

Routes of the *Marion Dufresne* from 1995 until 2014

SHIP PARTICULARS

- Call sign FNIN
- IMO number 9050814
- Overall length 120.50 m
- Beam 20.60 m
- Summer draft 6.96 m
- Displacement 5499 t
- Gross tonnage 9403 UMS
- Total capacity 160 persons
- Marine crew 48
- Scientists and technicians up to 110
- Averaging operating speed 13 knots
- Built 1995, refit 2015
- Ateliers et Chantiers du Havre, ACH291



IPEV is a Public interest group (GIP) with the following french organizations as members: Ministry of higher education and research (MESR), Ministry of foreign affairs and international development (MAEDI), Centre national de la recherche scientifique (CNRS), Institut français de recherche pour l'exploitation de la mer (Ifremer), Commissariat à l'énergie atomique (CEA), Centre national d'études spatiales (CNES), Météo-France, Terres australes et antarctiques françaises (TAAF), Expéditions polaires françaises (EPF).



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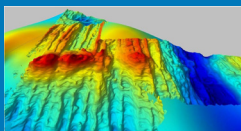
THE RESEARCH VESSEL MARION DUFRESNE



CAPABILITIES

SEABED MAPPING - GONDOLA MOUNTED

EM 122 1°x1° deep water multibeam echosounder
EM 710 high resolution multibeam echosounder
SBP 120-3 sub-bottom profiler



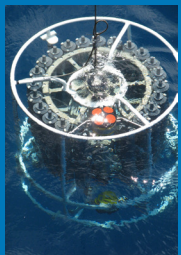
SEABED SAMPLING

CALYPSO II giant piston sediment corer up to 75m
CASQ Square gravity corer 9 or 12 m
Gravity corer and heat flow measurement
Interface acoustic multicorer equipped with underwater camera
MSCL Multi-sensor core logger including camera
Rock dredges



SEAWATER SAMPLING AND MEASURES

24 bottles carroussel with SBE 911+ and associated sensors
Thermosalinometer SBE 45
Mooring deployment and recovery in any water depths
Hull mounted ADCP Acoustic doppler current profiler 38, 75 and 150 kHz



FISHERY RESEARCH

EK80 bioacoustics echosounder 18, 38, 70, 120 and 200 kHz
Scientific fish trawl deployment



UNDERWATER ACOUSTIC POSITIONING

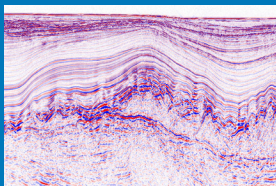
USBL Ultra-short base-line Posidonia

OTHER EQUIPMENT

Gravimeter microg Lacoste MGS-6
Overhauser Seaspy magnetometer
Weather station

Capacity to operate national multichannel seismic equipment

Dynamic positioning capacities for ROV or other deployment



THE R/V MARION DUFRESNE

The R/V *Marion Dufresne* was launched in 1995 and went through a major refit in 2015. IPEV, the French Polar Institute, operates the vessel 217 days/year* for undertaking research programs of national and global importance.

THE RESEARCH VESSEL

ONE OF THE LONGEST SHIP OF THE EUROPEAN FLEET

She is designed to operate worldwide including one of the earth's most challenging environment, the Austral ocean.



Fitted with the in-house developed giant sediment corer CALYPSO, she is mainly dedicated to paleoclimatology research.

The vessel is also equipped with a full range of hydroacoustic sensors (including multibeam equipment and sub-bottom profiling) allowing seabed mapping down to the full ocean depth, imaging the structure below the seabed, measuring currents and abundance of fish and other biomass.

Her wide range of cranes and overside gantries, with associated winches and wires, allow many different types of deployment and towing operations such as CTD casts, dredging and instrument towing. She is also rigged to operate the national multi-channel seismic equipment.

Due to her large accommodation capacity, IPEV organizes "Universities at sea" on board the R/V *Marion Dufresne* during some of the coring cruises together with the EGU supported "Teachers at sea" program.

**The R/V Marion Dufresne is operated by CMA-CGM and chartered by TAAF for 120 days/year for logistic supply of the french sub-antarctic islands.*

The R/V *Marion Dufresne* is the only vessel able to operate the giant corer Calypso II, retrieving sediment cores up to 75 metres long.

GIANT PISTON SEDIMENT CORER

THE CALYPSO II

The ship is specially designed to handle long pipes and is equipped with dedicated devices: a winch of 45 tons pulling strength, rigged with a very high stiffness Dyneema rope (Ø35) 7500 metres, and associated gantry and booms.

The core operation kinematics is first modeled and then monitored in situ via sensors and softwares allowing a precise quantification of the core quality. A continuous R&D is carried out to improve the security of both men and equipment, and optimise ship-time.

A comprehensive suite of coring tools such as interface, gravity, square corers and boxcores are also available. An autonomous camera can be mounted on them. Moreover, sampling and analysis equipment (MSCL) are available onboard. The vessel's acoustics and dynamic positioning system allow for accurate coring location.



For the last twenty years, the R/V *Marion Dufresne* cruises generated thousands of top rank publications in paleoclimatology and other sciences.

