

Influence of Extreme Rainfall Events on the Water Quality and Shoreline Changes of Cadacan River Basin in the Province of Sorsogon

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Tropical cyclones (TC) are a prevalent natural hazard in the Philippines and other Asia Pacific countries, bringing heavy rainfall occurrences. There are several related studies, but the research on the effects of rainfall on water quality and shoreline alterations on water resources like river basins is still lacking. Furthermore, rivers in rural areas are overlooked most of the time. This study will concentrate on the Cadacan River Basin (CRB), a body of water in the Philippines that is vital for Sorsogon's agriculture and daily requirements.

This hydrometeorological research aims to determine the effects of extreme precipitation on the water quality and the changes in the physical parameters of the shoreline of CRB. This study also aims to identify extreme precipitation events using monthly meteorological data from Juban and Legazpi PAGASA weather station, from January 01, 1990, to December 30, 2020.

Water quality samplings will be conducted in the five selected stations along the Cadacan River Basin, especially before and after TCs. The parameters, Dissolved Oxygen (DO), Turbidity, Temperature, pH, Specific Gravity (SG), Total Dissolved Solids (TDS), ORP, EC, and Salinity of CRB are the parameters that will be measured in this study. These will be measured using portable instruments like the Multi-Functional Water Quality Pen Tester, Digital DO meter, and a DIY Secchi Disk. Aside from that, it includes the river's physical parameters like length, depth, width, and flow rate to test the goodness of the CRB. Available images or time-series data from the years 1990-2020 in Google Earth will be analyzed and interpreted to identify the shoreline changes of CRB over the years.

The water quality conditions of CRB will be assessed using a water quality index. Aside from that, this is to investigate the implications of the shoreline changes and water quality results to the Cadacan river basin's future hydrological response. It will also serve as a model for other river basins, particularly those with data shortages such as Cadacan.

Keywords: Tropical cyclones, extreme rainfall events, Cadacan River Basin, water quality samplings, shoreline changes