

Evaluation of Coastal Erosion in the Jurisdiction of the Municipalities of Puerto Colombia and Tubará, Atlántico - Colombia in Google Earth Engine with Landsat and Sentinel 2 Images

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Abstract : In the coastal zones are home to mangrove swamps, coral reefs, and seagrass ecosystems, which are the most biodiverse and fragile on the planet. These areas support a great diversity of marine life; they are also extraordinarily important for humans in the provision of food, water, wood, and other associated goods and services; they also contribute to climate regulation. The lack of an automated model that generates information on the dynamics of changes in coastlines and coastal erosion is identified as a central problem. Coastlines were determined from 1984 to 2020 on the Google Earth platform Engine from Landsat and Sentinel images, using the Normalized Differential Water Index (MNDWI) and Digital Shoreline Analysis System (DSAS) v5.0. Starting from the 2020 coastline, the 10-year prediction (Year 2031) was determined with the erosion of 238.32 hectares and an accretion of 181.96 hectares, while the 20-year prediction (Year 2041) will be presented an erosion of 544.04 hectares and an accretion of 133.94 hectares. The erosion and accretion of Playa Muelle in the municipality of Puerto Colombia were established, which will register the highest value of erosion. The coverage that presented the greatest change was that of artificialized Territories.

Keywords : coastline, coastal erosion, MNDWI, Google Earth Engine, Colombia

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