

Controls on Water Table Fluctuations in Two Salt Marshes on New Brunswick's Baie des Chaleurs

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In order to preserve, restore or manage salt marshes, an understanding of their hydrological processes is critical. My research assesses the controls on water table fluctuations in Rivière du Nord and Daly Point salt marshes on New Brunswick's Baie des Chaleurs. Using data from pressure transducers logging water table levels at intervals of 15 min over the summers of 2018 and of 2019, I determined the impact of tidal channels on marsh soil water drainage. I have located studies on water table fluctuations in only four sites outside of Baie des Chaleurs. In Boston Harbor, soil water drainage occurred only 10 m from the channel. On the Yangtze estuary, soil water drainage was affected at a distance of at least 13 m away from the tidal channel. In Bay of Fundy marshes, the impact of the tidal channel was not found beyond 15 m. Tidal channels on the Hudson River estuary seemed to influence salt marsh soil water drainage at a distance of 36 m from tidal channels. On Baie des Chaleurs, tidal channels had a greater impact on soil drainage, affecting water tables over a distance of at least 42 m at Rivière du Nord and 39 m at Daly Point. However, a multiple linear regression analysis, including sample site elevation the marsh and the year along with distance from channel, revealed that all parameters were statistically significant. These results suggest a difference in marsh soil characteristics and yearly sea level.



Rivière du Nord salt marsh in Baie des Chaleurs, NB.
Credit: Dr. Gail Chmura