Deep NINJA: A new profiling float for deep ocean observation developed in Japan

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We will introduce a Japanese new profiling float for deep ocean, Deep NINJA, which has been developed by Tsurumi Seiki Co. Ltd. and JAMSTEC. A prototype is designed to observe the deep ocean up to 4000m depth. It adopts the Iridium system which enables the two-way communication in a short time. Float locations at the sea surface are fixed by Global Positioning System. Its aluminum-alloy hull realized the float size of about 200 cm in height (with antenna) and about 75 kg in air weight. Lithium batteries are loaded and it is estimated to measure totally 100 ocean profiles. Now we are considering that its size be reduced for easier operation on board. One of the key devises of Deep NINJA is the buoyancy engine, which is a hybrid of the single-stroke piston and the hydraulic pump. The engine was tested at up to 4500-dbar well in the laboratory and it can generate significant buoyancy to raise the float to the sea surface in the global ocean. Recently the prototype was just built up and the first dive to deep ocean will be planed in 2011 after several tests in coastal regions.