

Argo-España

Parte de la estrategia global de observación del océano



Report on Argo float deployments of *BATHYPELAGIC* cruise

ARGO ESPAÑA – IEO / 18 – 41

Argo float deployment for
**WMO 6901253, 6901256, 6901258,
6901262, 6901265, 6901266 and
6901269.**

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1. Deployment design

Following the Argo program goals, the float density criteria demands a coverage distribution of $3^{\circ} \times 3^{\circ}$ grid cells (Fig. 2). In order to maintain the global Argo network coverage and taking in account the current distribution of the Argo floats, Argo España planned 7 float deployments in the central – north Atlantic area after some gaps in the network were identified.



Figure 1. The 7 packed Argo floats on the left side of the picture.

As PI of the *BATHYPELAGIC* cruise, Santiago Hernández León (Universidad de Las Palmas de Gran Canaria) was requested to support the Argo deployments planning. The R/V Sarmiento de Gamboa was planned to carry out a unique transect between 20°N , 20°W and 60°N , 20°W (Fig.1) that included ideal locations for Argo España purposes. The survey was divided in 9 stations and the first 7 from 20°N , 20°W were selected for the Argo deployments. The *UTM (Unidad de Tecnología Marina) – CSIC (Consejo Superior de Investigaciones Científicas)* staff was in charge of the float deployments.

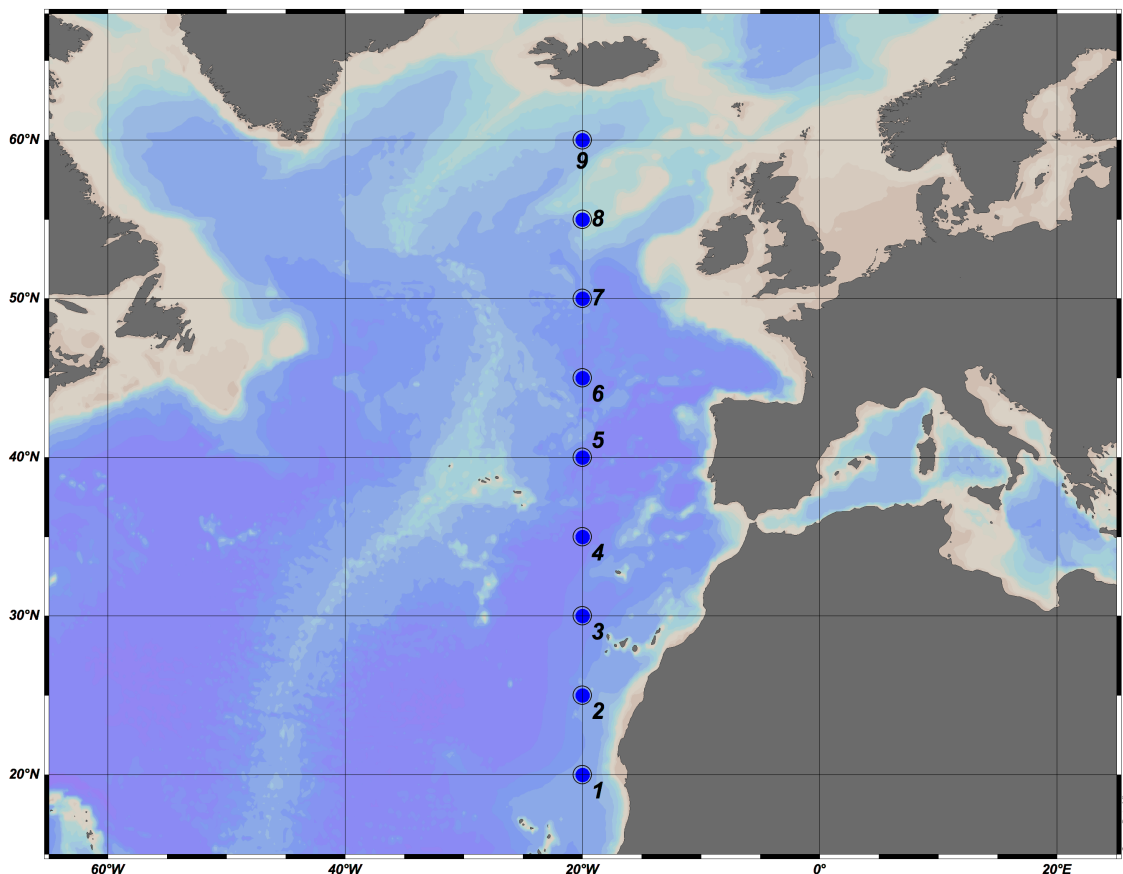


Figure 2. Stations distribution of the *BATHYPELAGIC* cruise and estimated positions of the Argo float deployments (stations number 1 to number 7).

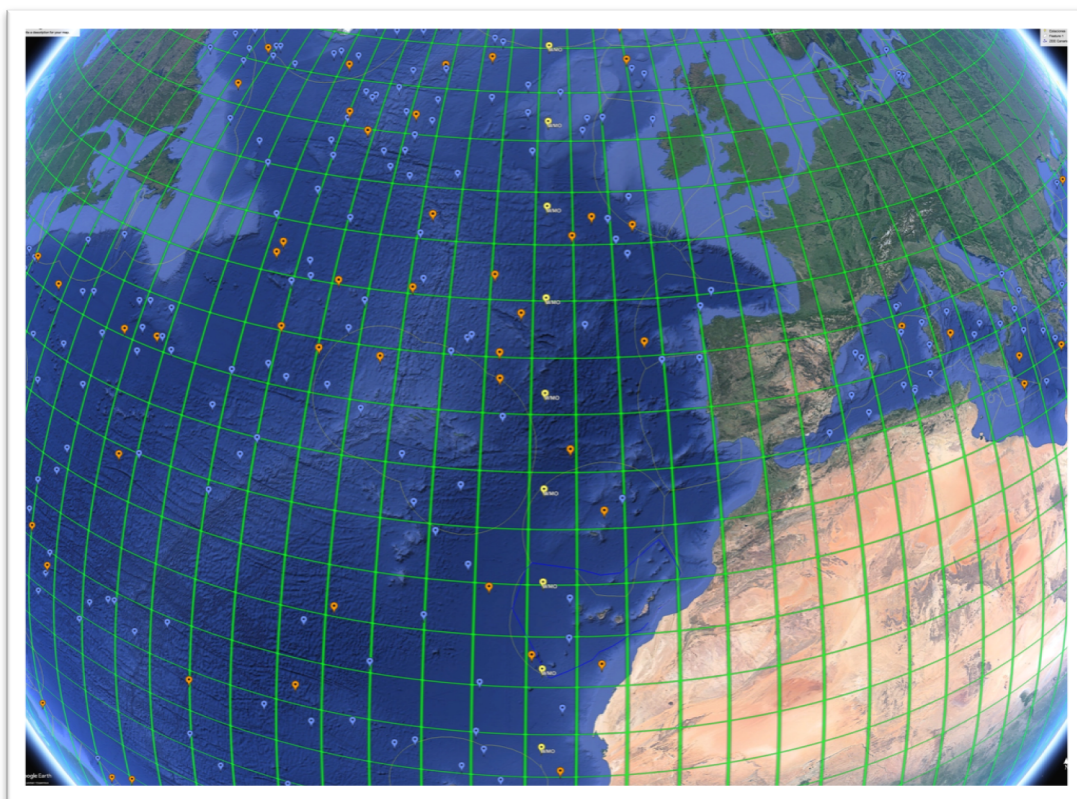


Figure 3. Gridded 3° x 3° map that shows potential locations for Argo float deployments among the current active floats (yellow color).

2. Deployment data

Information of each float deployment is showed in this paragraph.

- a. **WMO 6901253.** The following table contains all the data of the WMO 6901253 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 13 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901253.html>

DATE AND TIME	2018 - 05 - 29 / 13:33 UTC
DEPLOYMENT LOCATION	21° 12.03 N 20° 54.24 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP002
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPLOYMENT DEPTH (m)	4200
WEATHER CONDITIONS	<i>Marejada</i>
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 1. WMO 6901253 information deployment.

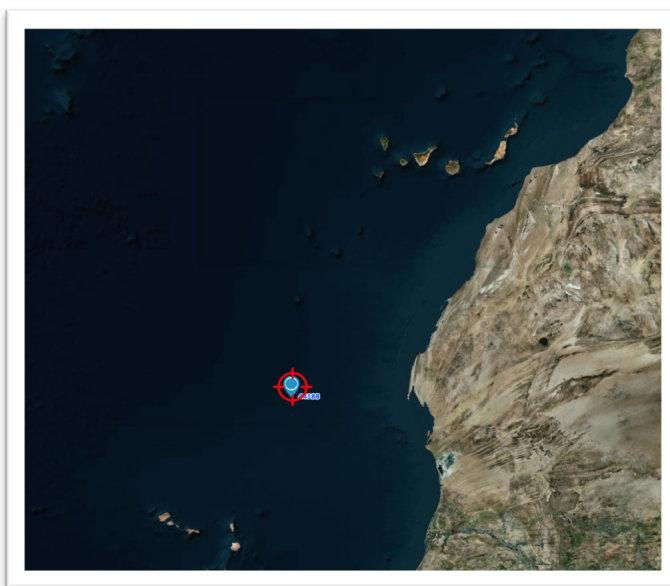


Figure 4 (a) and Figure 4 (b). Arturo Castellón in the run up to the deployment of the float WMO 6901253 (a). Deployment location from CLS satellite viewer (b).

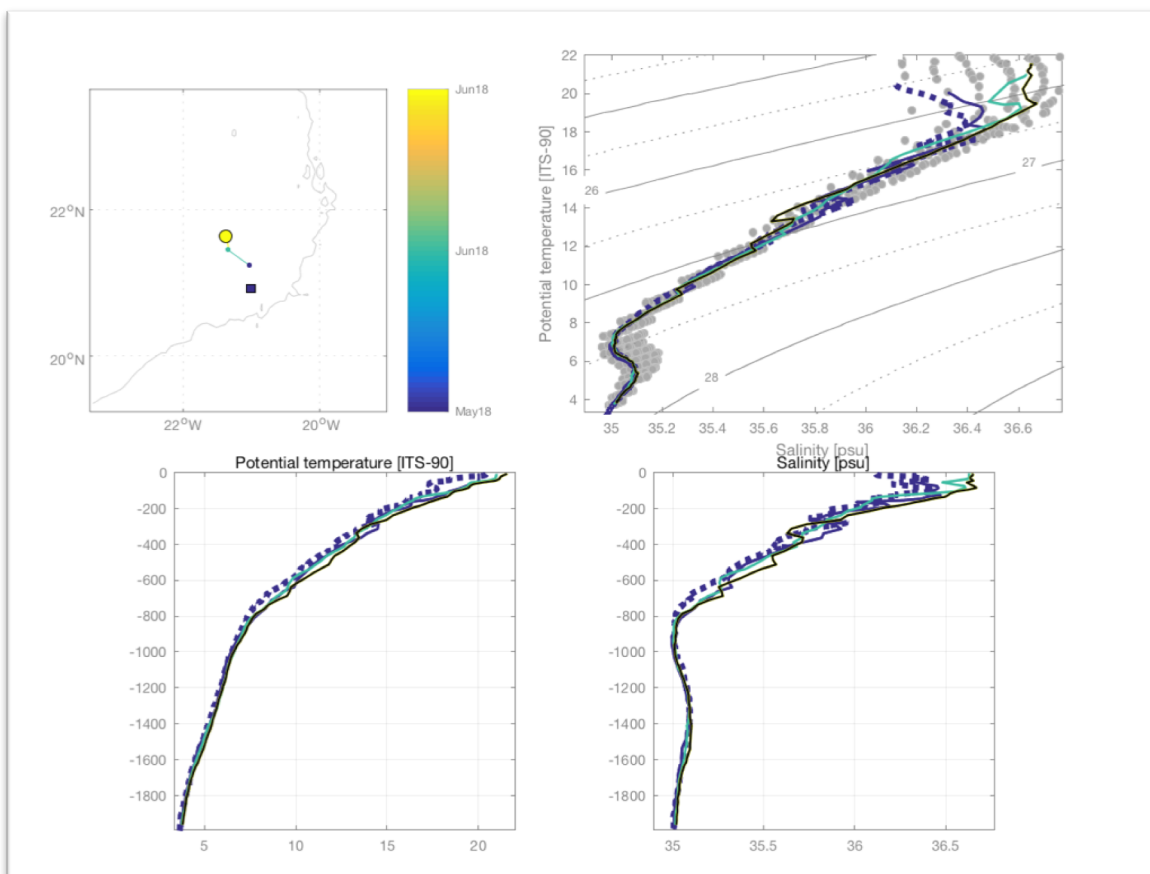


Figure 5. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901253 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

- a. **WMO 6901256**. The following table contains all the data of the WMO 6901256 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 13 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901256.html>

- b.

DATE AND TIME	2018 - 06 - 01 / 15:16 UTC
DEPLOYMENT LOCATION	25° 19.20 N 20° 42.75 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP005
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPTH	4300
WEATHER CONDITIONS	<i>Marejada</i>
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 2. WMO 6901256 information deployment.

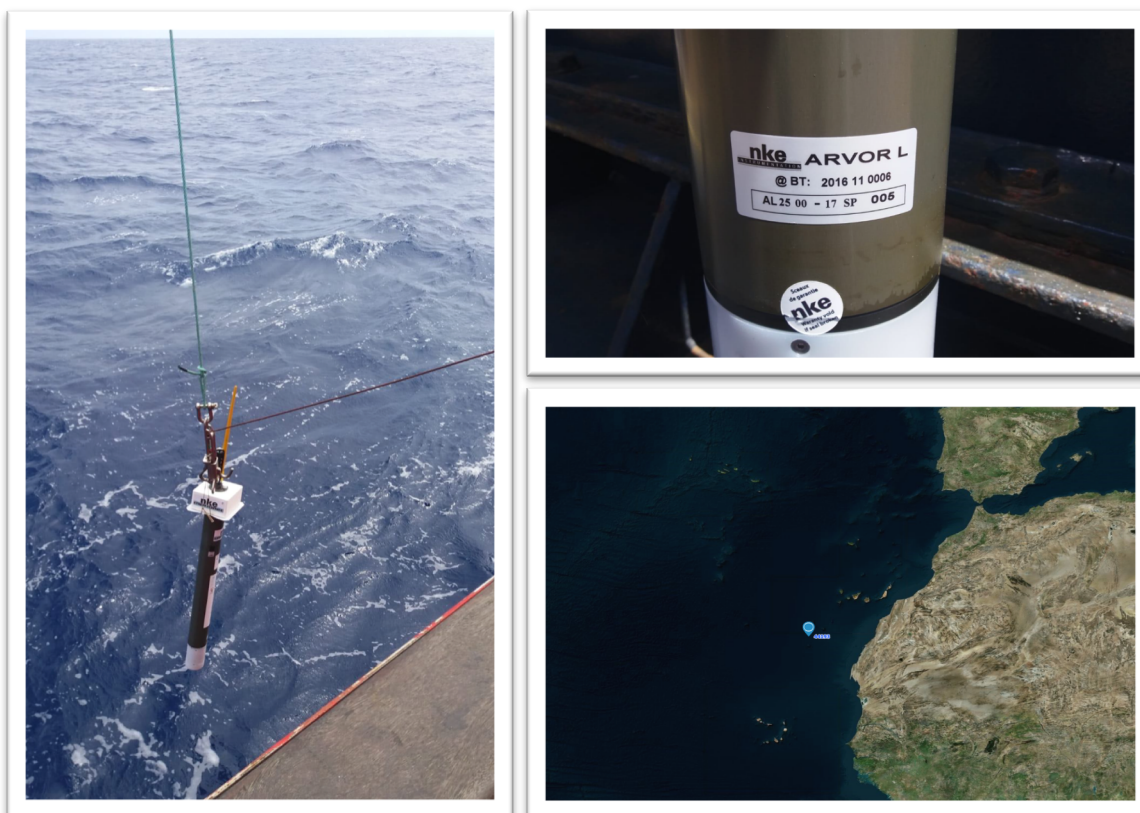


Figure 6 (a), Figure 6 (b) and Figure 6 (c). Deployment maneuver of float WMO 6901256. Serial number and Bluetooth number of the float (b). Deployment location from CLS satellite viewer (c).

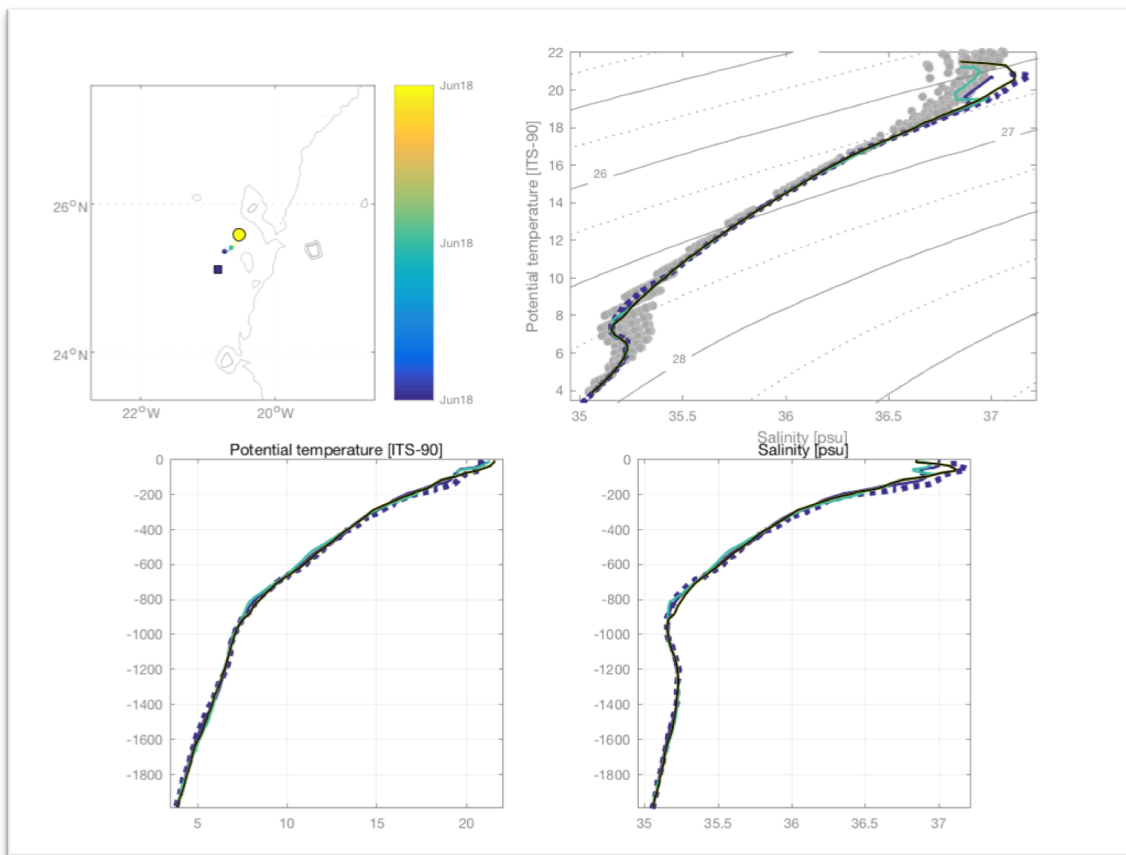


Figure 7. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901256 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

- c. **WMO 6901258**. The following table contains all the data of the WMO 6901258 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 13 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901258.html>

DATE AND TIME	2018 - 06 - 04 / 21:23 UTC
DEPLOYMENT LOCATION	30° 6.92 N 20° 4.63 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP007
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPTH	4700
WEATHER CONDITIONS	<i>Calma</i>
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 3. WMO 6901258 information deployment.

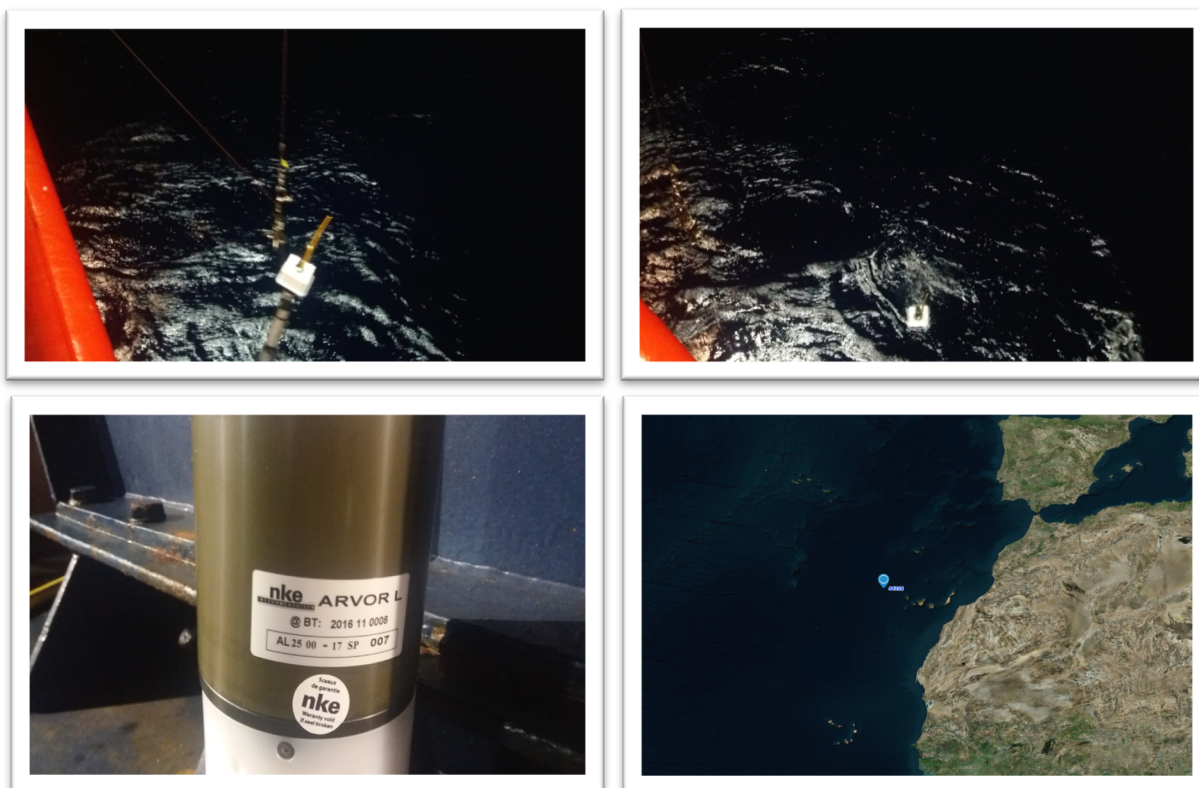


Figure 8 (a), Figure 8 (b), Figure 8 (c) and Figure 8 (d). Deployment maneuver of float WMO 6901258 (a and b). Serial number and Bluetooth number of the float (c). Deployment location from CLS satellite viewer (d).

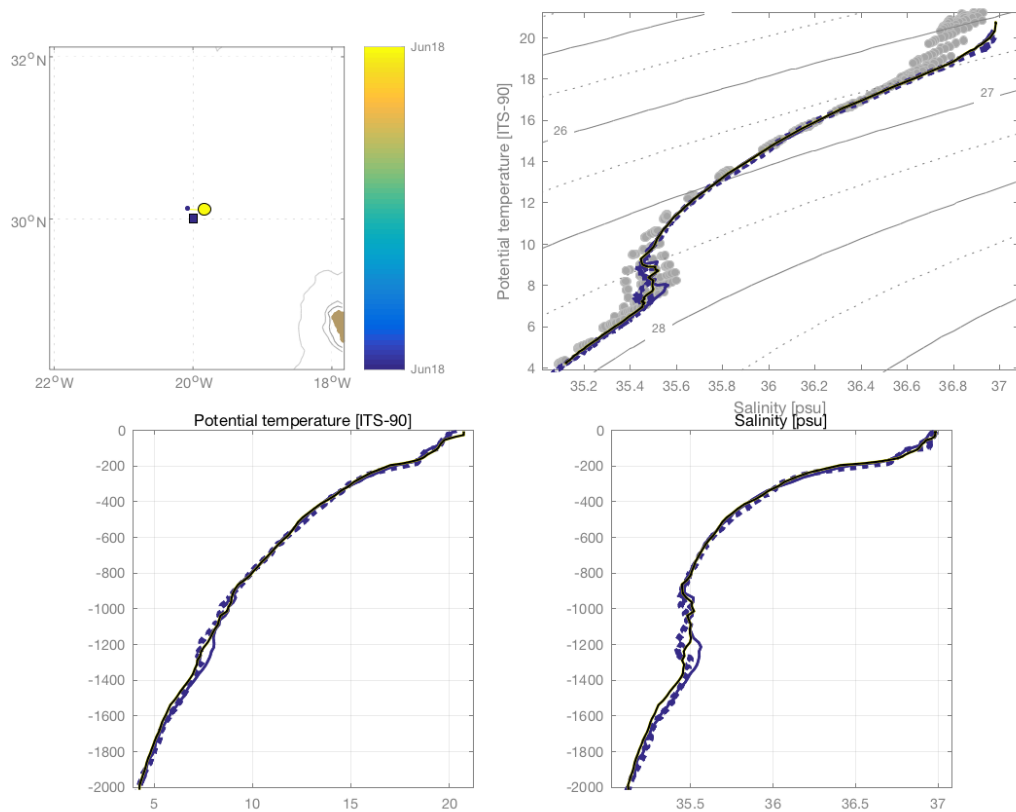


Figure 9. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901258 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

- d. **WMO 6901262**. The following table contains all the data of the WMO 6901262 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 13 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901262.html>

DATE AND TIME	2018 - 06 - 07 / 22:16 UTC
DEPLOYMENT LOCATION	35° 11.97 N 20° 0.43 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP011
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPTH	5200
WEATHER CONDITIONS	<i>Calma</i>
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 4. WMO 6901262 information deployment.

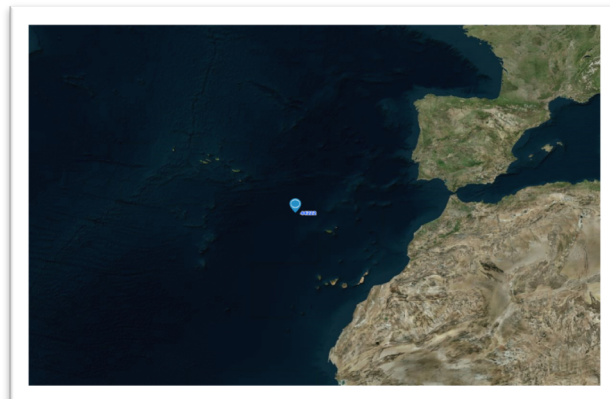
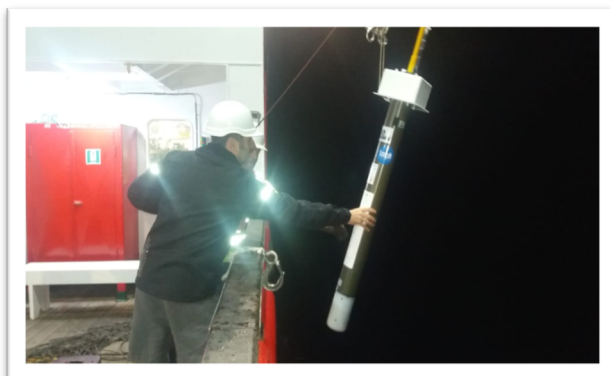


Figure 10 (a), Figure 10 (b) and Figure 10 (c). Deployment maneuver of float WMO 6901262 by UTM - CSIC staff (a). Serial number and Bluetooth number of the float (b). Deployment location from GLS satellite viewer (c).

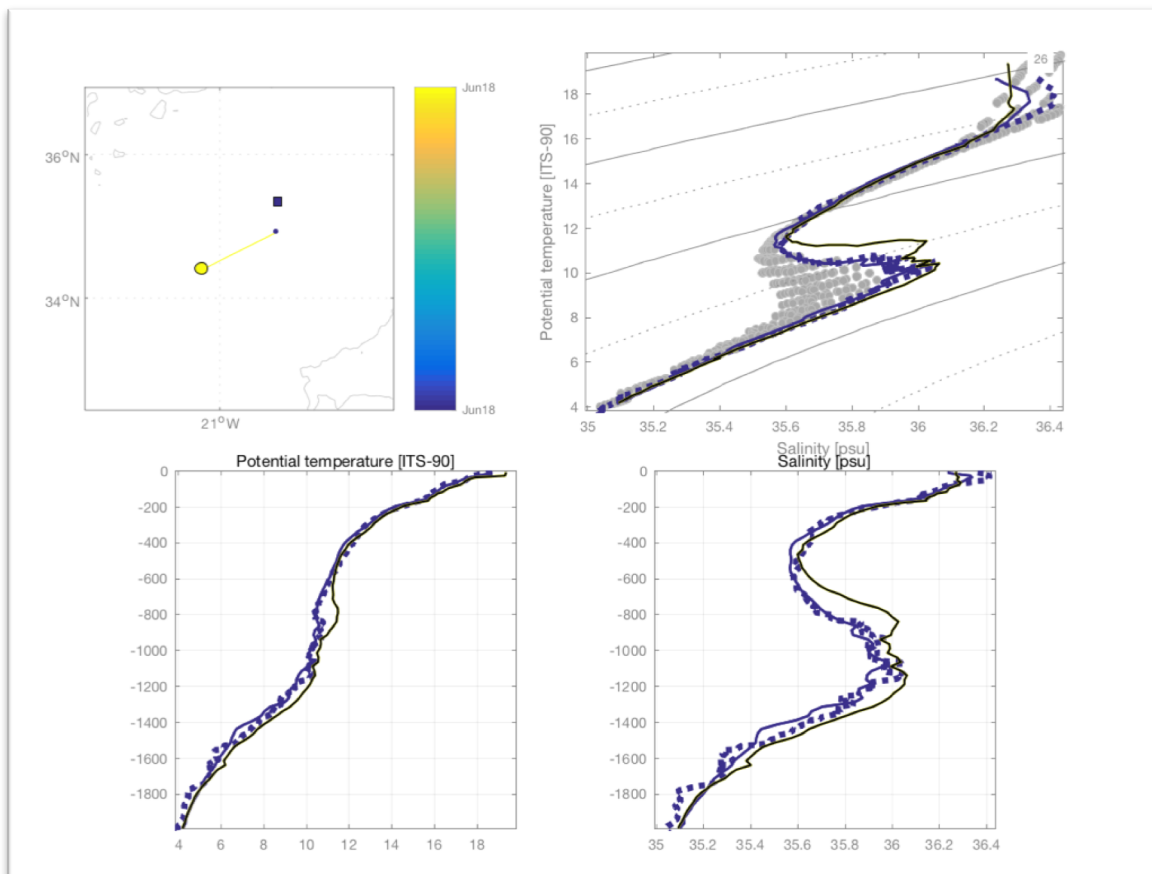


Figure 11. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901262 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

- e. **WMO 6901265**. The following table contains all the data of the WMO 6901265 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 13 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901265.html>

DATE AND TIME	2018 - 06 - 10 / 14:27 UTC
DEPLOYMENT LOCATION	39° 52.75 N 19° 47.56 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP014
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPTH	4000
WEATHER CONDITIONS	<i>Calma</i>
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 5. WMO 6901265 information deployment.



Figure 12 (a), Figure 12 (b) and Figure 12 (c). Deployment maneuver of float WMO 6901265 (a). Deployment location from CLS satellite viewer (b). Serial number and Bluetooth number of the float (c).

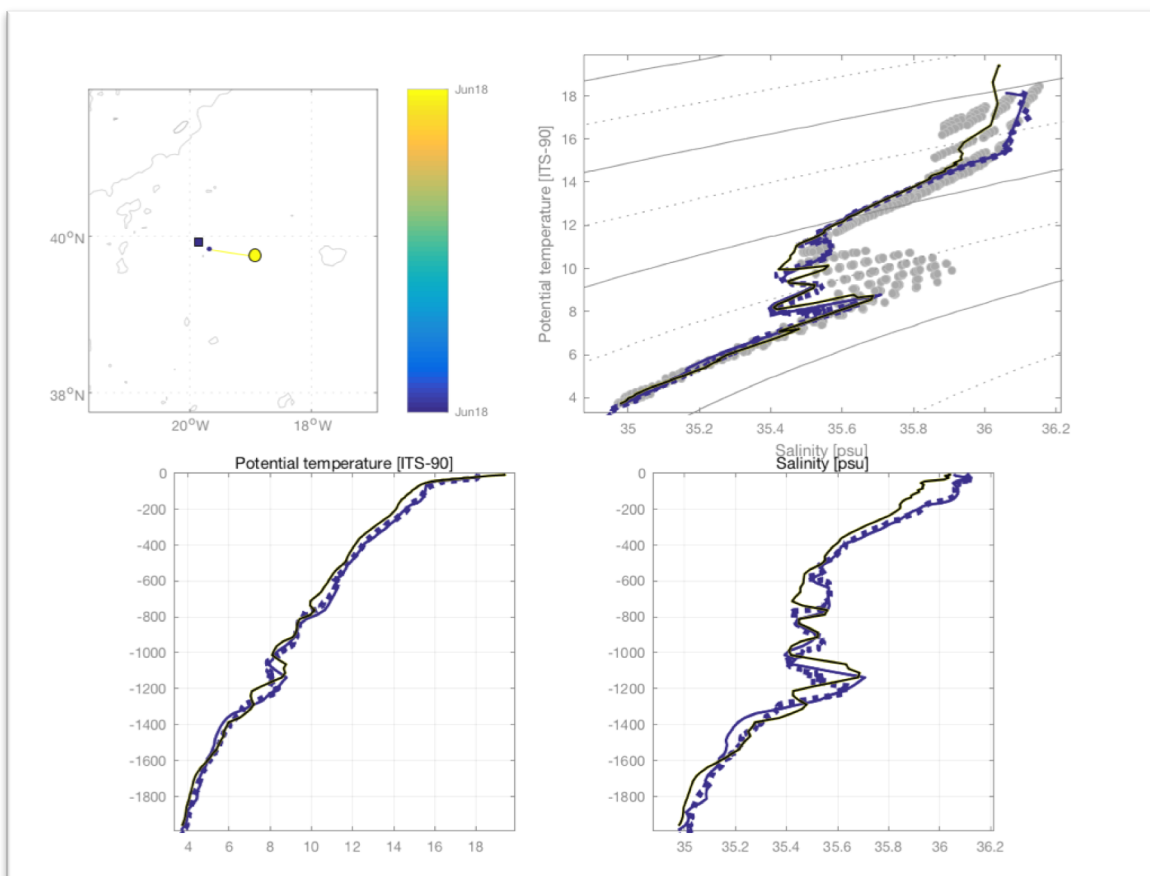


Figure 13. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901265 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

- f. **WMO 6901266**. The following table contains all the data of the WMO 6901266 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 19 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901266.html>

DATE AND TIME	2018 - 06 - 13 / 12:20 UTC
DEPLOYMENT LOCATION	45° 10.84 N 19° 55.10 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP015
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPTH	4000
WEATHER CONDITIONS	<i>Marejadilla</i>
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 6. WMO 6901266 information deployment.

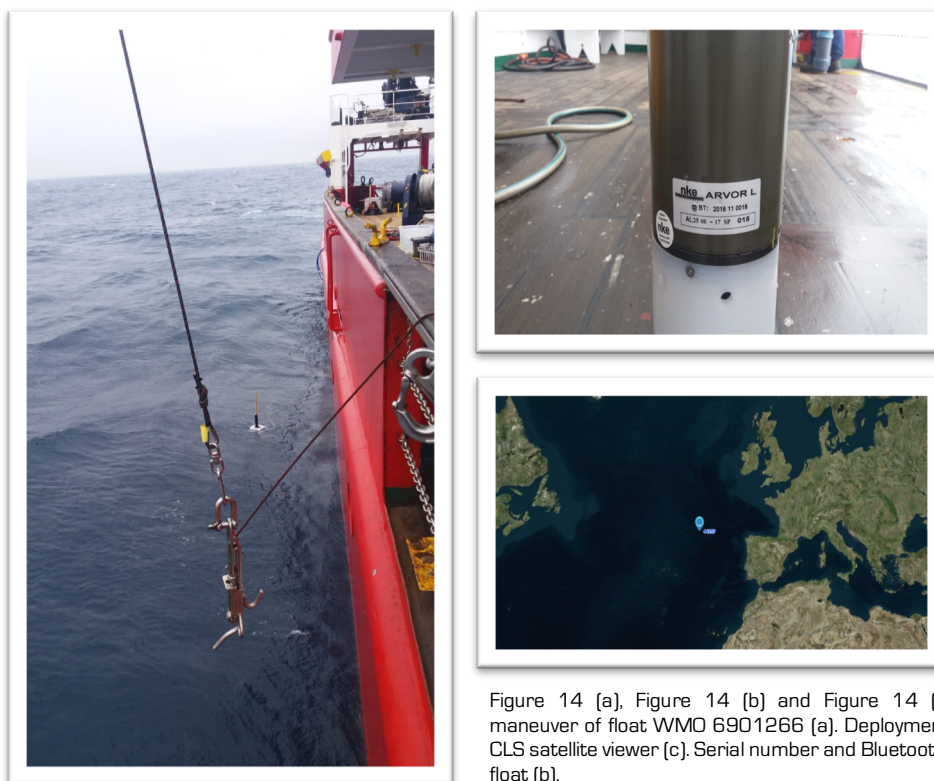


Figure 14 (a), Figure 14 (b) and Figure 14 (c). Deployment maneuver of float WMO 6901266 (a). Deployment location from CLS satellite viewer (c). Serial number and Bluetooth number of the float (b).

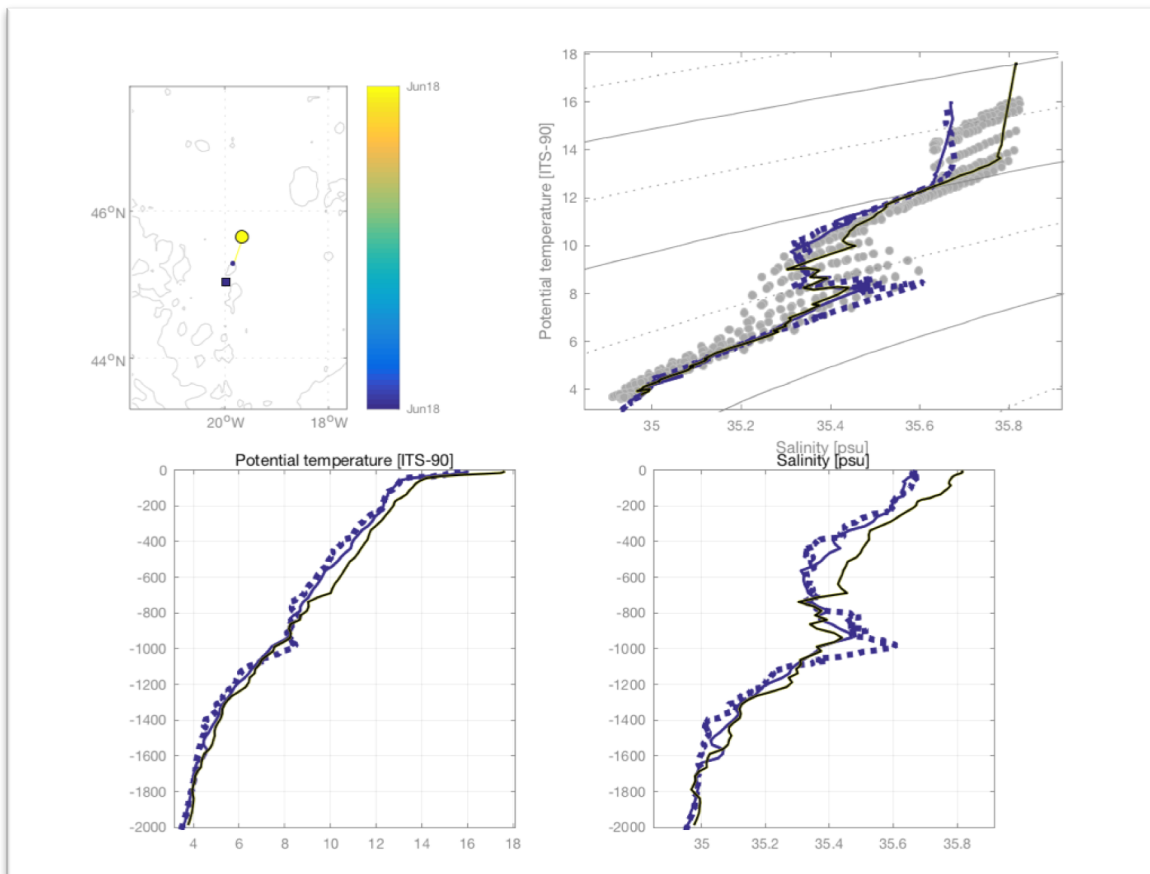


Figure 15. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901266 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

- g. **WMO 6901269.** The following table contains all the data of the WMO 6901269 deployment during *BATHYPELAGIC* cruise. No troubled issues during the deployment were reported. CTD cast is available at the deployment location. Coriolis was notified 19 June, 2018 and all the information was registered at the Argo Information Center database. The data is free and publicly available through the Argo data stream:

<http://www.oceanografia.es/argo/datos/ArgoEsGraficos/6901269.html>

DATE AND TIME	2018 - 06 - 16 / 11:02 UTC
DEPLOYMENT LOCATION	50° 11.57 N 19° 52.52 W
DEPLOYMENT PLATFORM	R/V Sarmiento de Gamboa
CRUISE ID	<i>BATHYPELAGIC</i>
FLOAT OWNER	IEO
PLATFORM TYPE	NKE Arvor - L
SERIAL NUMBER	AI2500-17SP018
TRANSMISSION SYSTEM	ARGOS
PARKING DEPTH (m)	1000
PROFILE FEPTH (m)	2000
DEPTH	4000
WEATHER CONDITIONS	-
DEPLOYMENT OPERATOR	Daniel Alcoverro

Table 7. WMO 6901269 information deployment.

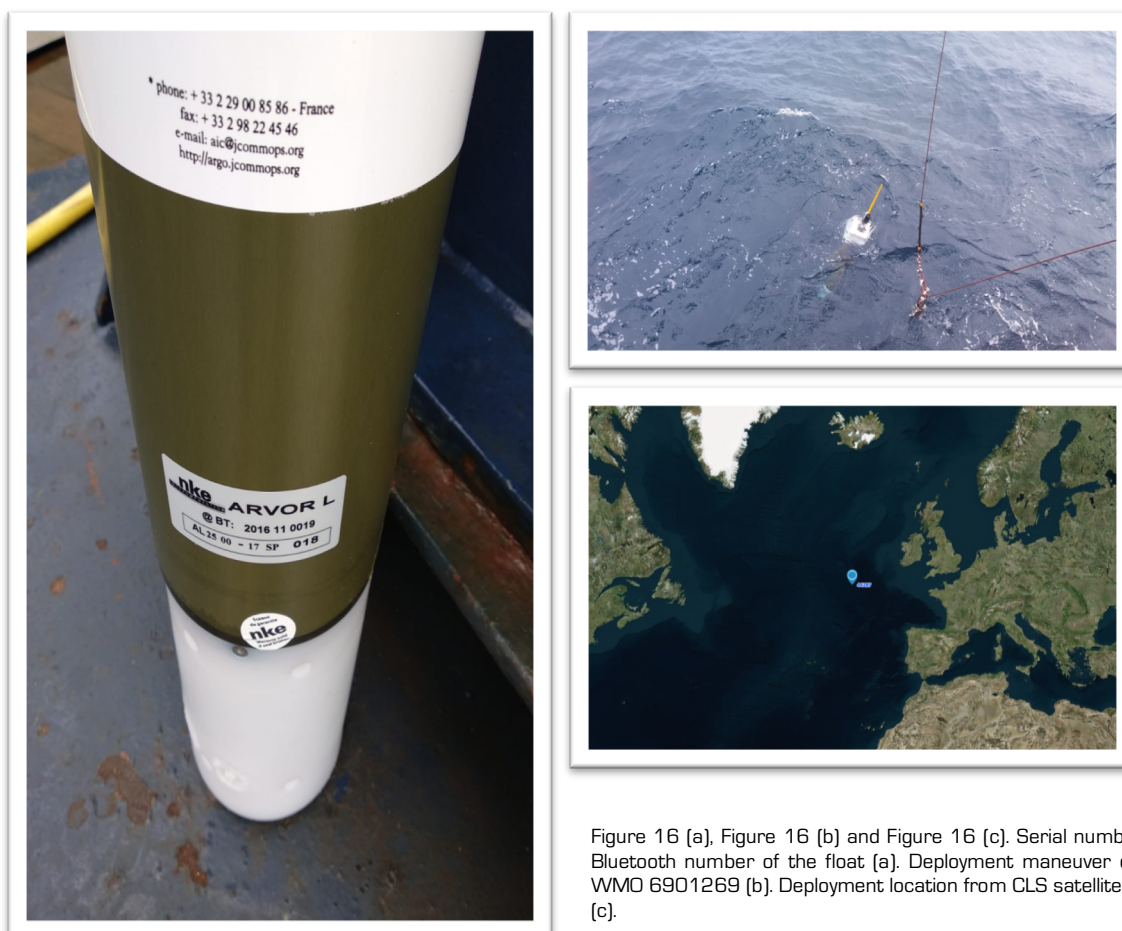


Figure 16 (a), Figure 16 (b) and Figure 16 (c). Serial number and Bluetooth number of the float (a). Deployment maneuver of float WMO 6901269 (b). Deployment location from CLS satellite viewer (c).

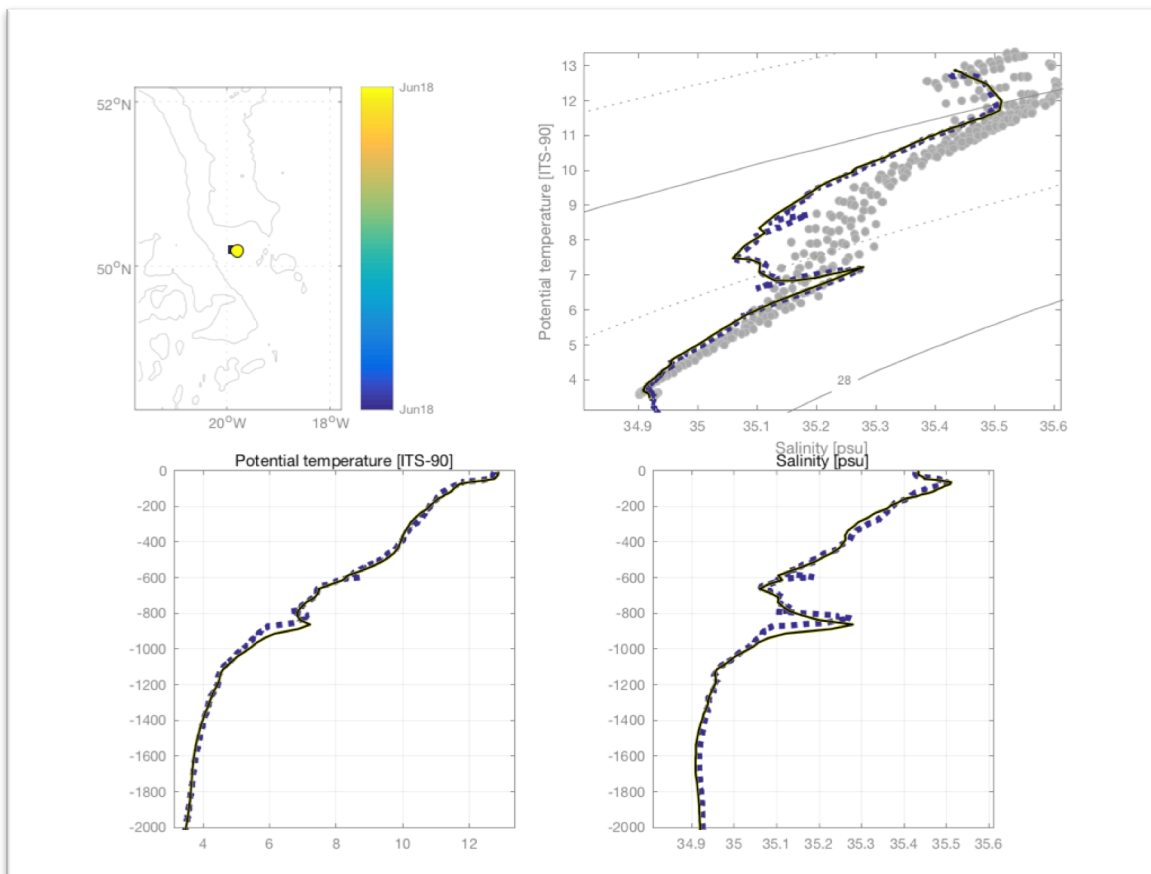


Figure 17. The trajectory of the float since the deployment is showed in the upper left side of the picture. T-S diagram of the data collected by WMO 6901269 is showed in the upper right side of the picture. The grey points are the climatology of the area. The black line is the first profile carried out by the float. The dark blue dashed line describes the CTD cast carried out from the R/V Sarmiento de Gamboa. Potential Temperature and Salinity profiles are also shown in the lower side on the picture.

3. Floats configuration

Floats configuration was set as default by NKE for all the floats. “MC” parameters (table 8) were set according to the scientific requirements and the oceanographic area of study (North Atlantic). The floats will dive up to 2000 m depth carrying out cycles of 10 days, with a parking depth of 1000 m.

Command no.	Name	Default Value	Units
Mission Commands			
MC0	Total Number of Cycles	300	Whole number
MC1	Number of cycle with “Cycle Period 1”	300	
MC2	Cycle Period 1	240	Hours
MC3	Cycle Period 2	240	Hours
MC4	Reference Day	2	Number of days
MC5	Estimated time at the surface	6	Hours
MC6	Delay Before Mission	0	Minutes
MC7	Descent Sampling Period	0	Seconds
MC8	Drift Sampling Period	12	Hours
MC9	Ascent Sampling Period	10	Seconds
MC10	Drift Depth for “MC1” first cycles	1000	dBar
MC11	Profile Depth for “MC1” first cycles	2000	dBar
MC12	Drift Depth after “MC1” cycles are done	1000	dBar
MC13	Profile Depth after “MC1” cycles are done	2000	dBar
MC14	Threshold surface/Intermediate Pressure	10	dBar
MC15	Threshold Intermediate /bottom Pressure	200	dBar
MC16	Thickness of the surface slices	1	dBar
MC17	Thickness of the intermediate slices	10	dBar
MC18	Thickness of the bottom slices	25	dBar
MC19	Iridium End Of life period (UNUSED)	60	Minutes
MC20	2 nd Iridium Session Wait Period (UNUSED)	0	Minutes
MC21	Grounding mode (0= Shift, 1 : Stay grounded)	0	
MC22	Grounding switch pressure	50	dBar
MC23	Delay at surface if grounding at surface	1	Minutes
MC24	Ontode type (0: none, 1 : 4330, 2 : 3830)	0	

Table 8. Configuration sheet for all the floats deployed during *BATHYPELAGIC* cruise.

4. Acknowledgements

Argo España would like to thank professor Santiago Hernández León (*Universidad de Las Palmas de Gran Canaria*), Miguel Ángel Ojeda Cárdenes (*UTM - CSIC*), Arturo Castellón Masalles (*UTM - CSIC*), Daniel Alcoverro Franquet (*UTM - CSIC*) and the rest of the crew, who cooperated for the success of the mission. The 7 Argo floats have been co - financed by FEDER funds from “*Programa Operativo Crecimiento Inteligente 2014 - 2020*”.

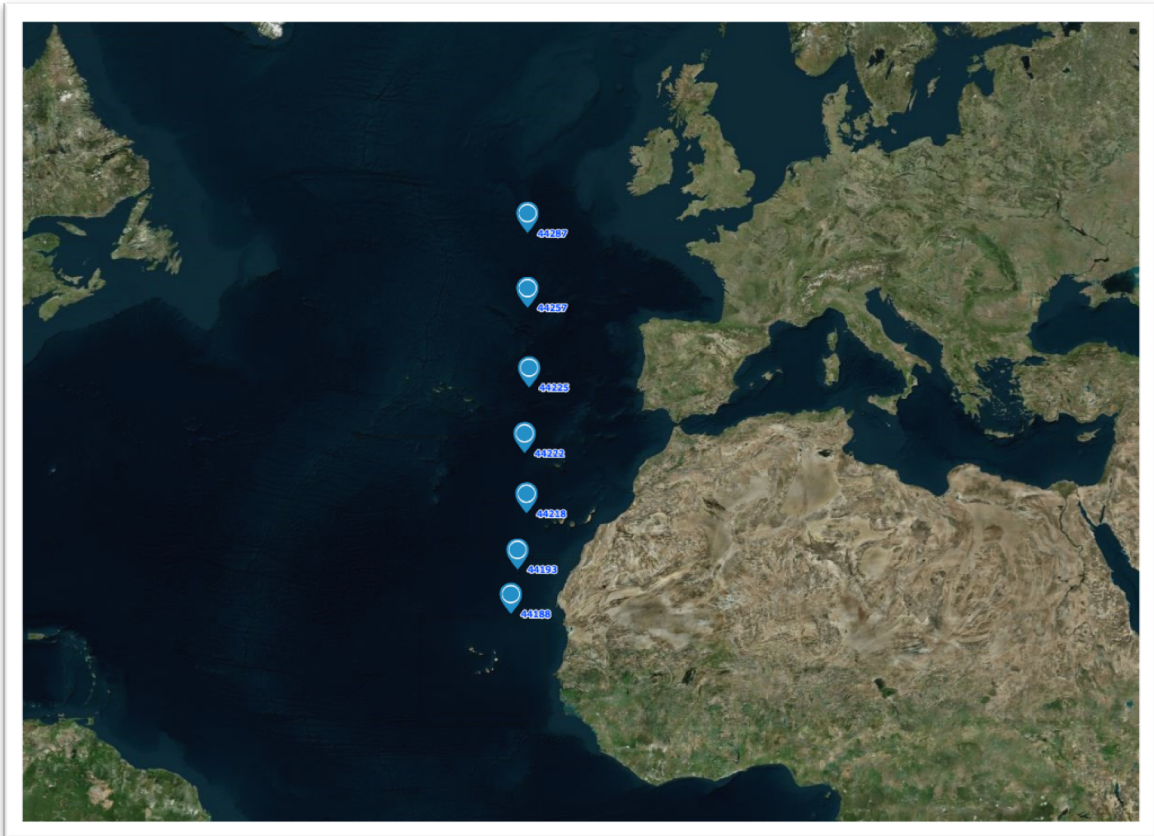


Figure 18. Deployment locations from CLS satellite viewer.