EQUATORIAL CURRENT SYSTEM IN THE WESTERN PACIFIC OCEAN (Abstract)

C. COLIN, F. JARRIGE and P. RUAL

—

(3rd Symposium on the Cooperative Study of the Kuroshio and Adjacent Regions - CSK, Bangkok, May 26-30,1973)

—

Many cruises of the R.V. CORIOLIS, carried out in the equatorial area, have given evidence of several typical currents according to the meteorological surface conditions. The distributions of the physico-chemical properties confirm the velocity distribution.

The current distribution at 170° E, on each side and at the equator, is composed of :

- The Equatorial Current, flowing westward at the surface and which has two main cores at 2°30 S and 2°30 N

- The Equatorial Undercurrent, underneath, flows eastward; it is divided into two cores :

  . the upper one, situated at the bottom of the mixed layer, 100 m deep, is formed of the same waters as the Equatorial Current; it is not, of course, in geostrophic balance and seems to be bound to the surface circulation which is driven by the wind; it flows westward when the trade winds are replaced by the N.W. Monsoon

  . the lower one, 200 m deep, within the thermocline, is very steady and in geostrophic balance. Its waters are from different origins : North Equatorial Countercurrent Water, Subtropical South Pacific Water and Coral sea water. This core is more or less linked to the North Equatorial Countercurrent.

- The Intermediate Equatorial current flows westward below the undercurrent. It has a speed of about 20 cm/S, a volume transport of the same order of magnitude as the Equatorial Undercurrent and is associated with very typical physico-chemical properties.

- On each side of the Intermediate Equatorial Current, at 2°30 N and 2°30 S, are found the two deep extensions of the Equatorial Undercurrent, well developped at that longitude.

During the two "FOC" cruises, the current distribution was not exactly the same as observed at 170° E. If in the upper layers the current structure is bound to the atmospheric conditions by the same mechanism as observed at 170° E, at the level of the Intermediate Equatorial Current the current distribution is not steady. It seems that during the "FOC 2" cruise, this current was not present, and on the other hand seems to be replaced by an eastward current; nevertheless, this current was still associated to a minimum oxygen content.