

MARINE DEBRIS DEPOSITION RATES
IN THE NORTH PACIFIC
RELATIVE TO FORCING FACTORS

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ABSTRACT

Marine debris is becoming more abundant in the ocean and it is difficult to predict its pattern of movement resulting in wide ranges of deposition patterns along coastlines. This study investigated the relationships between physical forcing factors and marine debris deposition on an island in the central North Pacific, Tern Island (23.870°N 166.284°W). Data collected by the National Oceanic and Atmospheric Administration Marine Debris Program was classified into types (*i.e.* floating or saturated) and analyzed annually, seasonally, and biweekly. Debris was found to appear in large sporadic events as opposed to following seasonal or interannual patterns. Some of the large debris events at Tern Island were found to correlate with changes in the location of Ekman transport convergence. Ekman convergence, as estimated by the line of zero zonally-averaged meridional Ekman transport, typically occurs between 26°N to 30°N. The analysis shows during certain times, this line shifts south to near the latitude of Tern Island, and this is sometimes coincident with large marine debris deposition events.