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Development of An Autonomous Underwater Glider for Observing Physical Ocean Parameters in Indonesian Seas

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Conducting a sustained monitoring and surveying of physical ocean parameters for research or operational purposes using moorings and ships would require high cost. Development of an inexpensive instrument capable to perform such tasks not only could reduce cost and risks but also increase cruising range and depth. For that reason, a prototype of underwater glider was developed, named “GaneshBlue”. GaneshBlue works based on gliding principles which utilizes pitch angle and buoyancy control for moving. For one gliding movement, GaneshBlue passed through 5 phases of surface, descent, transition, ascent and back to surface. The glider is equipped with basic navigation system and remote control, programmable survey planning, temperature and salinity sampling instruments, lithium batteries for power supply, and information processing software. A field test at the shallow water showed that GaneshBule has successfully demonstrated gliding and surfacing movements with surge motion speed reaching 20 cm $s^{-1}$and 20 m in depths. During the field test the glider was also equipped with three instruments, i.e. Inertial Measurement Unit (IMU) to estimate glider’s speed and orientation; MiniCT to acquire temperature and conductivity data; and Altisounder to determine its distance to sea surface and to seabed. In general, all the instruments performed well but filter algorithm needs to be implemented on data collection procedure to remove data outliers.