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Feasibility Study of an Underwater Glider with Independently Controllable Main Wings (1st report) - Development of an Experimental Underwater Glider -

[Masakazu Arima](#), [Wataru Sumino](#), [Atsushi Toyoda](#), [Tokihiko Katsui](#) and [Taketoshi Okuno](#)

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Summary: The authors are planning to develop an 'underwater glider with independently controllable main wings' for the use of oceanographic survey, monitoring of marine environment, fisheries, ocean exploration, and marine sports / leisure activities. Underwater glider has no propulsive machinery, and so this silent and safe vehicle can be maintained with relative ease and is easy on environment and many forms of life in the sea. The first report deals with development of an experimental underwater glider. The glider was designed for much of a high performance of motion. Main wings, upper rudder, diving rudder, movable balance weight, and vent - blow valves can be remotely operated by using the 6-ch-radio-controlled system. Three-component-force test has been conducted in a circulating flow channel so as to obtain hydrodynamic characteristics of the glider. Motion performance of the glider was also observed in a towing tank and a diving training pool. Various kinds of experiments leads to the conclusion that the 'underwater glider with independently controllable main wings' had an admirable motion capability as compared with conventional 'underwater gliders with fixed main wings', and therefore practicability of the proposed glider was demonstrated.

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