MISSION MICROBIOMES

Marine microorganisms play a fundamental role in oceanic ecosystems. These microorganisms are key actors in regulating our planet’s health. Mission Microbiomes is driven by the need to understand how this invisible population of the ocean functions and to study its vulnerability in a changing climate and increased pollution.

Benefits
The Ocean microbiome is composed of all marine microorganisms (viruses, bacteria, micro-algae, protists, etc.) and the environment within which they evolve.

REGULATORS OF ECOLOGICAL BALANCES
Among all photosynthetic organisms, marine phytoplankton is responsible for capturing and emitting half of the CO₂ and O₂ respectively.

It transforms matter and makes it available to the rest of the system. Research approaches and focus

RESOURCES FOR SOCIETY
This ever-changing biodiversity is responsible for capturing and emitting half of the CO₂ and O₂ respectively.

The expedition
Sailing for 21 months to sample the ocean microbiome and share with the public.

The mission in numbers
1 mission, 2 phases
1 stopovers
70000 kms to cover
21 scientific disciplines
44 organisations from 14 countries

On-board lab
RESEARCH APPROACHES AND FOCUS

1 - Chilean coasts: Oxygen depleted areas
2 - Guyana - Amazonia: connection and exchanges between South and North Atlantic under the influence of the Amazon river
3 - Weddell sea: a key ocean & climate area with a major downwelling of surface waters and carbon
4 - Chile and Africa: regions of upwelling of rich deep ocean waters, with highly productive fisheries and a strong biological carbon pump

5 - Chilean coasts: influence of melting glaciers on salinity and local microbiomes
6 - Great rivers: Amazon, Orange, Congo, Orinoco, Uele, Zambezi with an important influence on the Atlantic microbiome

SMALL SCALE PHENOMENA

How do small-scale phenomena (e.g., eddies) have to included in models for predicting the ocean microbiome future state?

7 - Atlantic Ocean: understanding the impact of small features (eddies, fronts) on the microbiome

The mission in numbers

ITINERARY
1 START • END
Lorient, Brittany August 2020 • September 2022
2 Dakar, Senegal August 2021
3 Pointe a Pitre, Guadeloupe September 2021
4 Conception, Chile April 2022
5 Punta Arenas, Antarctica March 2021
6 Puerto Montt, Chile March 2022
7 Cape Town, South Africa April 2022
8 Pointe à Pitre, Guadeloupe September 2022

COLLABORATING ON A GLOBAL SCALE
44 organisations from 14 countries

STORAGE
1 • Surface content Water pumped and continuously analysed (salinity, temperature, oxygen content).
2 • The manta net Collecting all organisms, depending on the size of the net, from depths down to 1000 metres.
3 • The plankton net Taking a very large volume of water and specific types of organisms, depending on the size of the net, from depths down to 1000 metres.
4 • The rosette Collecting aerosols above the ocean which can carry bacteria and viruses.
5 • Dry labs Stocking samples.
6 • The front hold Where most sampling occurs.
7 • The wet lab

COLLABORATION
15 sailors
150 researchers
80 scientists
200 scientists