

The Kuroshio Fronts and Cold Eddies off Northeastern Taiwan Observed by NOAA-AVHRR Imageries

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ABSTRACT

Over a hundred AVHRR-HRPT thermal imageries of NOAA satellites which covered dimensions 350Km (columns) \times 280Km (rows) with center point at 26°N and 123°E, period from October 1989 to December 1990, had been derived to observe the surface features of waters off northeastern Taiwan.

The patterns of Kuroshio fronts in this water (KEEP area) can be generalized to three types: (A) front extending away from northeastern Taiwan northeastwardly, (B) front extending away from northeastern Taiwan north-eastwardly, then turning into an anticlockwise frontal eddy, and (C) front extending westward along coast of northern Taiwan then away with an arcuate curve and turning to east. The locations of cold eddies, another major phenomenon in this area, can also be generalized to three types related to Kuroshio fronts: (A) eddy formed with no Kuroshio fronts around, (B) eddy located on cool (west) side of fronts, and (C) eddy located on warm (east) side of fronts.

Front Type-A is the dominant and most stable pattern in summer. On the contrary, in other seasons, all three front types are variable and have different degrees of intrusion onto shelf waters. Regarding the cold eddies, the most common is Type-B, probably existing in each season. The next most common is Type-A, which prevails in summer. The least common is Type-C, which usually appears in winter. Regarding the relationship between front types and eddy types, the most prevailing composition is the cold eddy Type-B associated with the front Type-A.

1. INTRODUCTION

The Kuroshio, a steady boundary current, originates in the west Philippine Sea, then flows by Taiwan Island, East China shelf, east of Japan, and into the sub-polar region of the North Pacific ocean. Generally speaking, the Kuroshio flows along the continental edge between the Asiatic plate and the Pacific plate. When reaching southern area of Taiwan, the Kuroshio divides into two currents: the main current flows along the east of Taiwan and the

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