

Development of Deep NINJA

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Summary:

- Tsurumi Seiki Co. and JAMSTEC have developed a new profiling float for deep ocean, “Deep NINJA”, which can measure PTS profiles at the depth of up to 4000 dbar.
- The first prototype was tested in a coastal region near Tokyo with R/V Kaiyo (of JAMSTEC) in 2011 August.
- The field test for deep observation will be carried out this summer, and then a (small) fleet of Deep NINJAs will be deployed in the Southern Ocean by R/V Mirai in 2012/13 austral summer.
- Deep NINJA is planned to be available for public in 2 – 3 years.

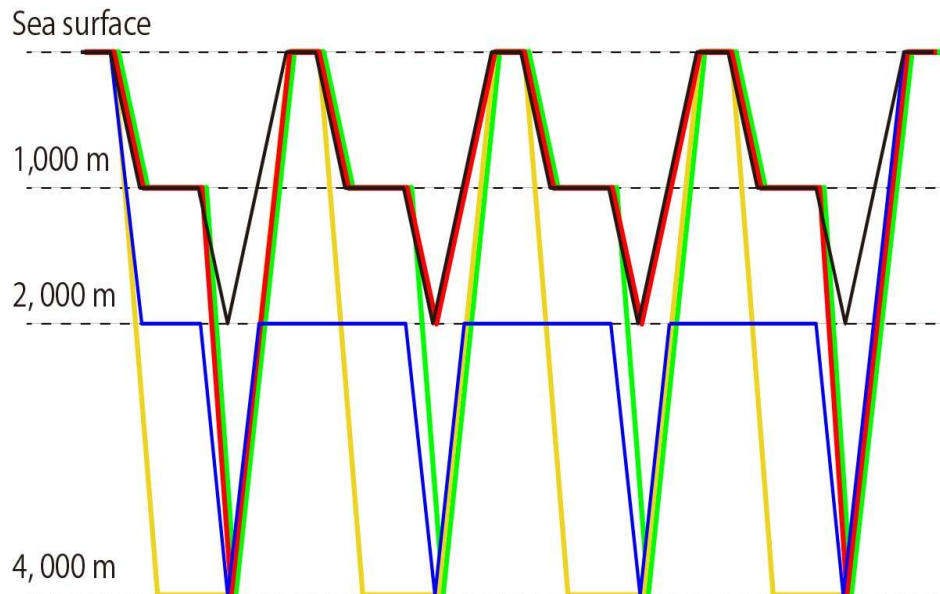


Specification of Deep NINJA (the latest prototype)

- Max. profile depth: 4000m
 - Available in the whole ocean
- Dimension:
 - Height: 210 cm (with antenna)
 - Diameter: Max. 25 cm (at bulge)
- Weight: about 50 kg (in air)
 - Pressure hull: Aluminum alloy
- Sensor: a SBE-CTD sensor
 - Enough capacity for additional sensors
- Communication: Iridium SBD, two-way
- Position fixing: GPS
- Battery: Lithium, 20 DD cells

Operation pattern

Deep NINJA makes most observation patterns required by users available.



Others:

- Avoiding sea ice: similar to ISA and iStore of Klatt et al. (2007)
- Avoiding groundings (similar to PROVOR/ARVOR)

- 1000m-parking and profiling from 2000m normally and 4000m every several (5) cycles. (default)
- 1000m-parking and 4000m-profiling.
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- 2000m-parking and deep layer observation.
 - Profile positions are interpolated by surface positions.
- 1st profile is observed from 4000m within a day after deployment. (default)
- Most parameters are changeable even after deployment.

Future plans

- The first test for deep dive will be carried out this summer east of Japan.
- In 2012/13 austral summer, 3-5 Deep NINJAs will be deployed around the Antarctica by R/V Mirai. (The details, the number of floats and locations of deployments, are not determined.)
- Deep NINJA is planned to be available for public in 2 – 3 years.

