

海洋観測のための定点復帰型ブイの開発

石井 憲* 山越 康行** 御手洗 哲司*** 有村 忠浩**** 廣田 修一*****

Abstract

We developed a prototype of a dynamic positioning buoy using DGPS (Differential Global Positioning System). The research budget provided by the Science and Technology Agency of the Japanese Government (the Special Coordination Funds) since 1993. The research is principally aimed at developing of oceanographic vertical observation buoy system to keep the position within a specific area, such as a drifting warm-core ring.

The prototype buoy, 5.4m in length, is made of aluminum alloy. A nutrient analysis sensor, sensor for primary production and winch system with cable for vertical sensing are installed in the buoy. Buoy position is self-controlled by using DGPS position data and self-propulsion unit with three electric thrusters. DGPS correction data and position data of the buoy are transmitted via communication satellite. Electric power is supplied by solar and lithium batteries.

We carried out full scale trials with significant wave height about 1.4 m, average wind velocity about 5m/sec, buoy drifting velocity about 0.27 m/sec. Dynamic positioning performance and controlling ability of the vertical sensing system of the buoy are confirmed by these experiments.