Interreg
Caraïbes
Fonds européen de développement régional

UNION EUROPÉENNE

SARG'COOP
Programme caribéen de coopération de lutte contre les algues sargasses

Fundametal knowledge on *Sargassum* and their associated microorganisms

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ECO3SAR : an interdiciplinary project combining knowledge, values and applications

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Global ecology needs interdisciplinarity and integrated ways in order to bring new concepts and hopefully resolve issues

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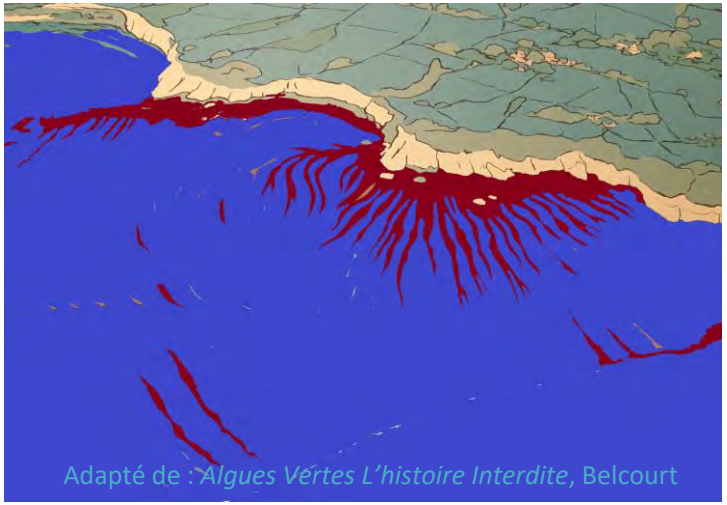

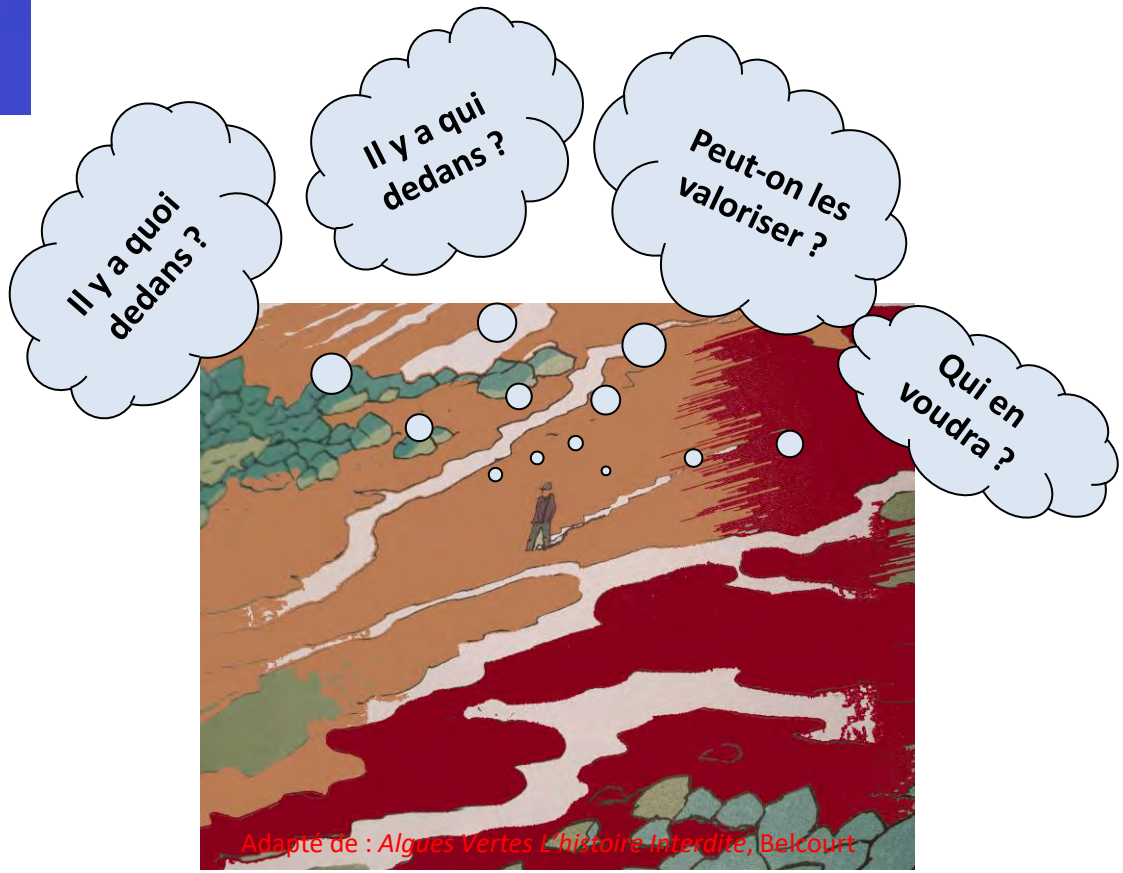

ECO3SAR : Ecology, Ecotoxicology and Economy of *Sargassum*

WP 1 : Ecotoxicology of beached *Sargassum* from Martinique and Guadeloupe

WP 2 : Preliminary studies on contamination/decontamination processes


WP 3 : Diversity of the micro-organisms associated to *Sargassum* tides

WP 4 : Studies of sectors and social acceptances

« pratiques, usages et représentations »
« l'action de l'homme sur la nature et la vision d'une nature perturbée et en évolution »

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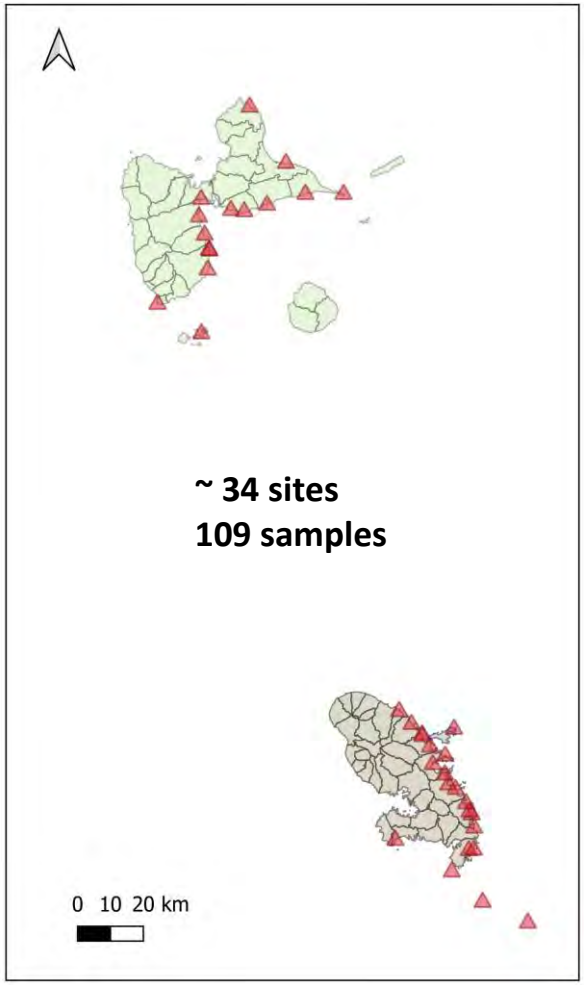
Guadeloupe landscapes

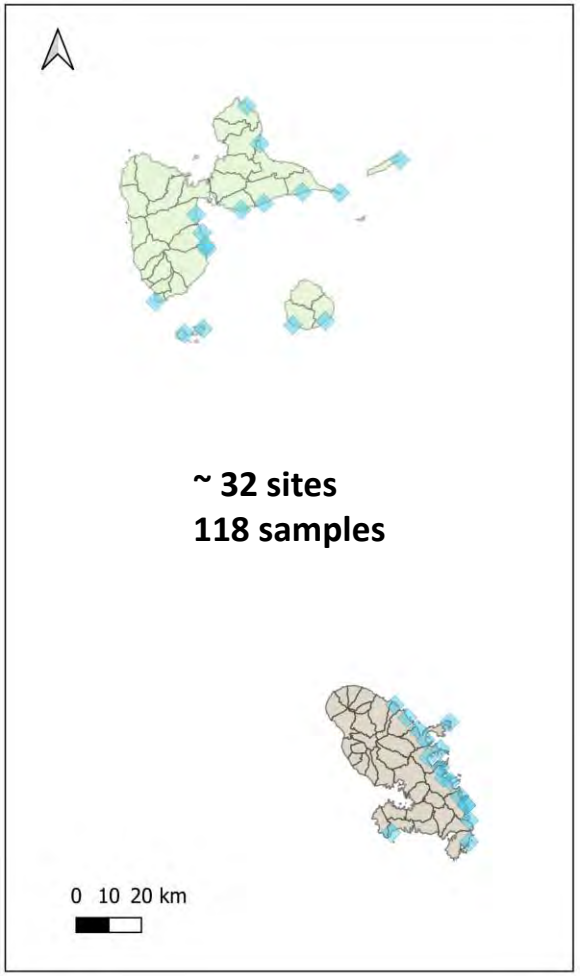
Martinique landsapes

Sampling periods and sites

Campaign 1 : July-August 2018



Campaign 2 : February-March 2019



57 sites; 227 analyzes

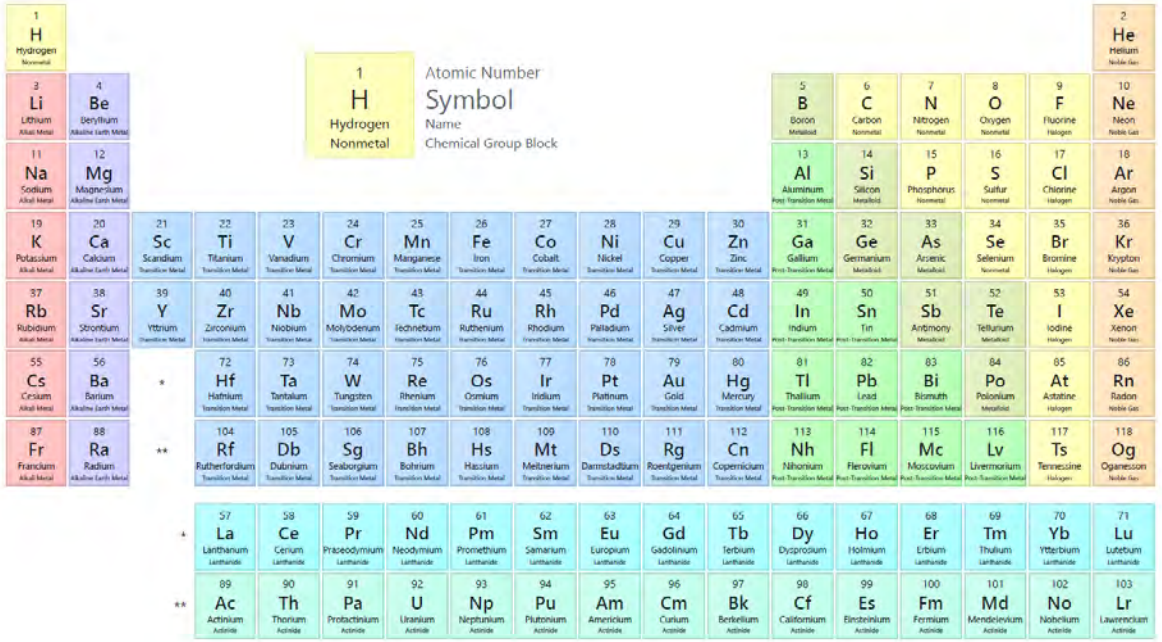
- Sargassum floating in seawater or washed up on the beach
- "new" and "old" *Sargassum*
- A few storage sites
- A few "less coastal" sites (~ 27 km)

Metals, semimetals, and nonmetals coumpounds

Dry weight

Mineral matter

Total organic matter (**C**)
Nitrogen (**N**)
Phosphorus (**P**)
Sulfur (**S**)



Lead (**Pb**)
Cadmium (**Cd**)
Nickel (**Ni**)
Cobalt (**Co**)
Zinc (**Zn**)
Cupper (**Cu**)

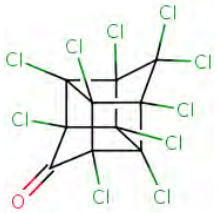
Chromium : **Cr** (III), **Cr** (VI)

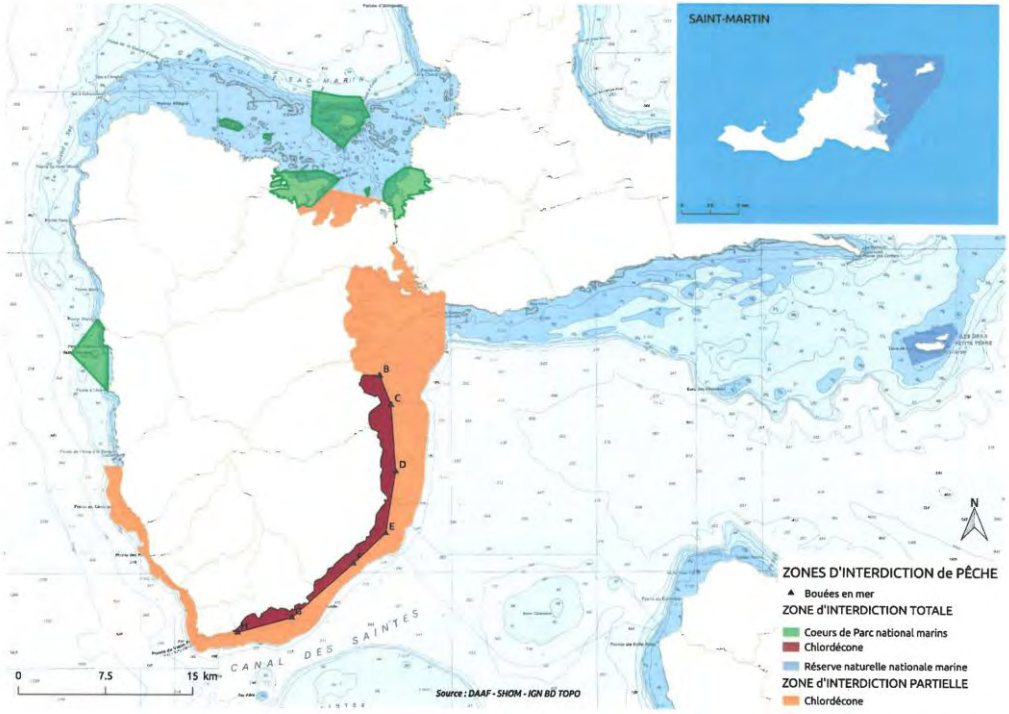
Mercury: **Hg**, H_3C-Hg^+X^-

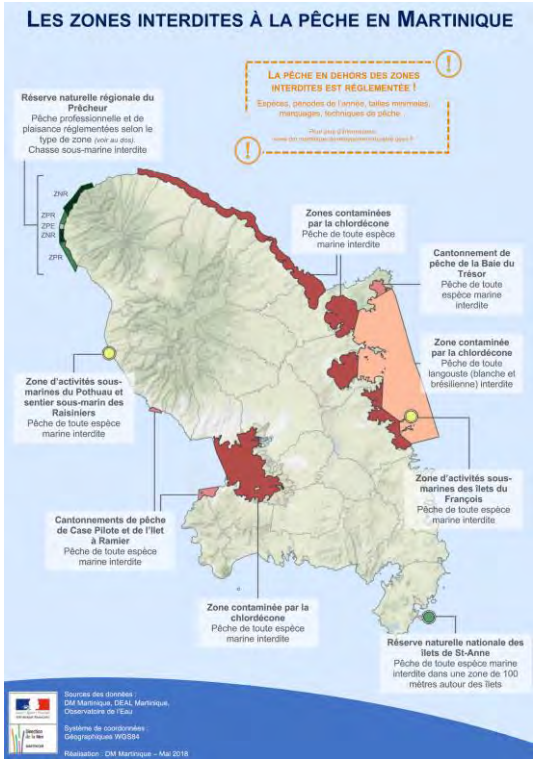
Mineral arsenic: **As** (III), **As** (V)
Organic arsenic: Monomethylarsonic acid (MMA), Mimethylarsinic acid (DMA), Arsenobetain (AsB), arsenocholine (AsC)

Persistent Organic pollutants

Chlordécone (Kepone)
5β-hydro-chlordécone
chlordécol



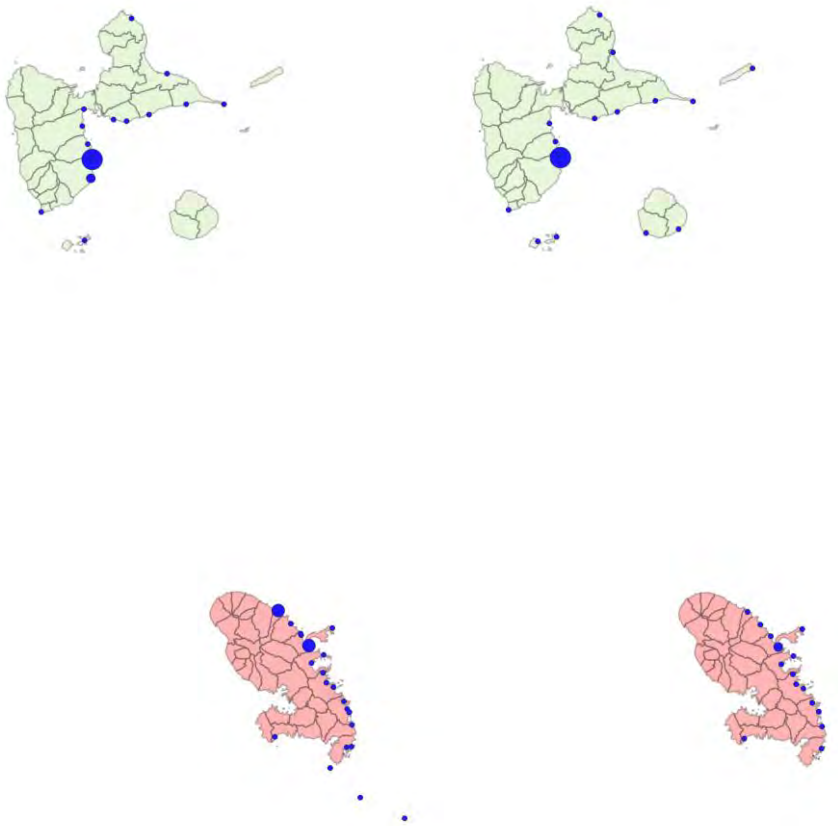




Sargassum can contain both oceanic and costal contaminants

[Arsenic] = 78 mg.kg^{-1} DM

0 < **[CLD]** < 1.2 mg.kg^{-1} DM



North Atlantic Ocean : 0,64-1,94 µg.l^{-1} (Mlddelburg *et al.* 1988)
Atlantic Ocean : 0,41 – 1,57 µg.l^{-1} (Braman and Foreback, 1973)

On the same order of magnitude than **estuarine and fluvial waters**

Virgin soils varies from 0.1 to 40 µg.kg^{-1}

Continental crust of the earth: 1.5–2 µg.kg^{-1}

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Algae microbiome

Pathogenicity

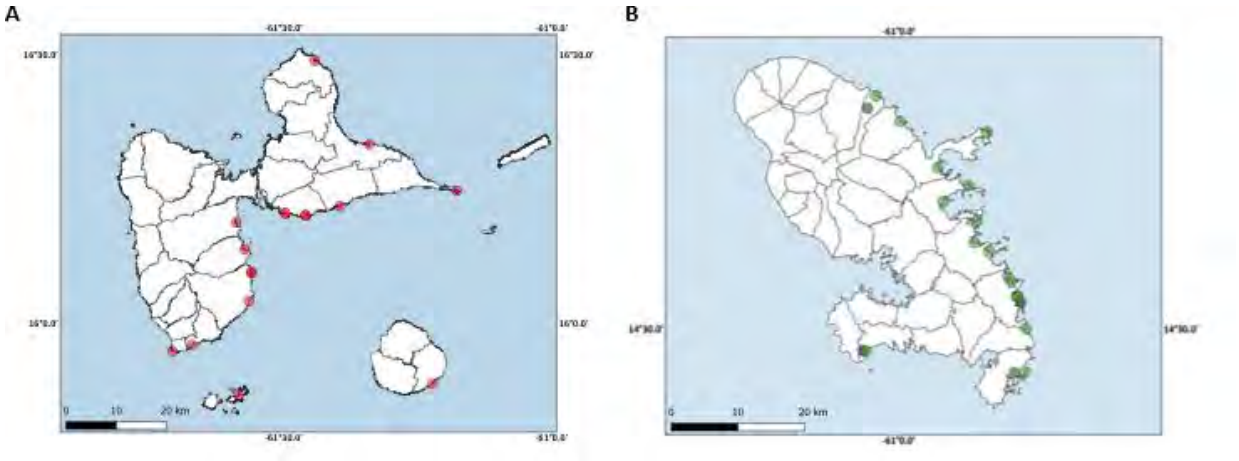
Oxygen, Organic compounds
Anchorage, Protection

Defense

Carbon dioxide, Fixed nitrogen, minerals and growth
Detoxification, life cycle, Anti-fouling

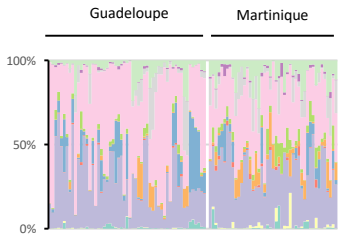
Symbiotic bacteria

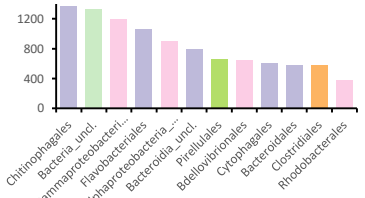
Metabarcoding of the **16S rDNA***



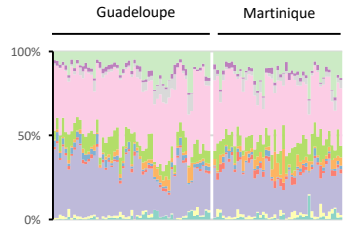
100 samples: **Seaweeds** and **Surrounding seawater**

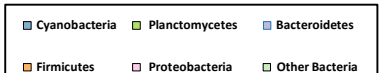
Relative abundance: 2,849,100 reads

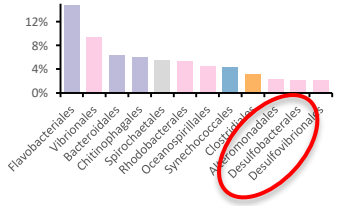




Diversity: ~ 22,200 OTUs



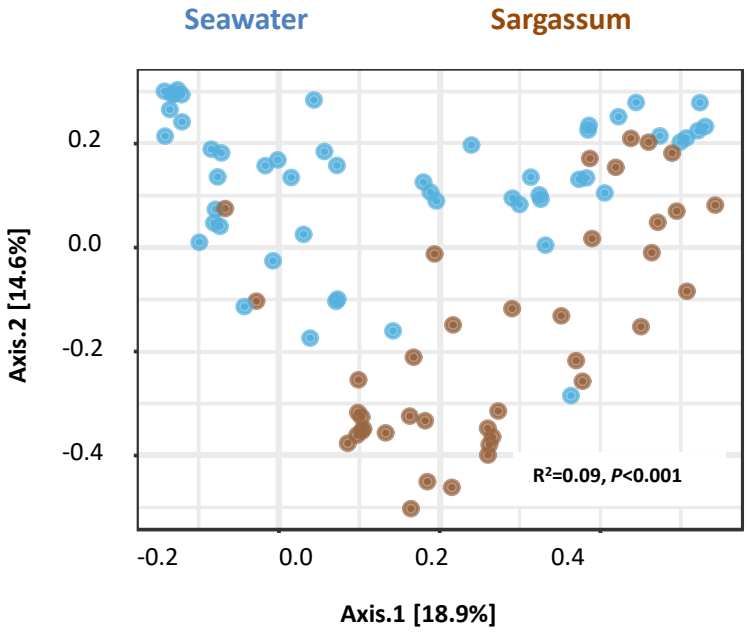


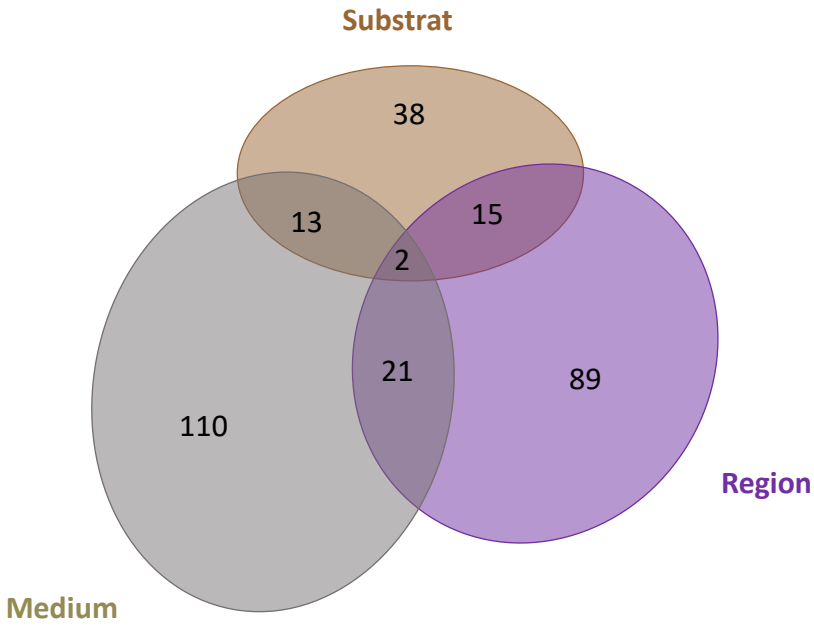


* *Unpublished data*

Regional, substrat and medium specific bacterial diversity *

Functional categories:		
	Respiration_of_sulfur_compounds	404
	Fermentation	314
	Human_pathogens_all	142
	Intracellular_parasites	491





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Thank you

« Global and local scale »

« Not one but many/various* Sargassum *ecosystems »