



Effects of Surface Winds on Green Island Wakes Observed from Satellite Imagery

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Effects of sea surface wind on the wakes induced by the Kuroshio at lee of Green Island, Taiwan are investigated using satellite imagery. The spatial scale and characteristics of the wakes are analyzed using optical and synthetic aperture radar images acquired from the Satellite Pour l'Observation de la Terre, Formosat-2, European Remote Sensing Satellite, Advanced Land Observing Satellite, and Sentinel-1. Kuroshio velocities around Green Island are derived from satellite altimeter data and acoustic Doppler current profilers. From high-spatial resolution satellite images, the average aspect ratio of the wakes is 2.09 under southerly winds and 1.91 under northerly winds. The dimensionless width of the wakes is 2.02 and 2.76 under southerly winds and northerly winds, respectively. Under the same conditions of the Kuroshio velocity, southerly winds lead to the expansion of the wakes and eddy shedding is transmitted farther downstream. However, northerly winds constrict the development of eddy shedding and cause the wake to be close to the island. Observations from Moderate Resolution Imaging Spectroradiometer images show that the area of the sea surface temperature drop is relatively large under southerly winds and small under northerly winds.