

Float technology progress PROVOR / ARVOR floats

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Current objectives of the technology group within Coriolis

- Demonstration of ARVOR operational use
- Development of PROVOR as a multi sensor platform
- Improve floats performance
- R&D for new sensors, new technologies
- Context:
 - Partnership with float manufacturer : NKE
 - Some activities done as part of the Euro-Argo project

ARVOR

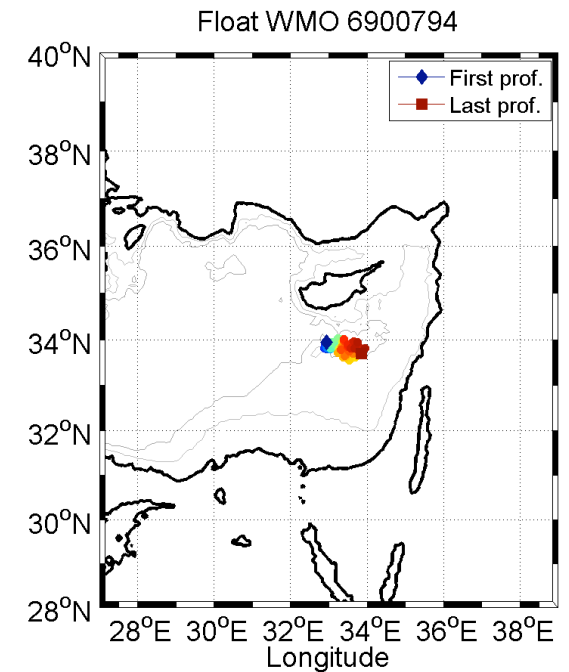
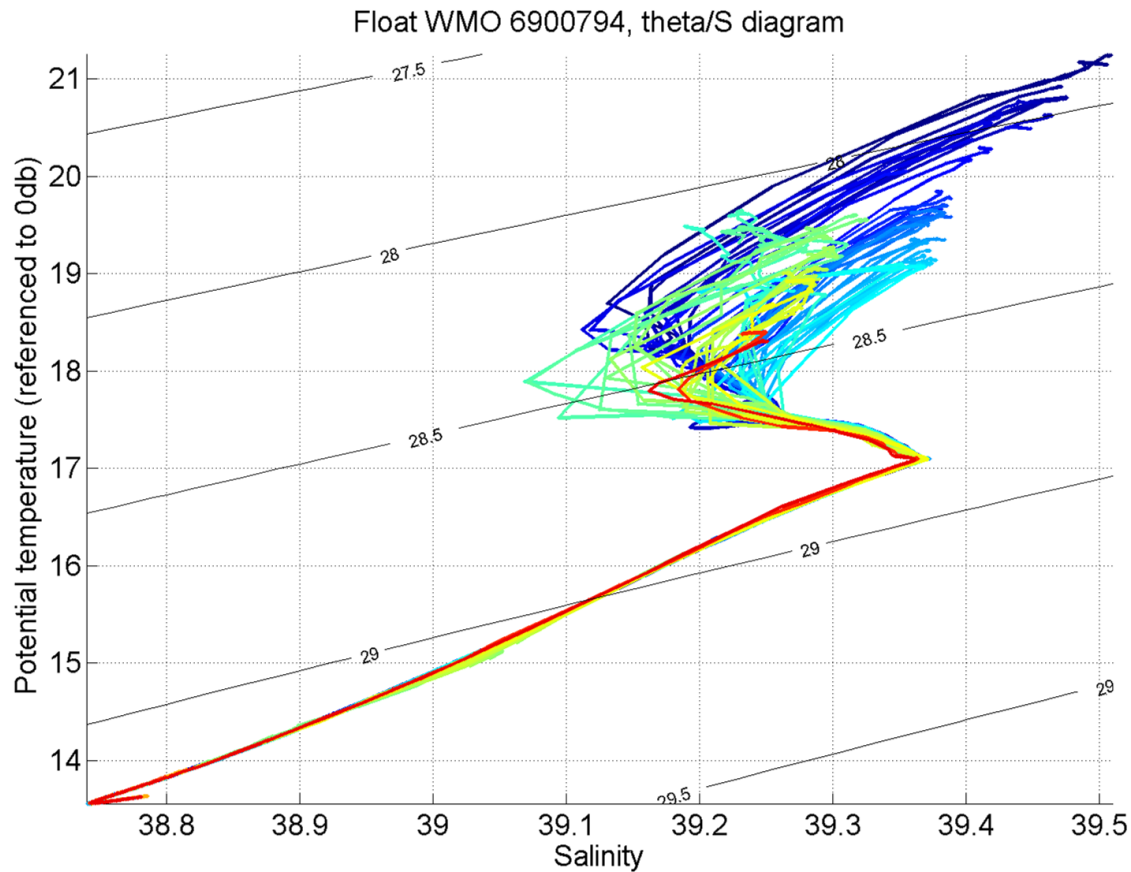
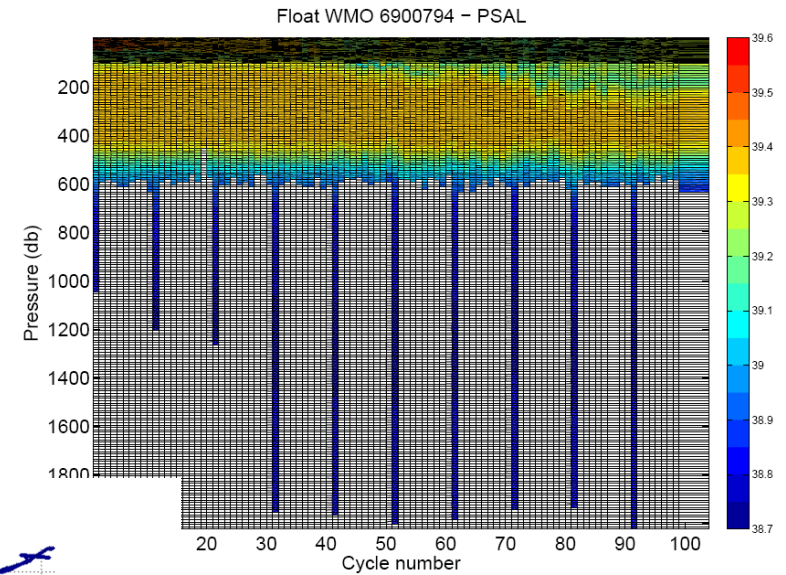
- Surface pressure value transmitted with a 1 cbar resolution (ARVOR and PROVOR)
- Near surface measurement :
 - Transmission last P,T,S triplet acquired in spot sampling mode before the CTD pump is turned off.
 - Add a third sampling zone: **deep** (25 dabr bin avg), **intermediate** (10 dbar bin avg), **surface** (1 dbar bin avg). To be implemented on 14 Arvor floats.
- 3 Arvor prototypes deployed
 - 3/3 OK
 - 2 will reach 200 cycles by end of March
- a commercialisation licence established in 2010
- objective : 250 cycles at 2000m, continuous pumping for the CTD, 110 points transmitted by cycle.

IRIDIUM

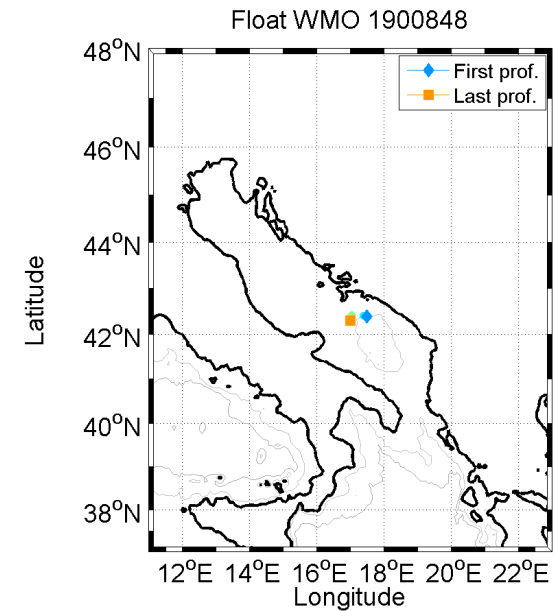
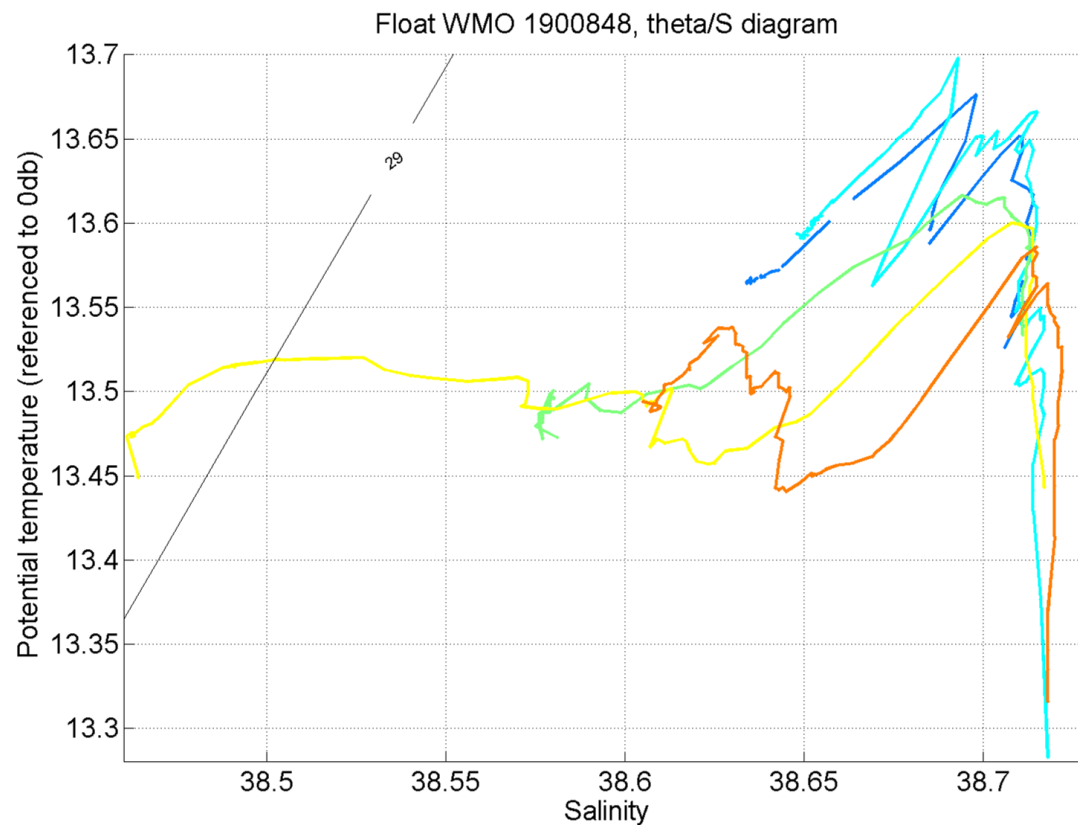
- Iridium transmission implemented on 2 Arvor floats
- First float (WMO 6900794) deployed in the Med Sea from the TARA (collab. with OGS)
 - ✓ daily cycles, 99 cycles done
 - ✓ 2 dbar bin-averaged data
 - ✓ 1 spot sampled triplet at 2 dbar
 - ✓ downlink OK
 - ✓ grounding procedure OK
- Second float (WMO 1900848) deployed in the Adriatic in Feb 2010
 - ✓ 1 cycle every 5 days, 5 cycles done
 - ✓ 1 spot sampled triplet at 2 dbar



Iridium transmission float 6900794



Iridium transmission float 1900848



ARGOS 3

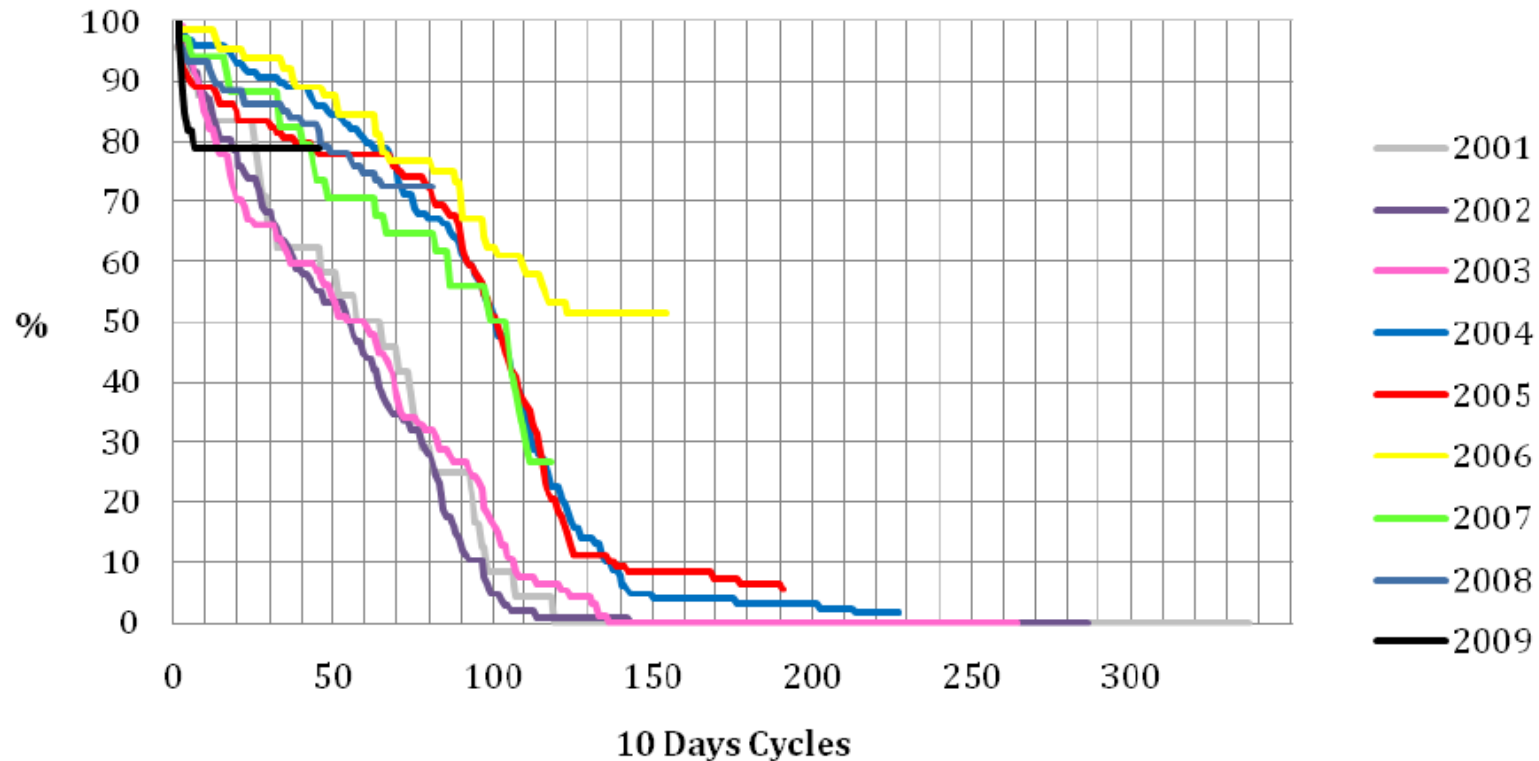
- 2 ARVOR floats with ARGOS 3 transmission are in construction by NKE
- Floats should be deployed **in 2010 in the Med Sea (contribution to EuroArgo)**
 - Surfacing according to the predicted passage of A3
 - **Send 1Koctet of data over 1 pass**
 - A testing platform has been developped to help define the transmission strategy; good results obtained in lab.

Other developments

- Investigations for the development of high-pressure profiling floats : In 2010 we should be able to conclude on the feasibility of such development
- Nitrates measurements from PROVOR floats are currently investigates

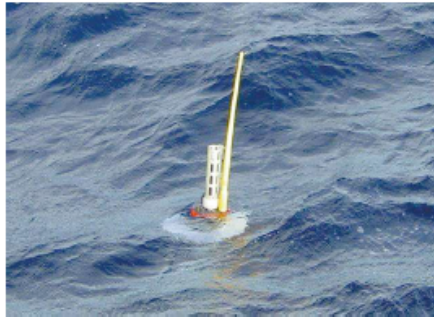
Float survival rate

Provor Survival Rate



- Need to follow closely floats performances ; this will be done for the PROVOR-CTS3 floats deployed after 2005

Performance improvements (2)



← Argos / Iridium →

1 typical profile / 5 kbits (100 CTD
points transmitted)



System	Fix accuracy	transmission duration	Energy budget per profile (~1Kbyte)	Equipement cost	Transmission cost (~1Kbyte)
Argos 1 & 2	Several 100m to few kms	6-8 hours according latitude	5-6 KJ	cheapest	9.5€
Argos3	Same as Argos2 (tbc)	10mn-15mn (tbc)	1.2KJ	Middle cost (bi-freq antenna, GPS option)	Same as argos2
Iridium	Several kms to 10 kms(With GPS <100m)	3mn (permanent coverage)	0.5KJ	The most expensive (antenna, GPS)	4€ 37