PB21) THe Variability of Environmental Characteristics in the Abalone Mariculture Area

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1. 서론

Marine aquaculture cage systems are used to increase productivity by concentrating energy supply much higher than natural ecosystems. Massive culture system and intensive food supply (and excretion) disturb the oceanic and environmental conditions around the aquaculture area. This study focused on the assessment and discussion of the seasonal and interannual variations of oceanic conditions as well as environmental effects on the marine aquaculture area.

2. 재료 및 방법

To understand the variability of the oceanic and environmental conditions around the abalone marine aquaculture area, seasonal hydrographic survey were carried out and time series datasets of hydrodynamic were collected in the study area simultaneously.

3. 결과 및 고찰

The observed hydrodynamic data showed that the seawater movement was dominated by tidal current with a semi-diurnal period in the study area. Depending on the water depth, the current speeds at surface and bottom layer decreased rapidly with range of from 80 cm.s.-1 to 5cm.s.-1. Particularly, due to the abalone aquaculture facilities(cages), the current speeds at surface layer decreased markedly. Preliminary results from the water quality parameters (dissolved oxygen, COD, nutrients, SPM, etc) indicated that the changes of environmental conditions are closely related to the current speed. The weaken tidal current at the surface by the dense and massive abalone aquaculture facilities should seem the main cause of environmental degradation in the study area due to restriction of water-mass exchange. The seasonal and interannual variation of the Sea Surface Temperature (SST) in the study area suggested that the increased SST in summer is associated with the weakened cold water in the southwestern coast (JCW). The JCW is strongly correlated with the temperature of bottom water affected by the Yellow Sea Bottom Cold Water (YSBCW). The more extended YSBCW to the south is bound to affect the temperature of bottom water in the southwestern coast of Korea. Southern limit of the YSBCW in summer is strongly correlated with the SST of the northern YS in previous winter.