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**LIBRO DE RESÚMENES**

## AN ESTIMATE OF SOIL ORGANIC CARBON RELEASED BY EROSION OF SALT MARSHES IN THE BAHÍA BLANCA ESTUARY (ARGENTINA)

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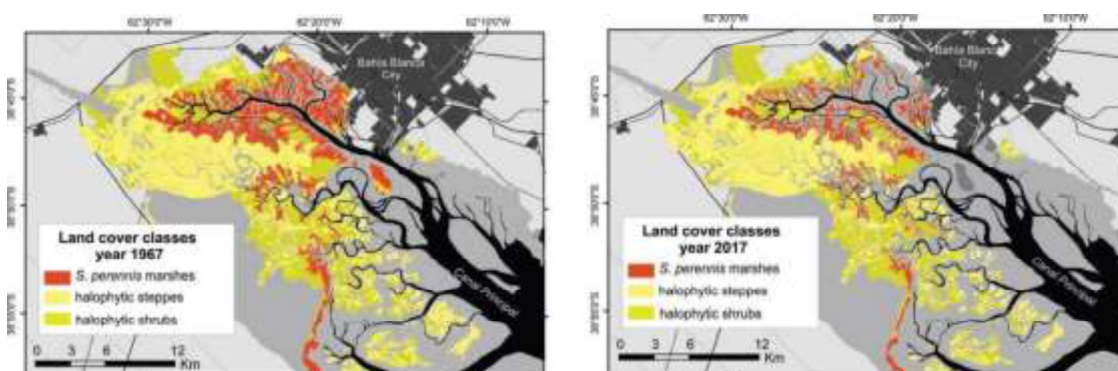
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Coastal marshes store large amounts of organic carbon in their sediments and account for an important fraction of carbon storage in the ocean and adjacencies. However, the magnitude of carbon storage in salt marsh soil deposits is variable, and adequate inventories have not been made for most coastal settings in the southern hemisphere. We quantified and characterized the soil organic carbon pool stored in *Sarcocornia perennis* marshes of the Bahía Blanca Estuary, a major coastal wetland system in the SW Atlantic. Land cover classes were mapped from aerial photographs (year 1967) and high-resolution satellite images (years 2005 and 2017) and rates of salt marsh erosion were evaluated. Erosion rates of *S. perennis* marshes (% loss per year) increased from 0.8 % (from 1967 to 2005) to 2.0 % (from 2005 to 2017). For this later period, salt marshes lost to mudflats at an average rate of 1.03 km<sup>2</sup> year<sup>-1</sup>. Considering the average erosion depths and soil organic carbon densities, between 2005 and 2017 the northern section of the Bahia Blanca Estuary exported organic carbon at a rate of 2893 tC year<sup>-1</sup>. The stored organic material under erosion presents a very low C : N ratio (8 - 10), and its bulk isotopic composition ( $\delta^{13}\text{C}$  -24.7 to -16.8 ‰;  $\delta^{15}\text{N}$  +8.7 to +11.3 ‰) reflects a dominance of organic matter of marine origin. Bulk organic matter from a deep section of one core (2.14 m below surface) was <sup>14</sup>C dated 4710 ± 30 years BP. In the study area, transgressive sea level events took place throughout the Holocene. Thus, the presently intertidal platform occupied by *S. perennis* marshes is likely composed of marine deposits that formed under a higher relative sea level. Under the current rates of relative sea level rise (+1.51 ± 0.32 mm year<sup>-1</sup>, Buenos Aires Harbor) there is accelerated erosion, and salt marsh soils act as a significant net source of organic carbon and nitrogen to estuarine waters.

**Keywords:** Soil Organic Carbon, *Sarcocornia perennis*, marsh loss



Salt marsh erosion in the Bahía Blanca Estuary from 1967 to 2017