Importance of the microbenthic loop of *Posidonia oceanica* meadows to detect anthropogenic perturbations early:

First results

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Introduction

Posidonia oceanica = descriptor of environmental perturbations in the coastal zone

BUT

Characteristics and organisms living in the sediment compartment are not often used as indicator of the environment quality

WHY???????
Characteristics of the sediment compartment

- Sedimentation of pollutants (organic or chemical)
  - smaller dilution
  - inevitably affected

- Physicochemical properties sensitive to pollution

- Organisms with a rapid turnover and which spend all their life cycle in the sediment compartment
  - inevitably affected
Our aims

- Use sediment compartment to find an early holistic indicator of anthropogenic perturbations.

- Important sub-system in *P. oceanica* meadows = microbenthic loop.

![Organic matter](image)

- Microphytobenthos
- Meiofauna
- Bacteria
Sampling period and sites

- Healthy meadow
- No anthropogenic perturbation
- 3 Sediment cores
- Sand with few rocks
- March & June 2007
- Low hydrodynamism

Are there differences in the microbenthic loop between both sites?

- Healthy meadow
- Boat anchoring
- Rocks
- High hydrodynamism
Measured parameters

- Slices: 0-1, 1-2, 2-5, 5-10, 10-15 cm
- Bacterial biomass, abundance (Vienna, Austria, B. Velimirov): epifluorescence
- Organic matter biomass
- Microphytobenthos biomass: spectrophotometer
- Meiofauna
- Nutrients
- Granulometry
Measured parameters

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Results: Biomass of bacteria

Difference in nitrogen concentration in March
Bigger bacteria in Alga Beach (predation?)
June: hydrodynamism
Results: Biomass of organic matter

Shoot and rhizomes densities more important in Alga...
Results: Biomass of microphytobenthos

June

Very important SD ➔ Attention to sampling strategy...

March
Results: Similarity (bacterial biomass, abundance and morphotypes, microphytobenthos biomass, organic matter content)

Mars 2007

Alga

Significant separation in March.
Non significant separation in June

Small scales variations?
Perturbations in both zones?
Conclusions

- The microbenthic loop seems to be a good tool to distinguish sites.

- The combination of all the measured parameters in a similarity analysis confirms the interest of using every compounds of the microbenthic loop together in order to detect perturbations.

- Problems of scales in sampling strategies…

- Now, comparison between STARESO and a fish farm to confirm the interest of this method (seems good!!!).
Thank you very much!!!