

C-5 Timing for the First Appearance of Swimming Cells of Harmful Algae, *Cochlodinium polykrikoides* and Their Growth Characteristics in the South Sea of Korea

Chang Kyu LEE, Chang Su JUNG, Sam-Geun LEE, Suk Yang Kim, Wol Ae LIM, Hak Gyoon KIM and Young Sil Kang
Harmful Algal Blooms Research Division, *NFRDI*

Harmful algae, *Cochlodinium polykrikoides* has damaged to fisheries organisms by making massive blooms mainly in the South Sea during the higher water temperature season since 1995 in Korea. Ecological and hydrodynamic studies of the species offer useful information in understanding its bloom mechanism, giving promising data for the modeling and prediction of the blooms. Thus, we studied the quantitative analysis of swimming cells and the hydrographic characteristics for four years, particularly, during the periods from the first appearance of swimming cells to the outbreaks in the South Sea of Korea.

One or two chained young swimming cells of the species were initially observed two to six weeks ago before making blooms in the South Sea of Korea. However, it took only one or two weeks until making blooms at the cell concentration of 50 cells/ℓ in an average. Although there were no any significant differences in the date for the first appearance of swimming cells depending on the locations such as Yokjido, Narodo and Wando in the South Sea, the elapsed time to blooms was the shortest near the Narodo, indicating that the coastal area near Narodo was the most environmentally attractive place for the growth of the species.

The quantity of zooplankton biomass for warm current indicate species was much more at the offshore between Geomoondo and Jeju, about 25-75 miles off from Narodo, than at the inshore between Kwangdo and Narodo. Also, the hydrographic data such as temperature, transparency, nutrient concentration, etc gave us the context that the area near Kwangdo and Geomoondo was a frontal area where there was active mixing between inshore and offshore water. More ever, the quantity of young swimming cells near Kwangdo and Geomoondo at the initial appearance time outnumbered that of other area.

Therefore, we estimated that the higher growth rate of the species around

Narodo and Kwangdo was attributed to the distinguishable environmental characteristics compared to other areas. In addition, the time when the thermocline is broken and what the strength of cold water is, being concurred annually near Jindo at this season, may affect deeply on the elapsed time to the beginning of blooms since initial appearance of swimming cells near Narodo.