



Physical Forcing Induced Coastal Vulnerability along the Gulf of Guinea

Coastal areas of the Gulf of Guinea experience accelerated degradation as a result of erosion and flooding associated with intensification of extreme marine-meteorological phenomena. The coastal erosion process, especially on the sandy or muddy littoral, constitutes one of the main factors of the degradation of the Gulf of the Guinean coast. These risks, which are still poorly studied, could increase over the coming decades because of climate change and the human activities that exacerbate them. Data related to ocean forcing (tide, wave, and sea level anomaly), to hydrologic parameter (rainfall) and to the state (geomorphology, coastal slope, and rate of coastal retreat) of the coast were analyzed by several statistical methods and a numerical vulnerability model to map the vulnerability of the different coastlines of this region. The results showed that the vulnerability of these coastal areas is influenced by geomorphology, tide, waves and rainfall intensity. 24.34% and 37% of the entire coast are of low and moderate vulnerability respectively. While 26.98% and 11.66% are of high and very high vulnerability respectively. This information could facilitate developing sustainable policies to effectively manage hazards in this coastal zone.

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