terrestrial lidar (CBL) will be situated above the bluff on the north shore of the island. A higher resolution terrestrial lidar (Riegl VZ400i) will be deployed, whenever an erosion event has been identified, for more detailed characterization.

Although hurricanes Henri and Ida did not inflict significant damage on Rainsford Island, these storms were accompanied with torrential rain that did affect the overhanging vegetation and the bluff face. Deployment of a stationary CBL on the cliff top, will allow assessment of post storm effects, and a decision on whether to deploy a team to obtain more rigorous, finer resolution, Riegl VZ400i lidar data for detailed measurement of damage and a better understanding of the geological processes that contribute to erosion on Boston Harbor Islands.

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