



MINISTERIO
DE ECONOMÍA Y
COMPETITIVIDAD

SECRETARÍA DE ESTADO
DE INVESTIGACIÓN DESARROLLO E
INNOVACION

DIRECCIÓN GENERAL
DE INVESTIGACIÓN Y GESTIÓN DEL
PLAN NACIONAL DE I+D+i

SUBDIRECCIÓN GENERAL
DE PROYECTOS DE
INVESTIGACIÓN

SOLICITUD DE BUQUE OCEANOGRÁFICO PLAN DE CAMPAÑA

DATOS DEL INVESTIGADOR PRINCIPAL:

Investigador principal: Santiago Hernández León

Organismo: Universidad de Las Palmas de Gran Canaria

Centro: Instituto de Oceanografía y Cambio Global

Dirección: Campus Universitario de Tafira, 35017 Las Palmas de GC

Teléfono: 928-45.29.07

Fax: 928-45.44.90

E-mail: shernandez@dbio.ulpgc.es

DATOS DEL PROYECTO:

Título del proyecto: **Migrants and Active Flux In the Atlantic Ocean**

Coordinador del proyecto: Santiago Hernández León

RESUMEN DEL PLAN DE CAMPAÑA (máximo 10 líneas)

Se realizarán dos campañas oceanográficas entre las Islas Canarias y Río de Janeiro con el objeto de realizar la primera estimación del flujo activo como parte importante de la bomba biológica en el océano a escala global. Proponemos una campaña durante la primavera y otra durante el otoño y que cubra el océano subtropical, tropical y ecuatorial del Atlántico. Se realizarán quince estaciones oceanográficas entre las que habrán estaciones de 4-5 horas para llevar la roseta hasta el fondo, estaciones de 24 horas donde además se realizarán pescas con la red MOCNESS de día y de noche hasta 650 m de profundidad, además de pescas con la red MOHT también de día y de noche hasta los 2000-3000 m. Por último, se llevarán a cabo estaciones de 36-48 h con el objeto de añadir pescas con una red semipelágica, así como ciclos diarios de neuston.



PLAN DE CAMPAÑA.

The main objective of the Project is to estimate the active flux in warm waters with a global perspective. We propose two cruises during winter-spring and autumn covering the subtropical, tropical and equatorial zones of the Atlantic Ocean (Figure 1). Fifteen oceanographic stations will be performed along a transect from the Canary Islands to the equivalent latitude in the South Atlantic Ocean. Oceanographic features will be studied through CTD-rosette casts performed in all the stations, and plankton and micronekton abundances and distribution patterns will be analyzed through samples taken from the neuston to the bathypelagic zone in selected stations (upwelling and oligotrophic regions).

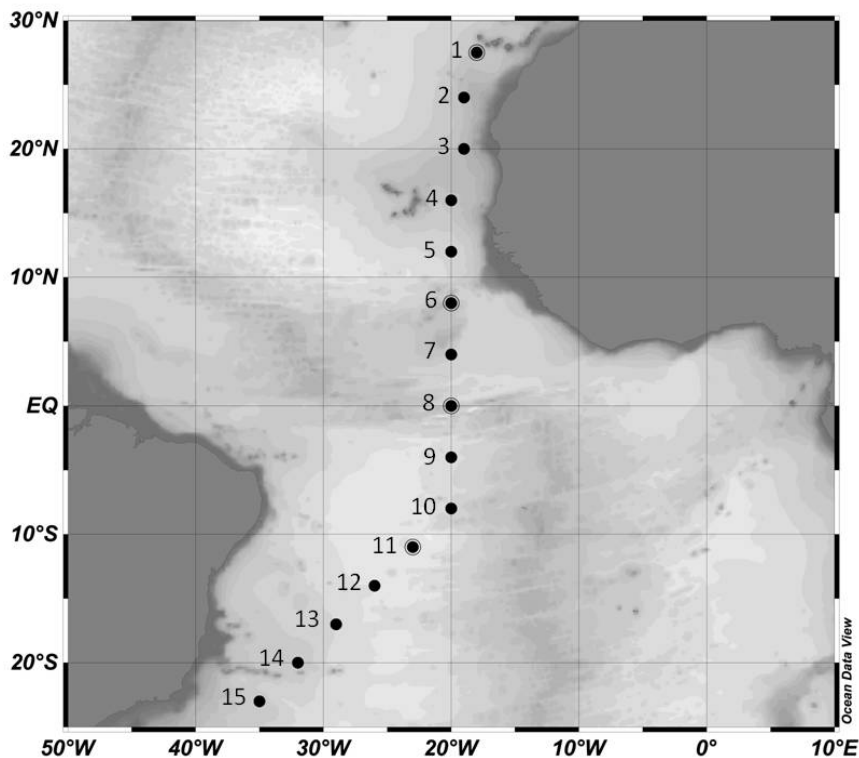


Figure 1. Location of sampling stations. Black dots indicate 24 h stations and encircled black dots stand for 36-48 h stations to deploy the semi-pelagic net and to study diel variability of neuston. Final position of long stations will be decided just after the cruise by taken into account the position of the oceanic upwelling in front of Cape Blanc, the equatorial upwelling and the most oligotrophic areas.



Acoustic data will be recorded along the transect and in all the oceanographic stations, which combined to the information obtained with the nets will give insight into the overall biomass of these communities. Calibration of echosounders will be performed during station 01 to the leeward of El Hierro Island, a suitable place (calm and deep) for this work. We will carry out the next sampling:

Deployment of a drifting sediment trap: This instrument (provided by the UTM) will be deployed at the start of the oceanographic station to measure the particle flux (POC, PON, and stable isotopes) at the base of the mixed layer (1,5 h for deployment and recovery).

Rosette-CTD cast: Temperature, salinity, oxygen, and fluorescence will be recorded using a CTD sensor mounted in a rosette sampler equipped with 24 Niskin Bottles (provided by the UTM) from the sea surface to sea floor (~4 h).

Zooplankton net deployments: A 1 m² MOCNESS net with 9 nets of 200 µm (provided by the UTM) in the 0-650 m depth layer (3 h during the day and 3 h at night). Hauls will be oblique at a ship speed of ca. 2 knots.

Micronekton net deployments: A 5 m² Matsuda-Oozeki-Hu trawl (MOHT, provided by the project) with 4 mm mesh size will be deployed in the 0-2000 or 3000 m (6 h during the day and 6 h at night). Depth of each haul will be decided according to the acoustic sound layers.

Semi-pelagic net deployments: A large net of 15x5 m net (provided by the project) of mouth and cod-end mesh-size similar to that of the MOHT will be used to collect larger and faster organisms. It will be used in selected oceanographic stations only.



Neuston net deployments: A neuston net with a rectangular frame of 100 cm x 30 cm with 0.2 mm mesh size (provided by the project) will be used in every biological station and during a diel cycle at selected stations across the latitudinal gradient.

Acoustic sampling: In order to evaluate the vertical distribution and migration patterns we will use the standard hull mounted echosounders (EK60, provided by the UTM), and the multifrequency Acoustic Water Column Profiler (AWCP) installed in the rosette sampler (provided by the project).

Table 1. Position of oceanographic stations along the Atlantic transect.

Stations	Latitude	Longitude	Distance between stations (mn)	Acumulated distance (mn)
Gran Canaria	28.5	15.5	0	0
Station 01	27.5	-18.0	150	150
Station 02	24.0	-19.0	217	367
Station 03	20.0	-19.0	240	607
Station 04	16.0	-20.0	247	854
Station 05	12.0	-20.0	240	1094
Station 06	8.0	-20.0	240	1334
Station 07	4.0	-20.0	240	1574
Station 08	0.0	-20.0	240	1814
Station 09	-4.0	-20.0	240	2054
Station 10	-8.0	-20.0	240	2294
Station 11	-11.0	-23.0	253	2547
Station 12	-14.0	-26.0	252	2799
Station 13	-17.0	-29.0	250	3049
Station 14	-20.0	-32.0	248	3297
Station 15	-23.0	-35.0	246	3543
Río de Janeiro	-23.0	-43.0	442	3985