

Relating frontal features and fishing activity in the Bohol Sea using multi-sensor chlorophyll-a and VIIRS night light data

Meara Noelle A. Tolentino

In this study, the relationship between fronts and fishing activity in the Bohol Sea will be examined using satellite data. Fronts are narrow high-gradient zones in the ocean that can act as bioaccumulation mechanisms that lead to increased levels of productivity. This would imply an adequate supply of biomass to support larger marine animals up the food chain including fish. Previous studies have reported a strong relationship between frontal features and fish distribution and abundance. These findings encouraged a growing use of frontal data in elucidating potential fish aggregations for a more practical and ecosystem-based fisheries management. However, this approach remains largely unexplored in the Philippines. Thus, this study aims to establish the link between fronts and fishing activity, focusing on the Bohol Sea which is one of the primary fishing grounds in Central Visayas and a known biodiversity hotspot for large marine vertebrates. Satellite data will be extracted from the CMEMS and NOAA websites for the multi-sensor chlorophyll-a (chl-a) concentrations and VIIRS night light boat detection data, respectively. The fronts will be detected by implementing chl-a gradient computations, and the fishing activity will be identified as dense fishing areas using a density-based clustering method. Subsequently, the fronts and fishing activity will be correlated by collocation and examined for different spatial and temporal patterns. Identifying robust spatio-temporal correlations between frontal features and fishing activity in the Bohol Sea would suggest the potential for expanding the analysis to the rest of the Philippines' archipelagic seas. This can be useful for guiding management strategies and decisions for monitoring the country's marine ecosystems and fisheries.