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THE MONITORING OF MARINE ENVIRONMENTAL PROBLEMS BY AIRBORNE AND LANDSAT MSS DATA

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For the purpose of monitoring of marine environmental problems, the authors tried digital analysis of multispectral scanner data obtained by airborne and Landsat around the coastal area of Japan.

The main purpose of this study is the detection of red tide which is popularly named after its apparent red color and caused by the abnormal growth of plankton. Due to the rapid increase of nutritious river water and industrial effluent into the sea, the frequency of red tide in coastal areas such as Tokyo Bay, Ise Bay and Seto Inland Sea increases year by year, and it becomes a serious social problem for fishing industry, especially fishing nursery industry.

In 1975, 1976 and 1978 several large-scale red tides occurred in Harimanada and Osaka Bay in a portion of Seto Inland Sea, and a large number of fish in the sea and in the fishing nursery were seriously damaged. In 1978, a severe red tide prevailed in Ise Bay for longer than two months, and almost all fish and shellfish in the coastal area were killed. Now, the detection and monitoring of red tide are among the most urgent needs for not only the fishing industry but also the administrative aspect for environmental problems.

Through this investigation, the authors found out the most effective wavelength for the detection of red tide is the thermal band of the airborne multispectral scanner. Although, unfortunately, the thermal band of Landsat-3 is not operated, the authors recognized that band-4 is also the most effective wavelength for the detection of red tide. The digital analysis of MSS data observed red tide was tried in several cases, and good results were carried out.