

Deep NINJA: The first practical float measurable in the deeper ocean than 2000m

- 2009 Beginning of development by JAMSTEC and TSK
- 2011 / 3 The first prototype was assembled.
- 2012 / 8 The first profile from 4000 dbar depth was obtained.
- 2012 / 12 4 floats were deployed in the Southern Ocean.
- 2013 / 4- Available in public from TSK.

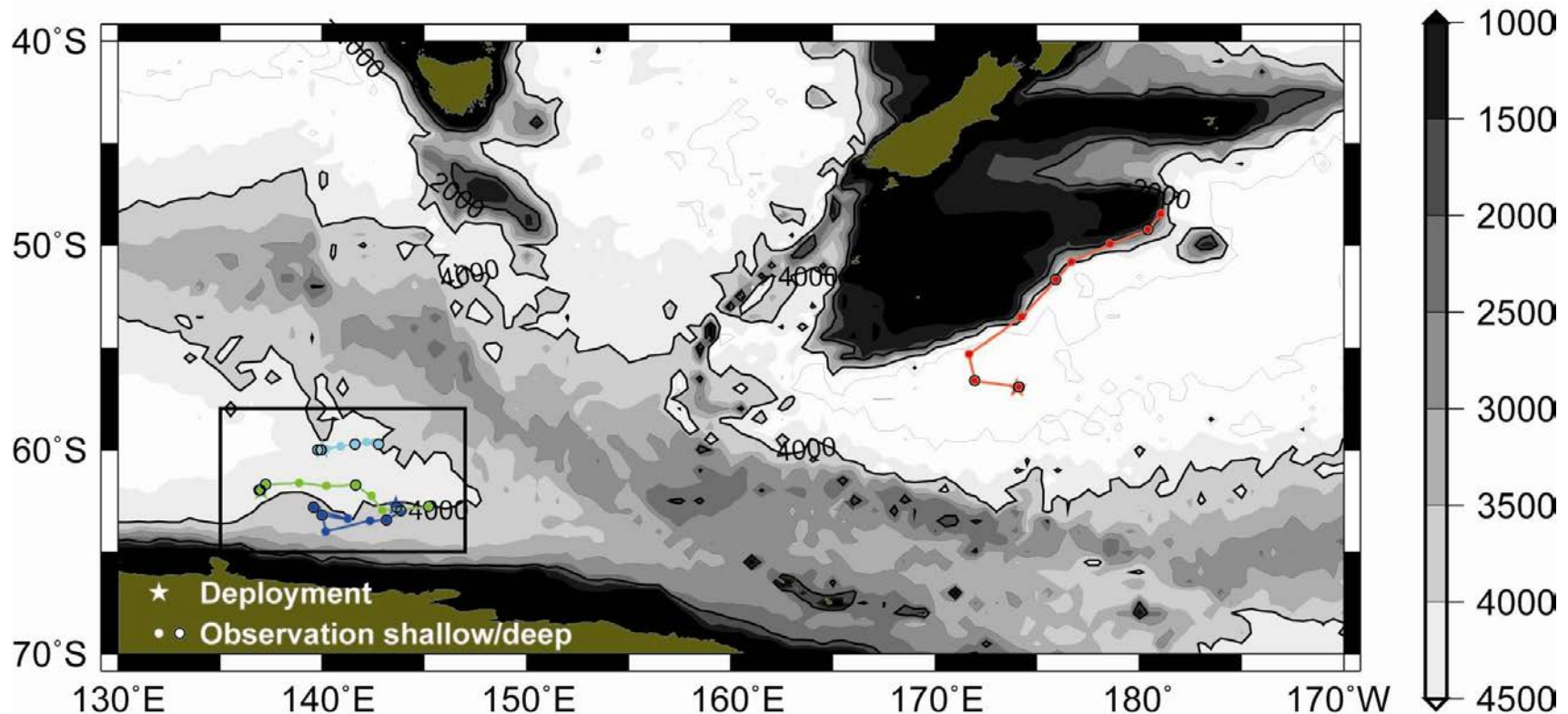
Specification of Deep NINJA

- Max. profile depth: 4000 dbar
 - Available from the tropics to the high-latitudes with seasonal ice
 - About 90% of the ocean's volume is measurable
- Dimension:
 - Height: 210 cm (with antenna)
 - Weight: about 50 kg (in air)
- Pressure hull: Aluminum alloy
- Sensor: SBE 41CP
 - Enough capacity for additional sensors
- Communication: Iridium SBD, two-way
- Position fixing: GPS
- Battery: Lithium



Observations in the Southern Ocean (Dec. 2012-)

- 4 Deep NINJA floats were deployed in the Southern Ocean by R/V Mirai in December 2012
 - to observe variations of AABW formed off the Adelie Coast, Antarctica and
 - to detect its signal transported into the Pacific Basin.
- They have measured 9-10 CTD profiles, including 5 deep profiles, until now (as of Mar. 15, 2013).



Preliminary results of the observation off the Adelie Coast, Antarctica

The floats observed that AABW has been warmer and less saline.

(Float salinity was preliminary corrected with R/V Mirai's CTD profiles.)

The warming/freshening trends have been continued since the 1970s.

The floats try to observe the changes of AABW water properties which could occur during the period of winter to spring.

