Coastal Eddies and Fishing Ground Formation in Spring 1997 as Revealed by OCTS Images

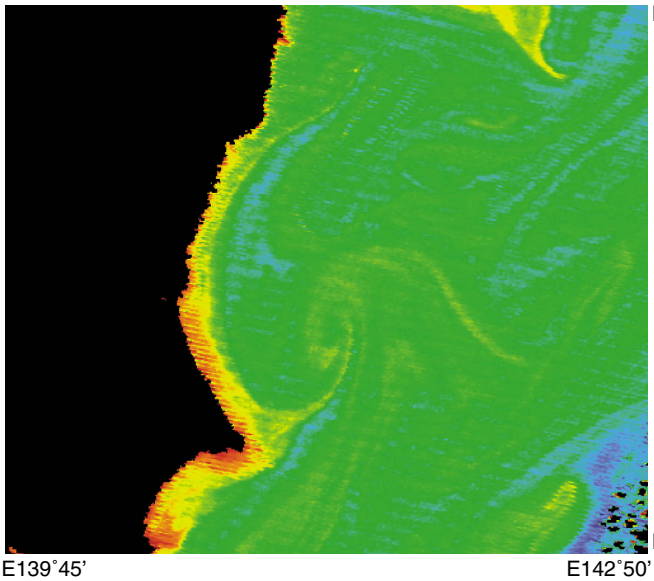

Fig.1 Chlorophyll-a off Kashima-nada to Boso peninsula ADEOS OCTS Level-3 LAC Image (25 April 1997)

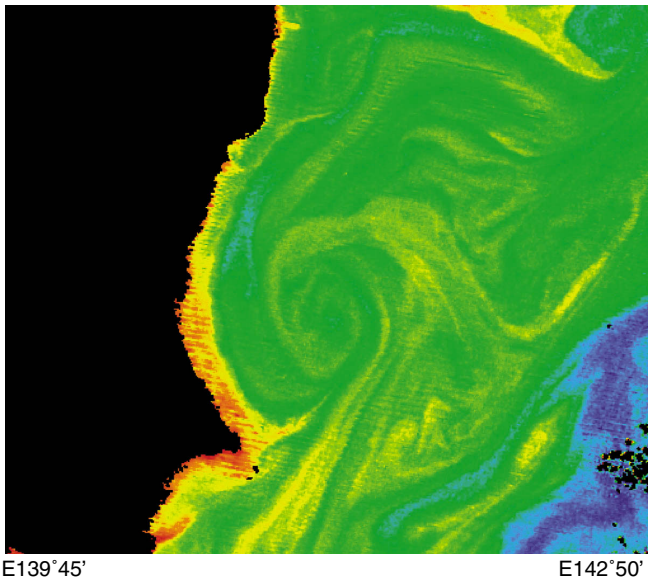

Fig.2 Chlorophyll-a off Kashima-nada to Boso peninsula ADEOS OCTS Level-3 LAC Image (26 April 1997)

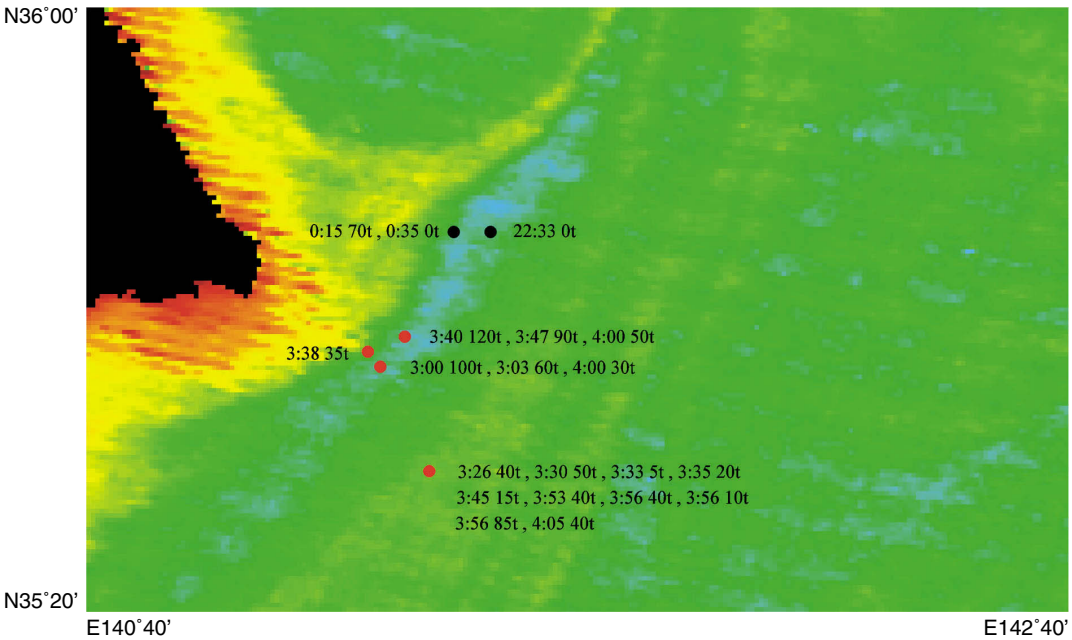

Fig.3 Range of Chlorophyll-a and horse mackerel fishing ground off Boso peninsula ADEOS OCTS Level-3 LAC Image (25 April 1997)

Provided by NASDA

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OCTS images show zoomed up Chlorophyll density map off Kashima-nada to Boso peninsula near Tokyo Japan. Chlorophyll-a is shown in red, orange, yellow, green and blue, from highest to lowest density. The blue (lowest density Chlorophyll-a) area in the lower right corners of Fig. 1 and Fig. 2 is the Kuroshio current which is well known as low-Chlorophyll-density water. Coastal water is always Chlorophyll rich, and northern water which comes from Oyashio is also known to be low temperature and nutrient rich. A clear coastal eddy is seen off point Inubo. The high chlorophyll streamer is not introduced by coastal water but is up-welled nutrient rich water by the eddy. The next day, Phytoplankton blooming was observed around the eddy. The eddy and mixing motion thus produced a large upwelling area and bring nutrient-rich water from several tens of meters deep to the surface. There is usually two to three days between nutrient supply and phytoplankton blooming.

Figure 3 shows horse mackerel fishing grounds off point Inubo. Although the total catch at the northern-most points (black circle) was relatively small, 70 tons in two hours, the catch was 485 tons in one hour at the middle three points (red circle) and 345 tons in 40 minutes at the southern-most point (red circle.) The fishing was conducted at night, so fishermen were unable to observe the ocean color. The interesting point is that all fishing grounds are formed on ocean color fronts (*1). This demonstrates that fishing grounds can be estimated by ocean-color maps.

The cooperation among the Ibaraki Fisheries Station, Ibaraki fisheries Radio Station, and RESTEC continues to produce much data on fishing grounds and ocean-color maps to enable producing fishing ground forecasting maps in the near future.

*1 Ocean-color fronts: Generally speaking, a boundary between water mass is called a front. Ocean color front is a boundary where ocean color abruptly changes.