







Sea cucumbers as bioindicators in N-W Mediterranean : focus on trace elements and microplastics

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Context

Sampling and analysis

Growing urbanization around of the Mediterranean coast is a major source of **anthropic contaminants** which can accumulate in this semi-enclosed sea. Some of them have a high affinity for the sediments:

Sampling of *Holothuria polii* and *H. tubulosa* in the Bay of

Trace elements (TE) and Microplastics (MP)

This highlights the importance of **developing monitoring tools** for this marine compartment and thus a need for a better understanding of the relationship between these contaminants and **potential bioindicator species** such as **sea cucumbers**.

Calvi, Corsica, at

- **3 stations**: Sewer exit | Fish farm | STARESO
- **3 periods**: Summer | Autumn | Winter



- Analysis of 19 TE concentrations in several organs :
 Bodywall | Respiratory trees | Haemal system | Muscles
- **Density separation of plastics** contained in the gut

Results

Origin of variability in **trace element** concentrations

Variability ~	Variability ~	Variability ~	Variability ~
organ	station	sampling period	species
57.26 ± 16.57 %	3.24 ± 2,81 %	1.38 ± 0.93 %	0.44 ± 0.53 %

Microplastics ingested by sea cucumbers at each station



PCA of **trace elements** concentrations in sea cucumbers organs





Types of **microplastics** ingested (%)

Fibers and filaments | Films | Rubbers | Fragments

Interpretation and conclusions

The body compartment has a major influence on TE accumulation,

with homogenously low levels in the bodywall and very high concentrations

in the haemal system that differ between species and stations

The haemal system appears as the most suited organ to monitor spatial variations of TE contamination in sediments

The **ingestion of MP by sea cucumbers** displays significant **differences between stations**

These variations highlight the potential of sea

cucumbers as bioindicators of plastic pollution in

sediments