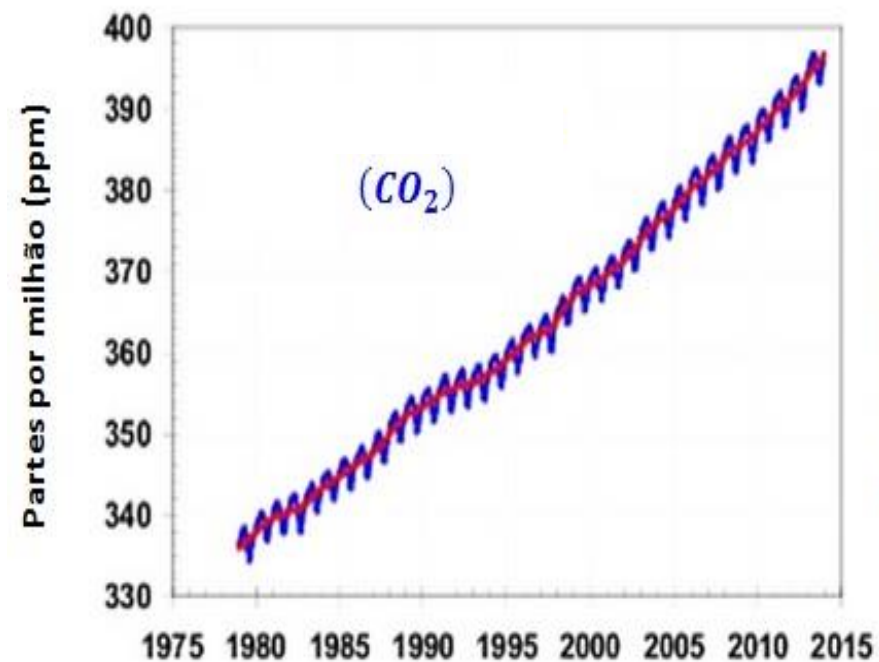
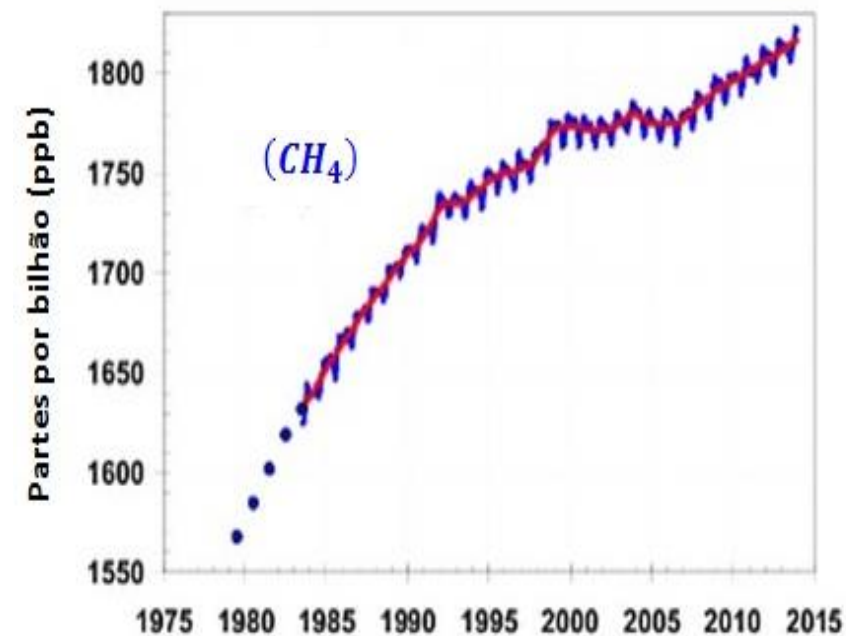
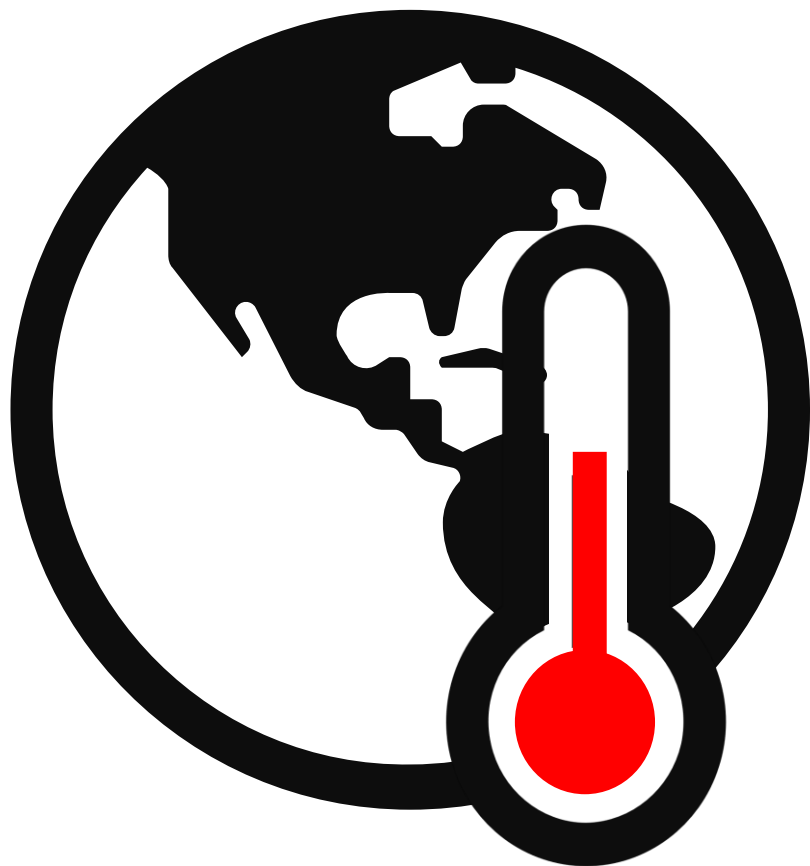


THE ROLE OF MUSSEL CULTURE IN CO₂ AND CH₄ BALANCE

Ana Paula Stein Santos
Marcelo G. da Silva, Danilo F. T. Garofalo,
Viviane C. Bettanin, Katia N. Kuroshima,
Gilberto C. Manzoni, Ana Paula Packer,
Leonardo Hoinaski, Davide Franco

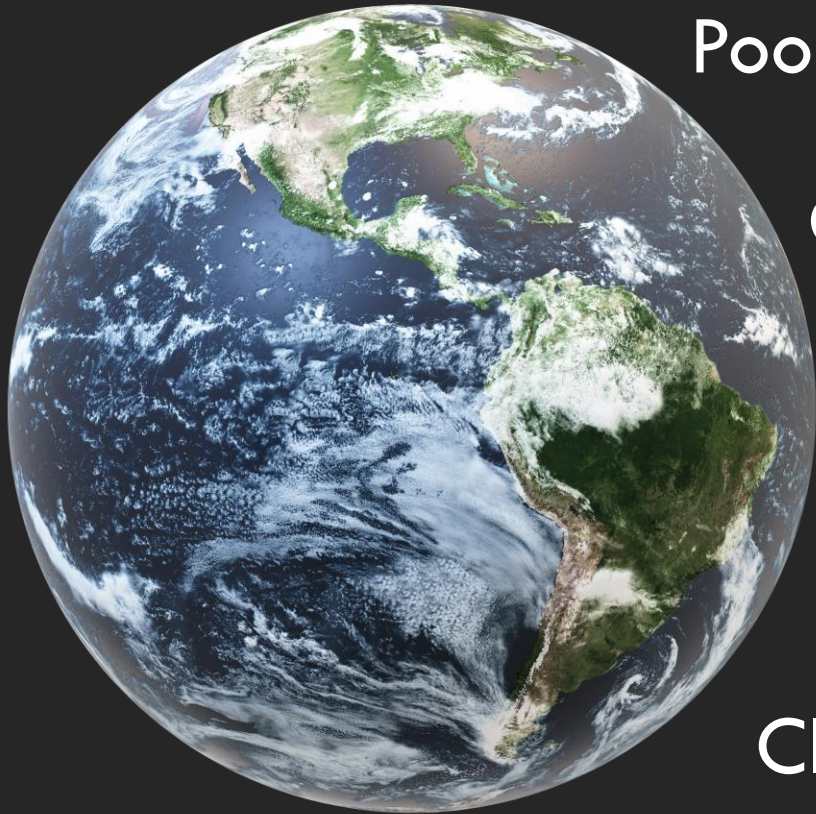


GREENHOUSE GASES



Fonte: NOAA (<http://www.esrl.noaa.gov/gmd/aggi/>)

MARINE ENVIRONMENT



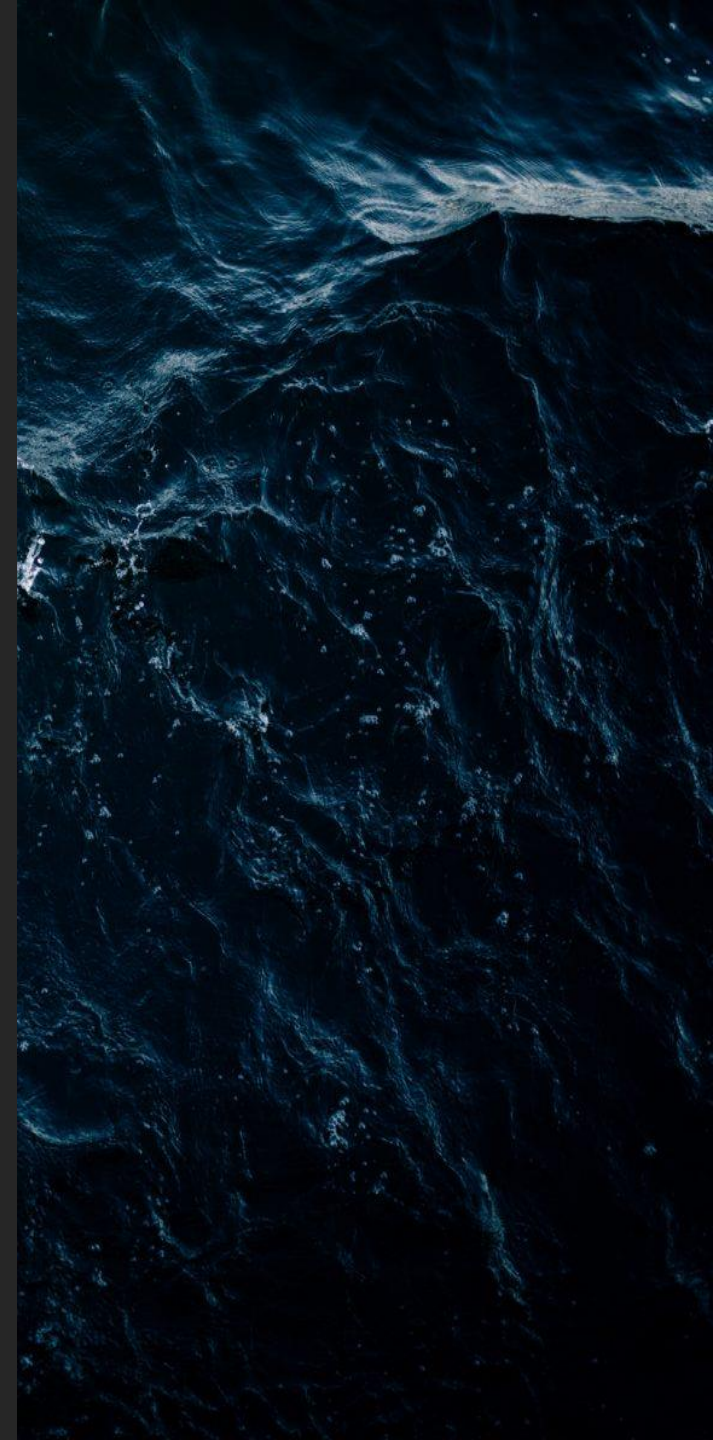
Poorly researched

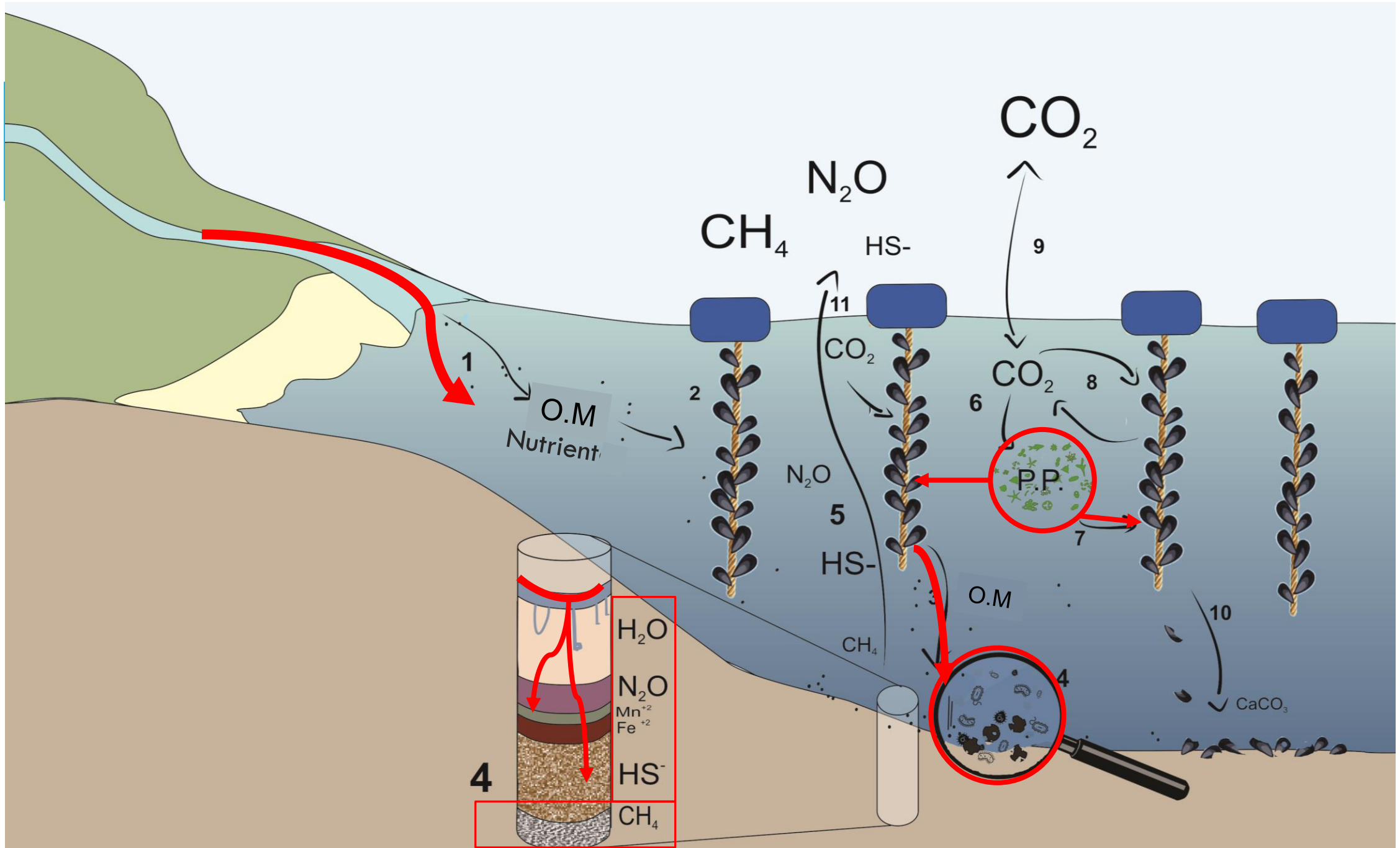
Organic Matter

Carbon accumulators

Potential GHG emitters

Climate change



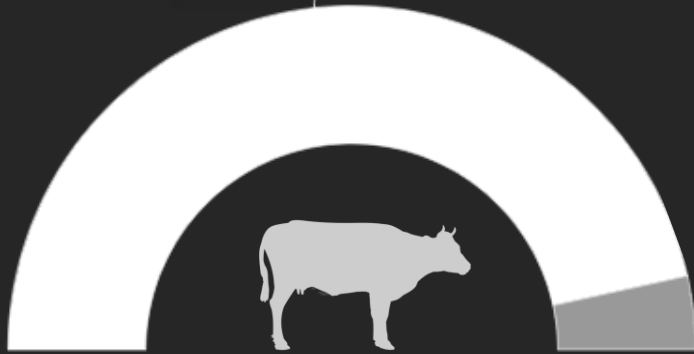


Representative diagram of biogeochemical processes in mariculture areas. Source: Author of Work

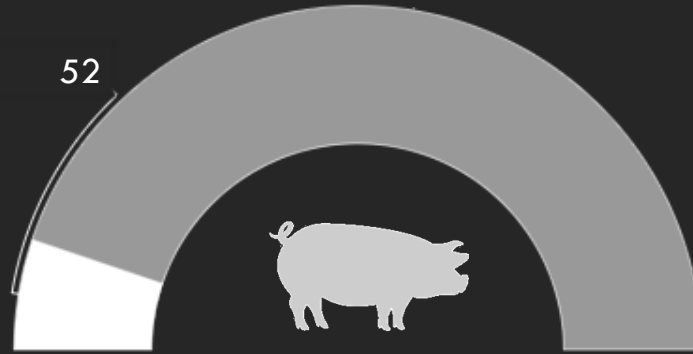
FOOD INDUSTRY AND GHG

CO₂-eq kg⁻¹

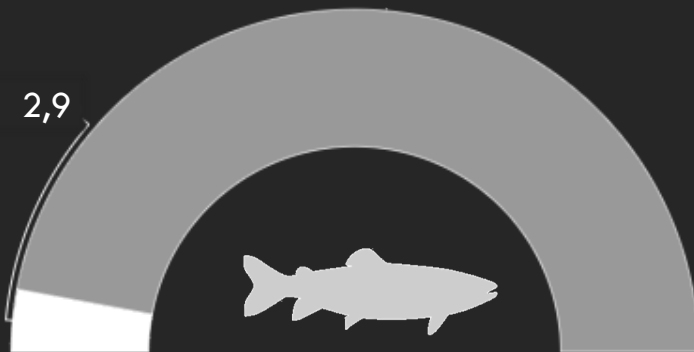
465



52



2,9



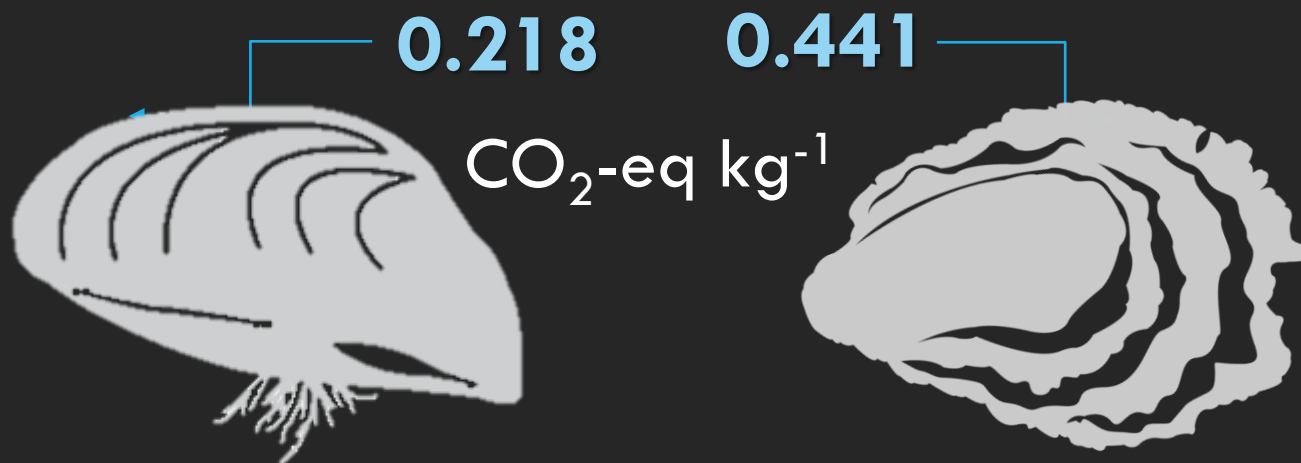
0,13



MUSSEL AND OYSTER

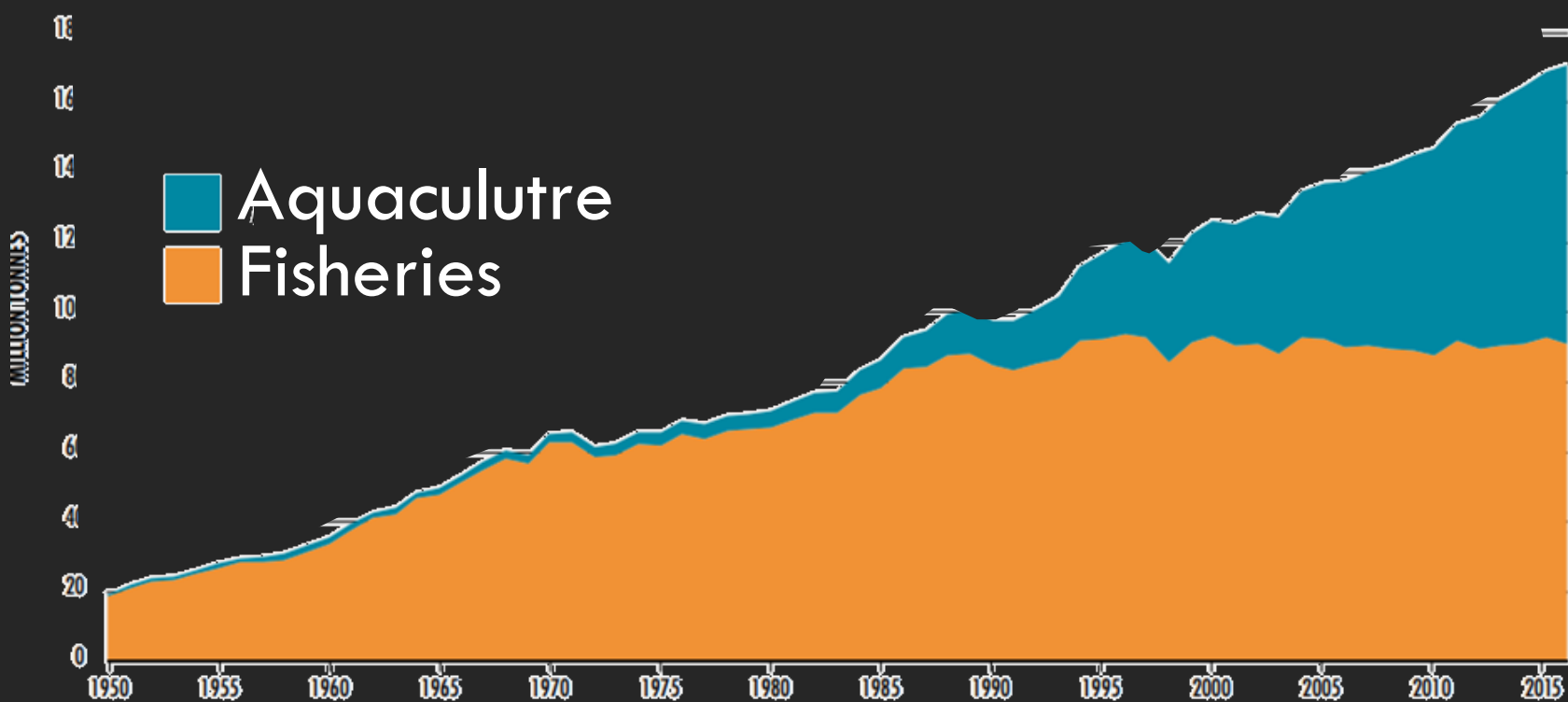
CO₂ sequestration

Biological balance and shell formation



AQUACULTURE

World production by fisheries and aquaculture



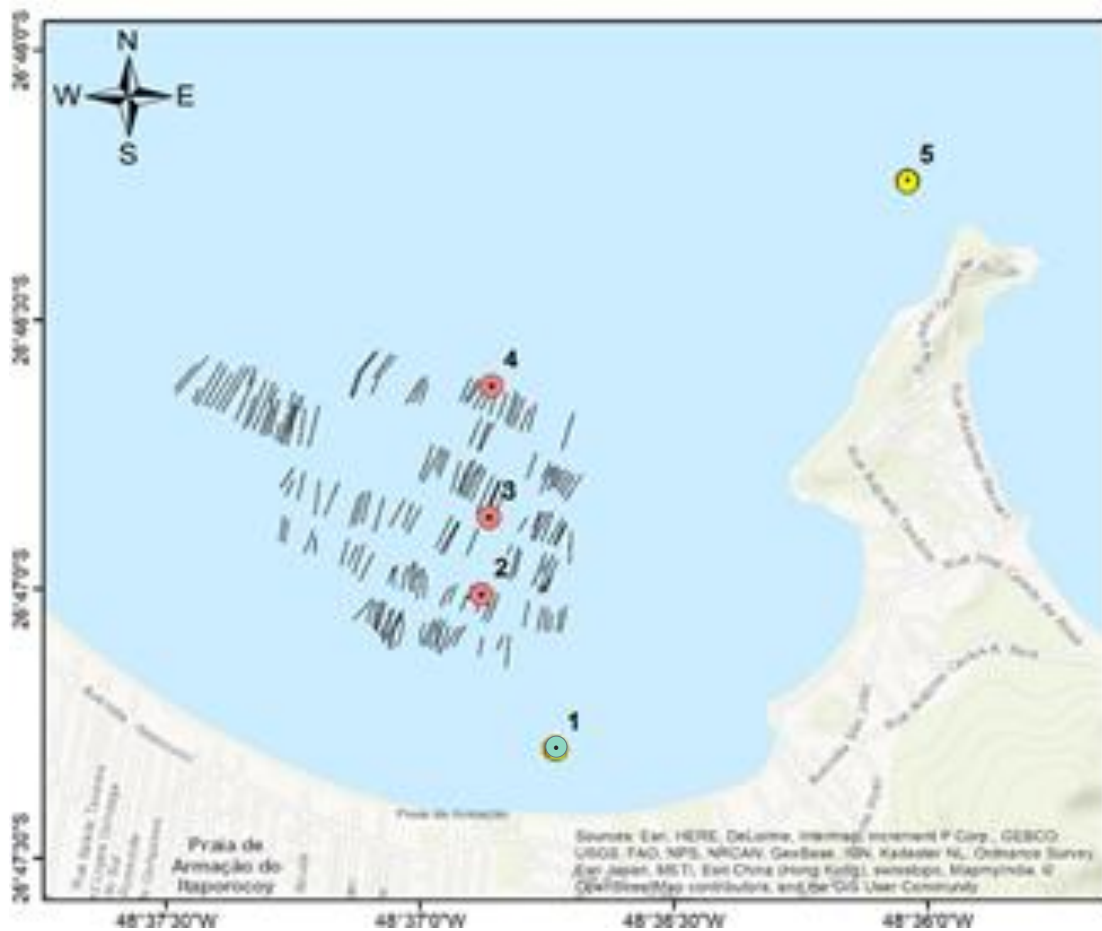
Fonte: FAO. The State of World Fisheries and Aquaculture. 2018



OBJECTIVE

Evaluate the influence of mussel production on CO_2 and CH_4 emissions in the coastal region in Southern Brazil

STUDY AREA



Legend

- Beach
- Control
- Mariculture
- Mariculture Long lines



Datum WGS 1984



GREENHOUSE GASES

GHG Fluxes

- Static chamber technique
- 7 min interval (21 min total)
- 60 ml (syringes samples)

Water dissolved gases

- Headspace technique

Air concentration

- 60 ml syringe samples

Câmaras Estróicas. Fonte: Autora do trabalho



ENVIRONMENTAL PARAMETERS

In situ parameters

- Horiba-U53 multiparameter probe

Water samples

- Niskin bottle
- Support laboratory processing

Coleta de água com garrafa de Niskin. Fonte: Tatiana da Gama Cunha



CHEMICAL ANALYSES

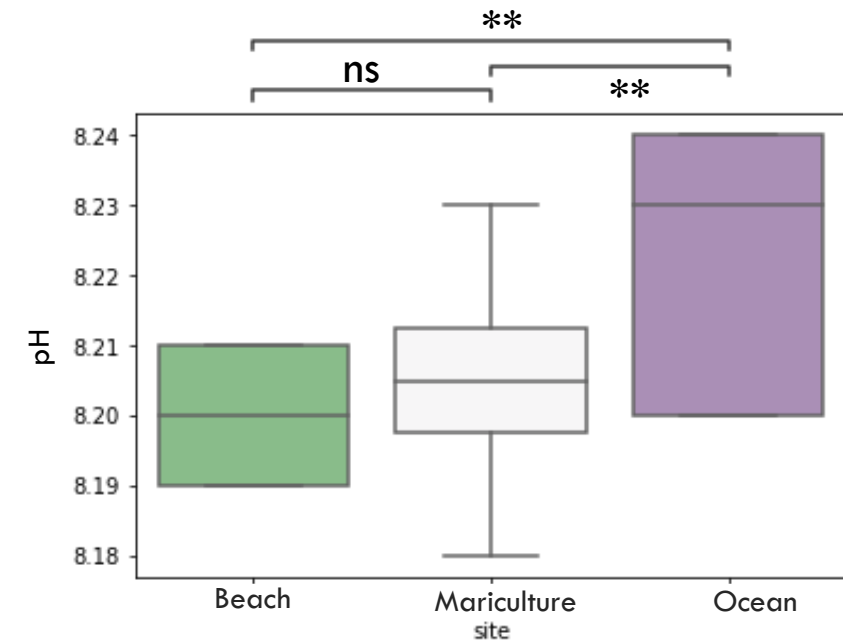
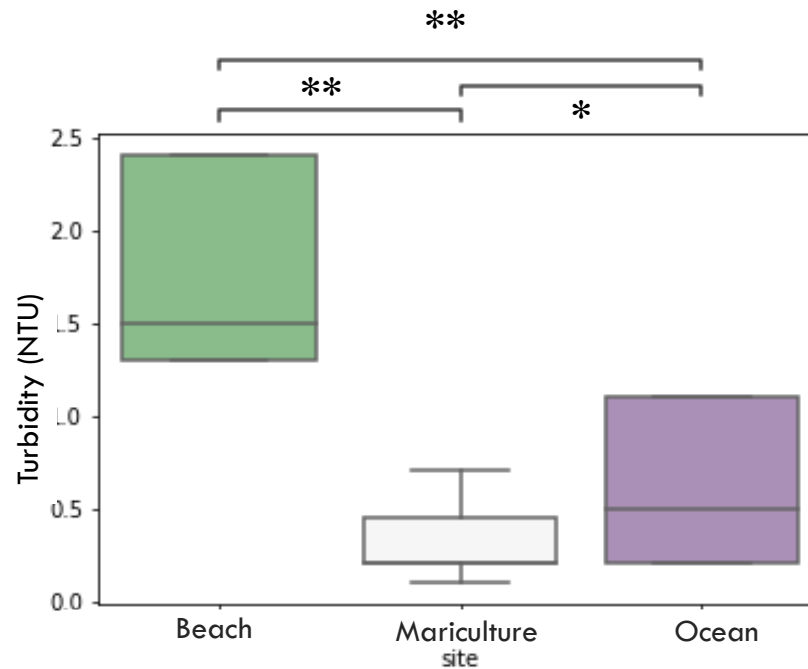
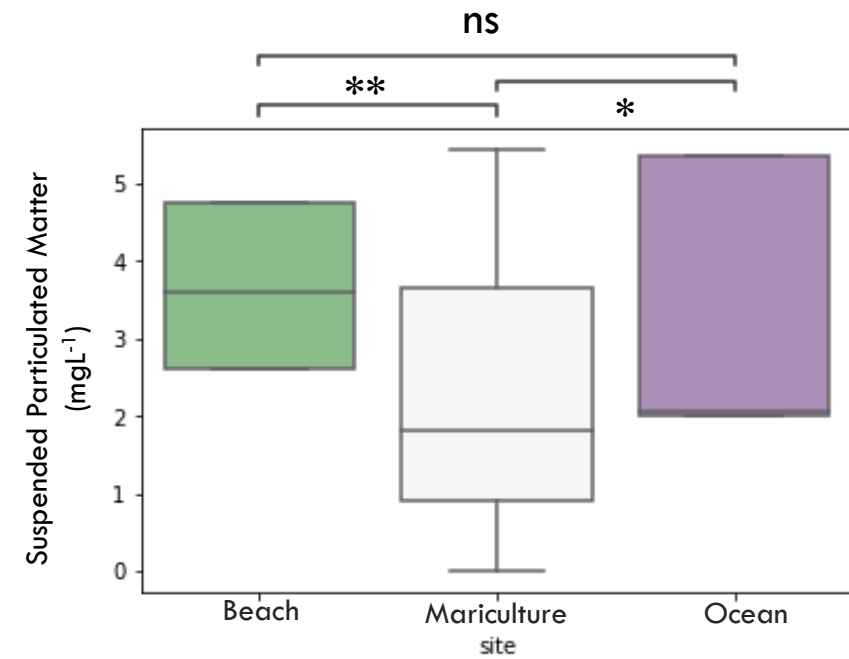
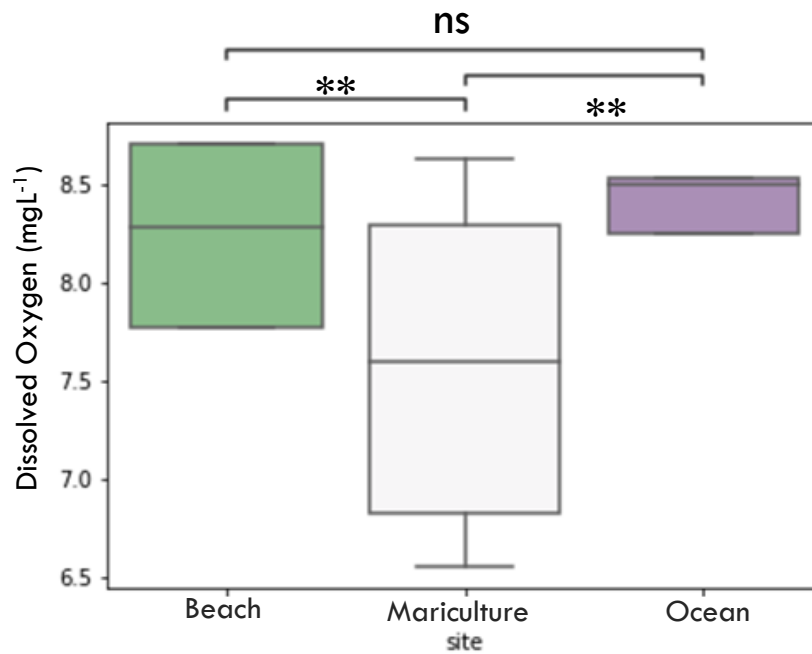
Parameter	Method	Analyses Technique
NH_4^+ , NO_3^- , NO_2^- , PO_4^{3-} , SiO_2	4500 ¹	Colorimetry
TOP	4500 ¹	Colorimetry
Clorofila-a	10200 – H ¹	Metanol extration and colorimetry.
SO_4^{2-} , SPM	4500 ¹	Gravimetry.
POC e TOC	5 220 C. ¹	Titrometry
GEE		GC-MS
Metais	3114 B. ¹	AAS



RESULTS

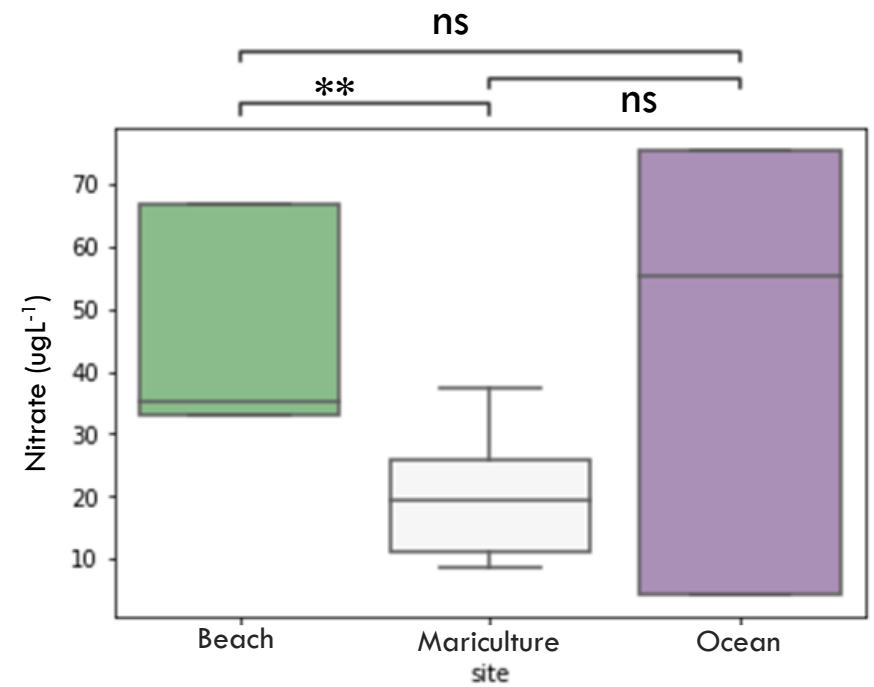
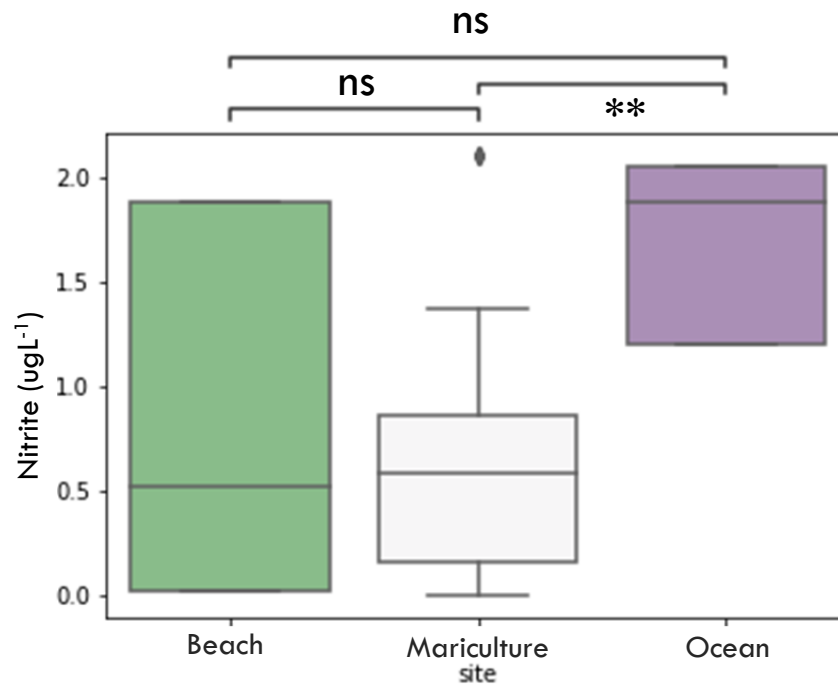
Salinity = 28.7 ± 0.4

Physical and
chemical parameters

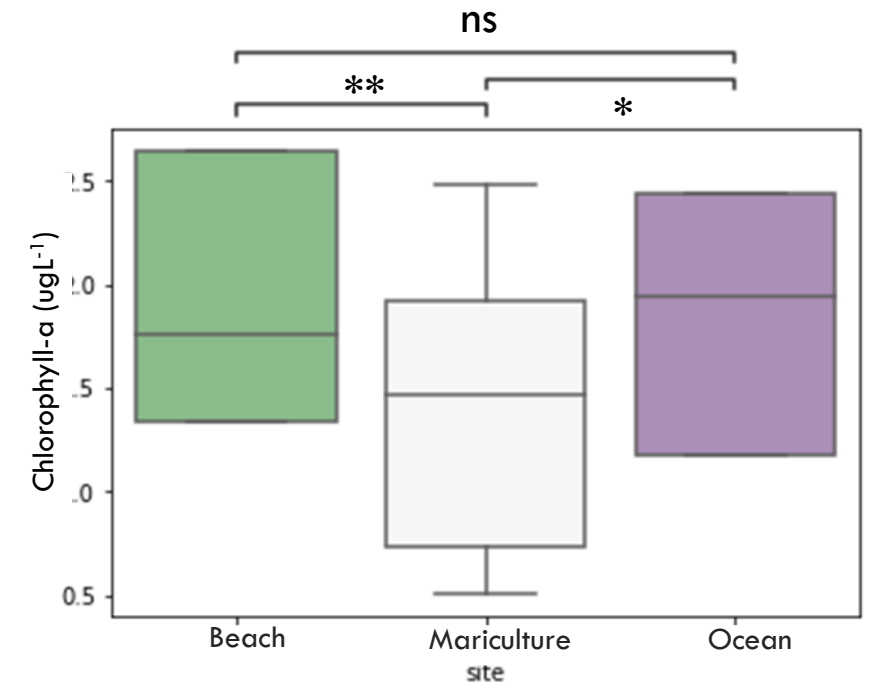
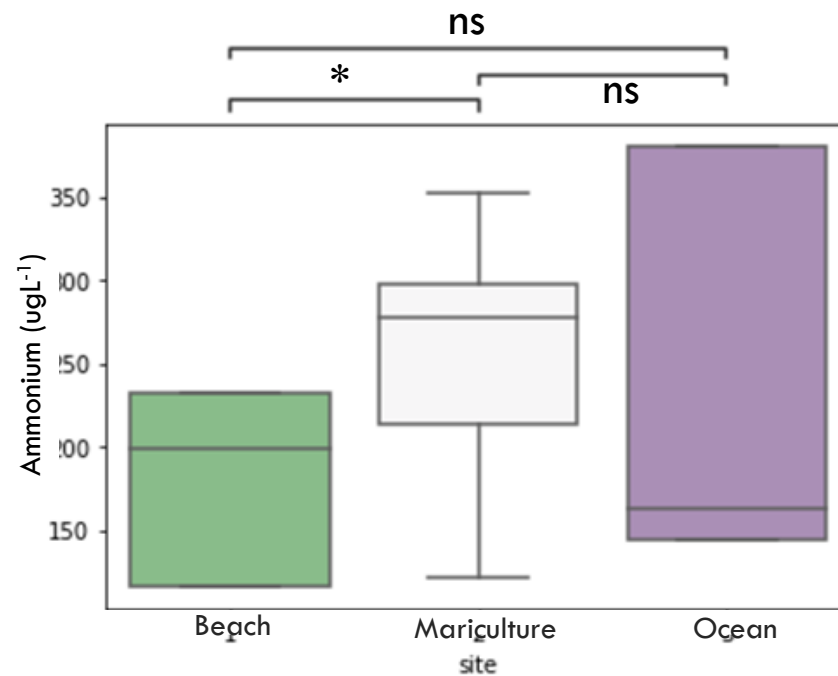


RESULTS

Nitrogen
compounds

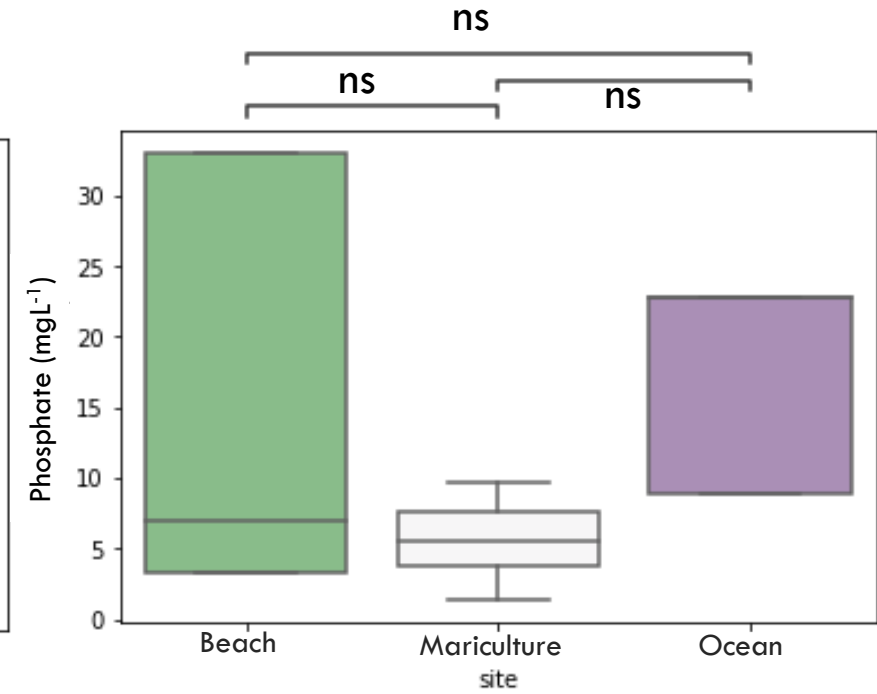
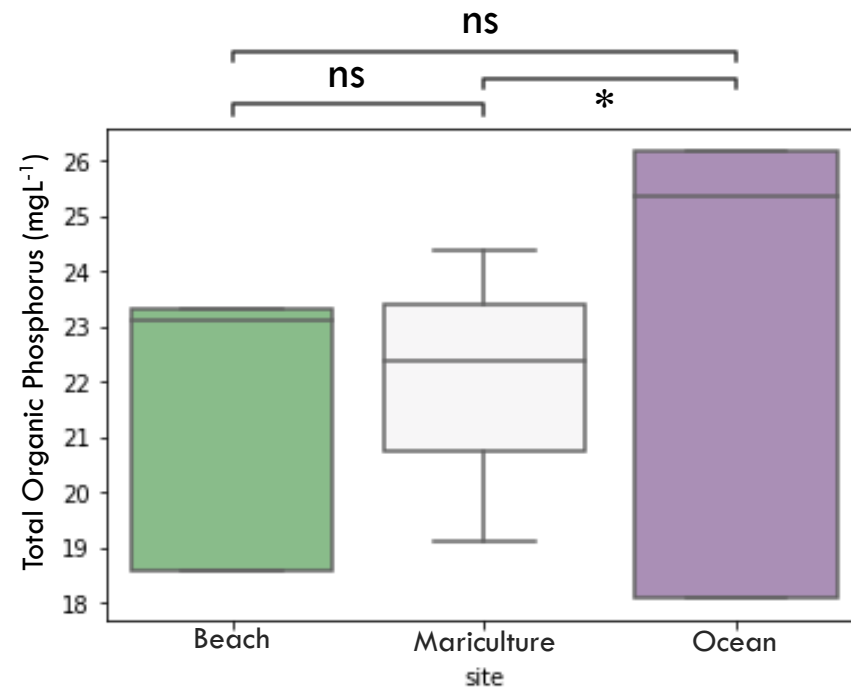


Chlorophyll-a

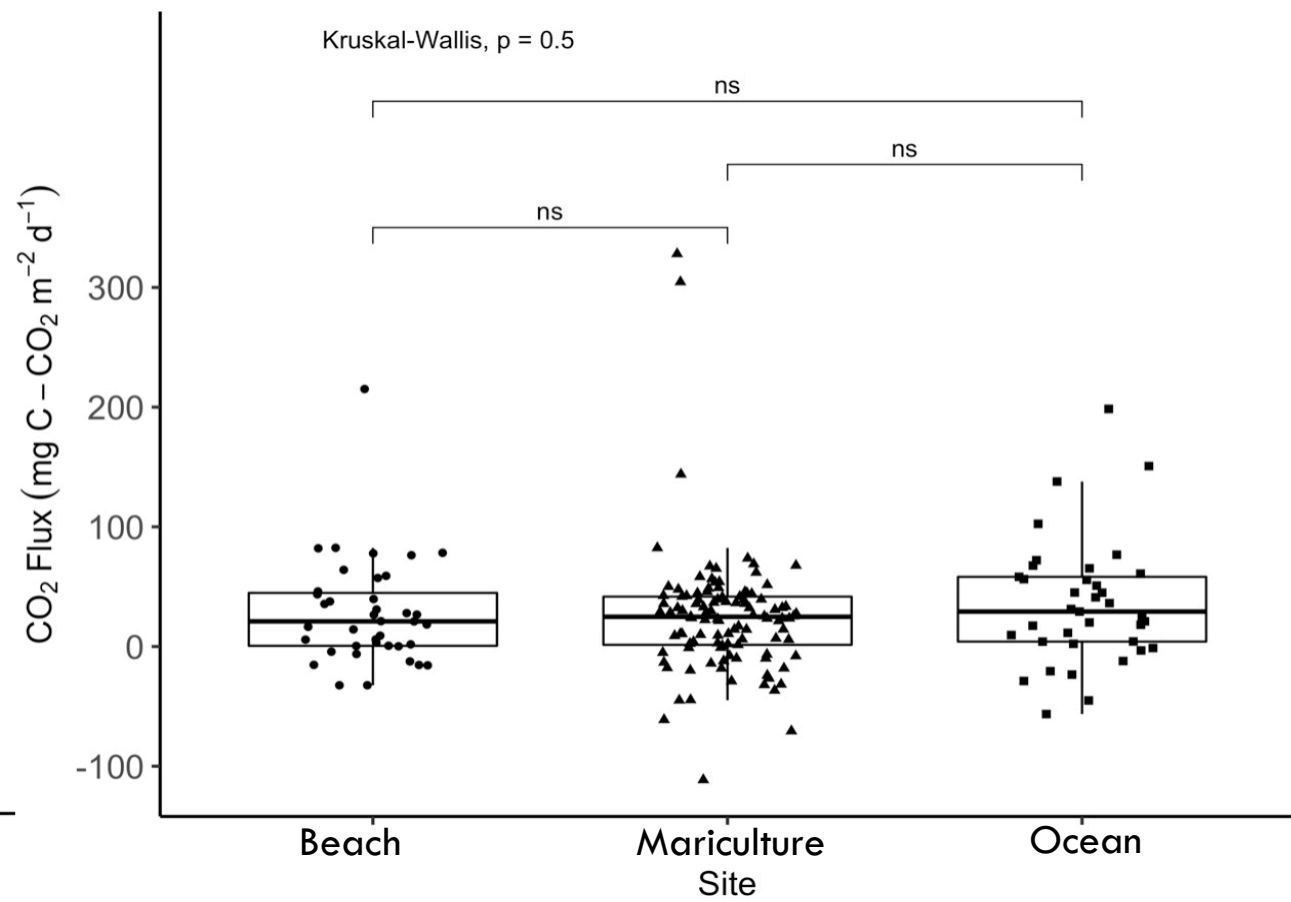
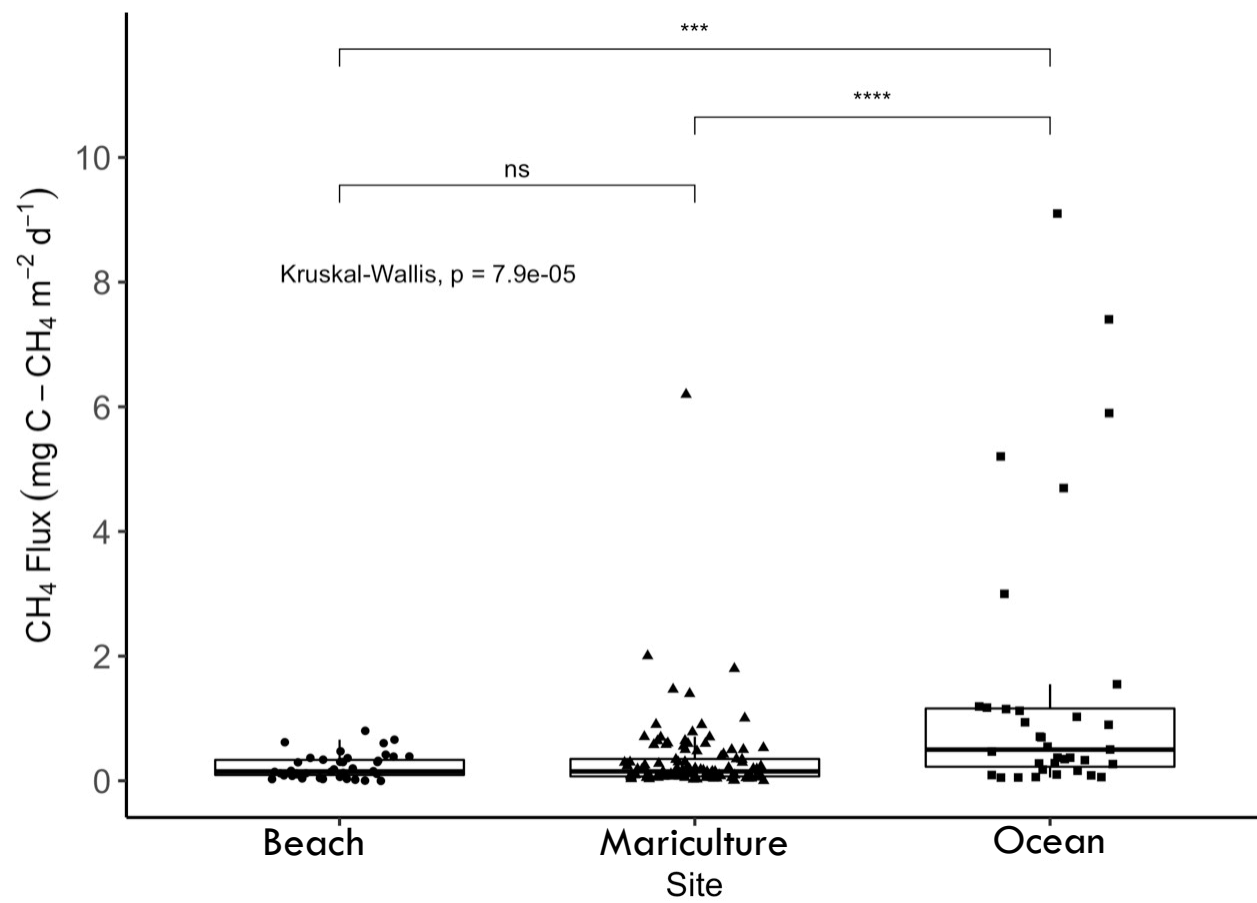


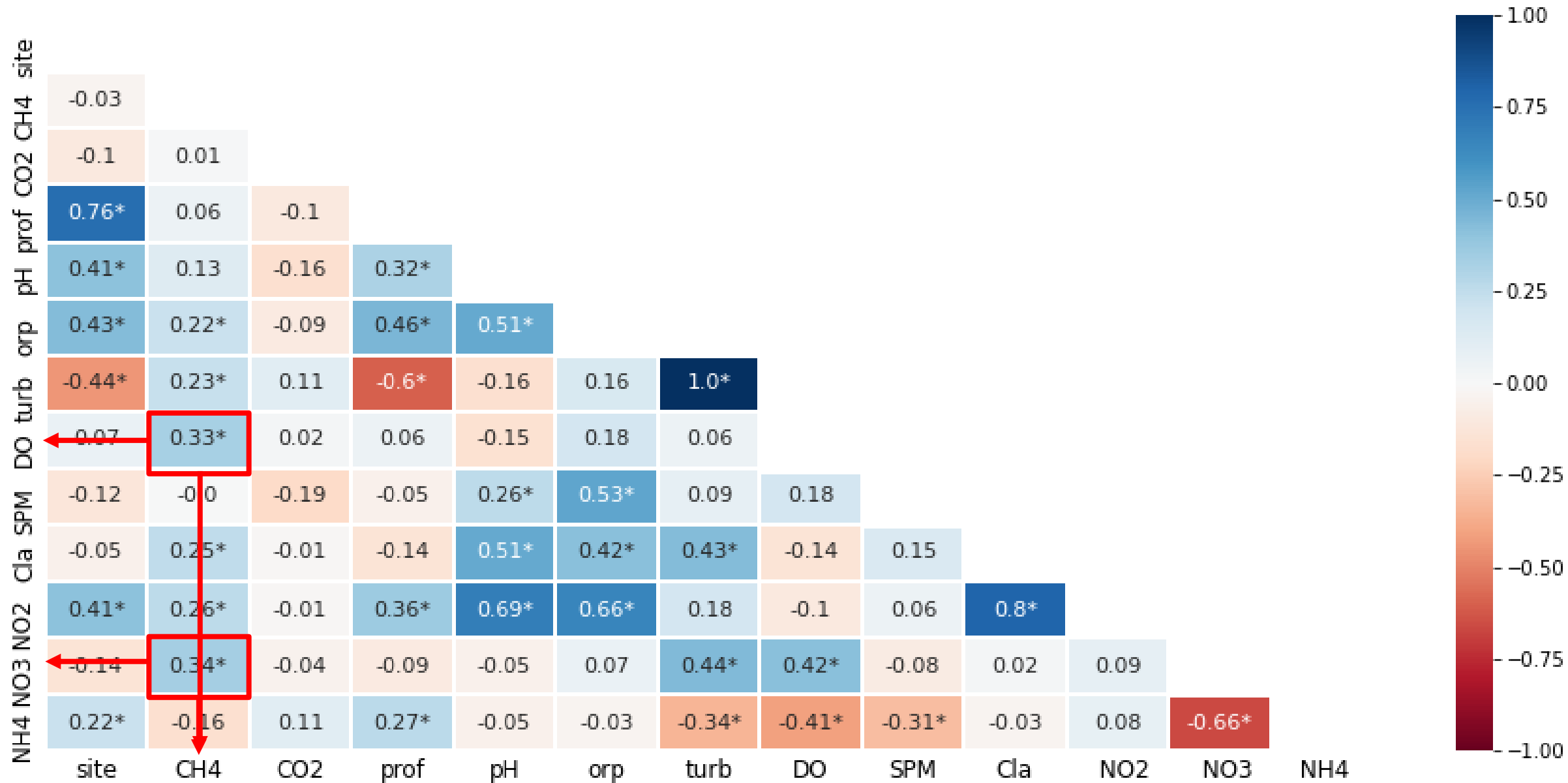
RESULTS

Total organic phosphorus
Phosphate



RESULTS - GHG





Spearman correlation * p-value < 0.05

CONCLUDING CONSIDERATIONS

Results showed that mussels farming in the Itapocoroy inlet did not have an environmental impact in the GHG emission.

A few monitored parameters have no differences between the control areas and mussel areas, showing no impacts resulting from the mariculture activity in the Itapocoroy inlet.

All parameters showed environmental healthy levels, indicating no impact on the quality of water and greenhouse gas emissions.



RECOMENDATIONS

Further research in marine aquaculture parks

Improve analytical tools

Continuous monitoring



ACKNOWLEDGEMENTS



REDE



19th ANNUAL

CMAS

Conference

Oct. 26-30 | Virtual

