



Changes on the coastline of buenaventura bay (colombian pacific) and its relationship with the climatic conditions

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Some authors point out that the variability of a coastal system is the response of physical factors (climate, waves, currents, wind, etc.) or combination of some of them, for example long-term variations in the relationship between climate and supply of sedimentary material. For Colombian Pacific coast it has been said that the regimen of meso-tidal is one of the agents that contribute to changes in the morphology of the littoral zone.

Between 2012-2015 was conducted a research in the mouth of Buenaventura Bay (Colombia Pacific coast), using two stations: Soldado point (southern point of the bay) and Bazan point (the northern point of the bay), for those stations the digital elevation model (DEM) was performed using a DGPS with technology GNSS the recent evolution of the coastline and changes in volume of sand from beaches for two scalar approaches were determined: annual and intra-annual. The use of ArcGIS 3D Analyst in the DEMs allowed to calculate the cubic area between the raised surfaces each month. Changes in the coastline were made using Digital Shoreline Analysis System (DSAS) an ARCGIS extension. We used zonal and meridional components of the wind data near the coast from WindSat, rainfall and sea level anomaly data from the database AVISO (Archiving, Validation and Interpretation of Satellite Oceanographic), and sea level pressure (SLP) from NCEP/NCAR (National Center for Environmental Prediction/ National Center for Atmospheric Research), in collaboration with the National Oceanic and Atmospheric Administration (NOAA). Finally, climatic variables were correlated with the rates of coastal erosion and changes in sand volume of the beaches, because wind and precipitation are some of the factors in sediment transport. The study showed erosion rates with negative values in 2014 and 2015 that represent loss of land, the intra-annual variability in September and October were the highest loss of land, this coincides with the values of the highest tides of the year. The results suggest that in the last 5 years have risen tides (about 50 cm in spring tide), accompanied by strong winds, which has caused lost land in some areas because overwash and of flooding processes.

KEY WORDS: Coastal erosion, coastal processes, climate, tides