



Japan-Chile Scientific Cooperation: Monitoring of algae in Chile (MACH)

Development of harmful algal bloom (HAB) monitoring methods and forecast systems for sustainable aquaculture and coastal fisheries in Chile



1. What is a HAB?

The harmful algal blooms (HABs) (commonly named red tides) consist in the explosive growth of phytoplankton associated microorganisms, which may alter the marine life, human health and economy.

2. Our proposal

We propose to understand the HABs as a holobiome (holo = whole; biome = ecosystem), with specific focus on the biological interaction networks between the microbial species involved in the phenomenon. All this with the goal of contributing to elucidate the HAB dynamics in Chilean coasts.



3. Our results

Using high-throughput sequencing (Illumina MiSeq™ and Oxford Nanopore Technology) as well as bioinformatic tools, we are studying the interactions between the phytoplankton and its associated bacteria in Chilean coastal waters.

We have implemented a suitcase lab and mobile laboratory to do research and educate on the HAB phenomenon in Chile, including sampling, DNA extraction and *in situ* DNA sequencing.

4. What do we expect?

To better understand HABs in Chilean coastal waters.

To develop, improve or complement HAB monitoring systems in Chile.

To mitigate alterations induced by HABs upon the human health and the economy of the susceptible areas.

To educate and extend knowledge to coastal communities about the relevance and effect of HABs at global scale, with a specific focus in the Chilean HAB situation.

To strengthen the scientific cooperation agreements between Chile and Japan.



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