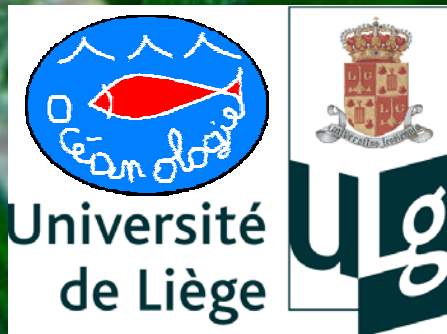


Importance of the microbenthic loop of
Posidonia oceanica meadows to detect
anthropogenic perturbations early:

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

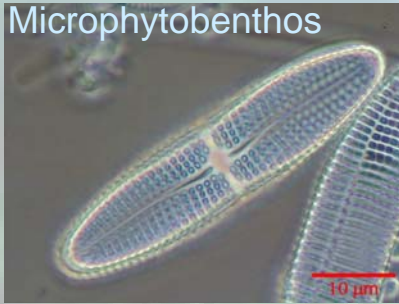
- Sedimentation of pollutants (organic or chemical)
 - ➔ smaller dilution
 - ➔ inevitably affected
- Physicochemical properties sensitive to pollution
- Organisms with a rapid turnover and which spend all their life cycle in the sediment compartment
 - ➔ inevitably affected

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

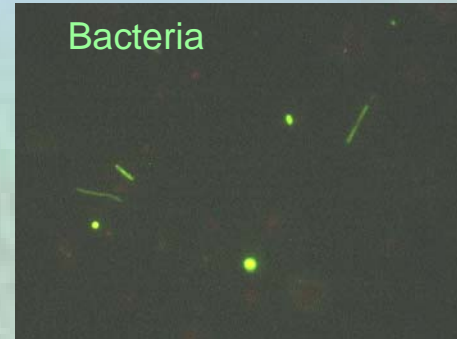
Microphytobenthos



Meiofauna



Bacteria



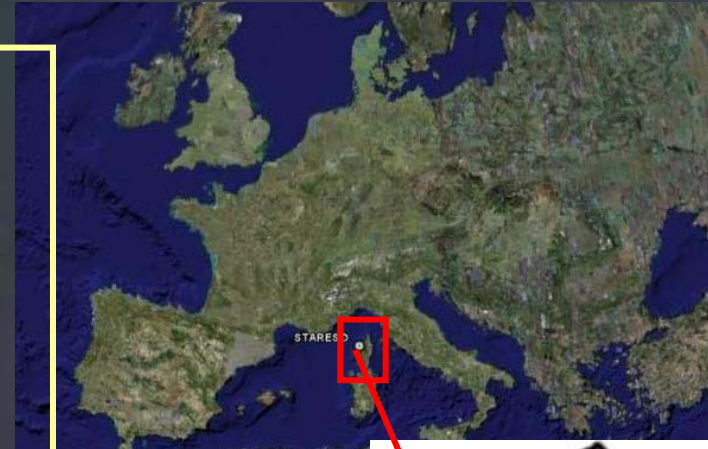
Sampling period and sites



STARESO



- Healthy meadow
- No anthropogenic perturbation
- 3 Sediment cores
- Sand with few rocks
- March & June 2007
- Low 10 m depth hydrodynamism



Are there differences in the microbenthic loop between both sites?

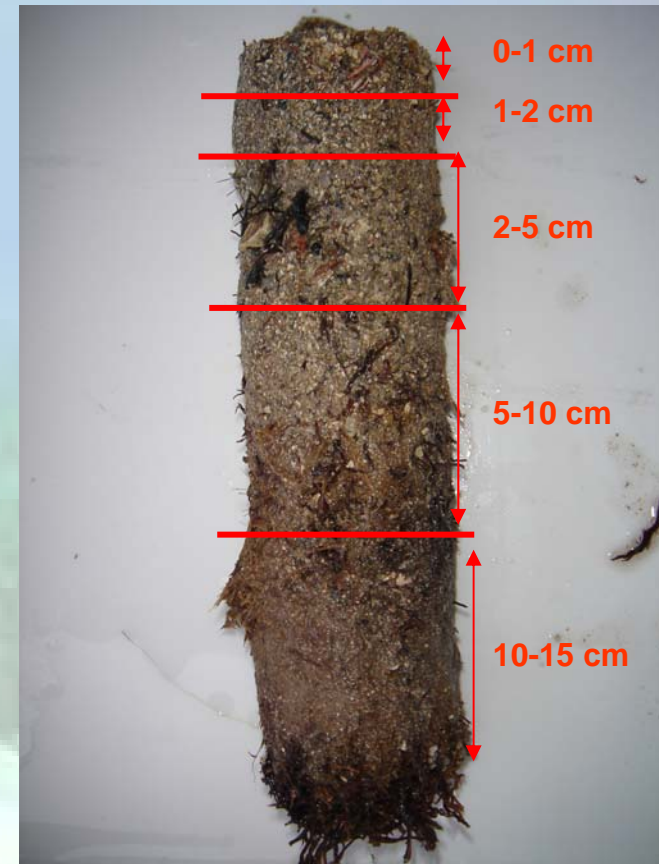


Alga Beach

- Healthy meadow
- Boat anchoring
- Rocks
- High hydrodynamism

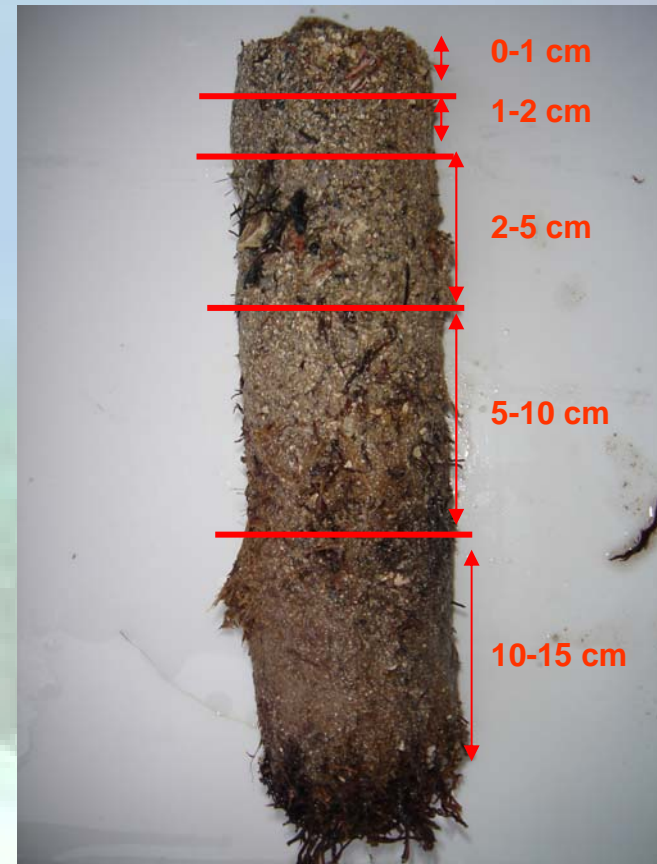
Measured parameters

- 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

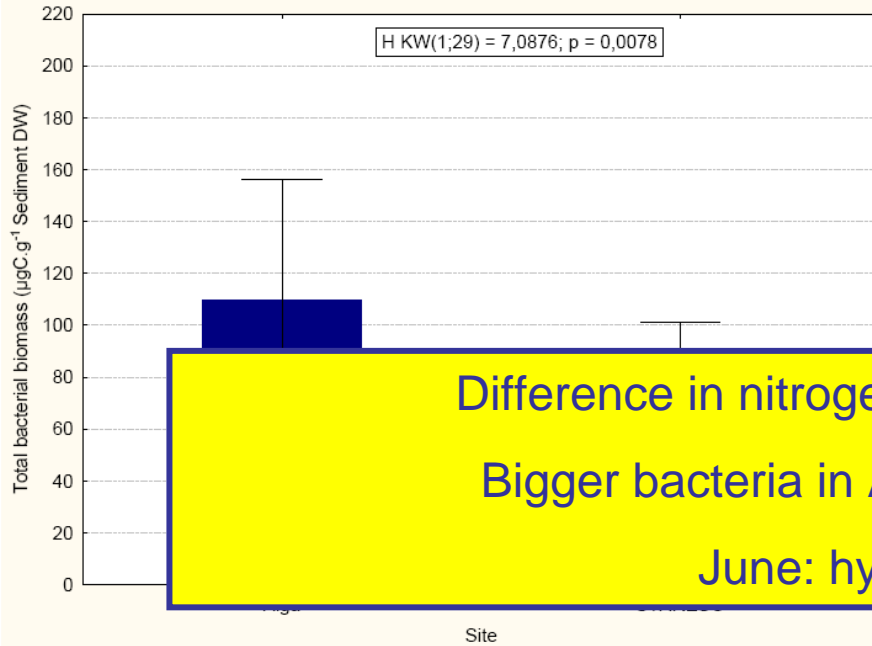


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- Microphytobenthos biomass : spectrophotometer
- **Meiofauna**
- **Nutrients**
- **Granulometry**



Results : Biomass of bacteria

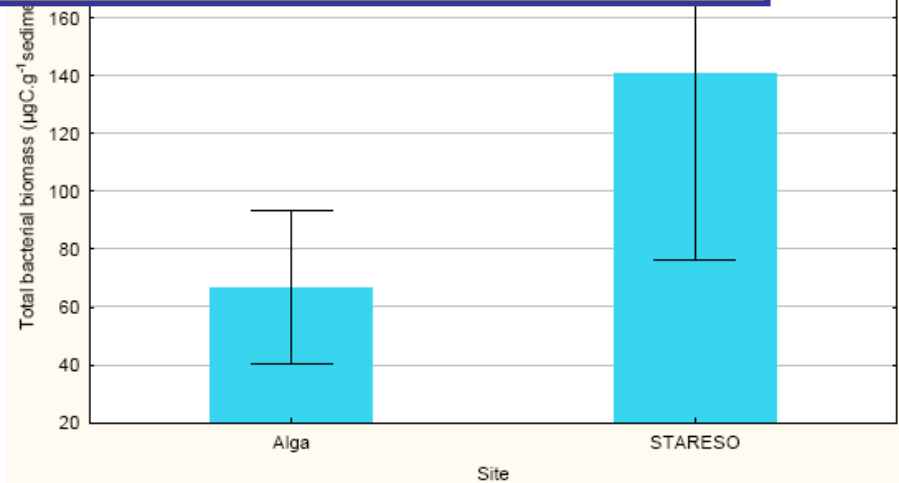


Difference in nitrogen concentration in March
Bigger bacteria in Alga Beach (predation?)

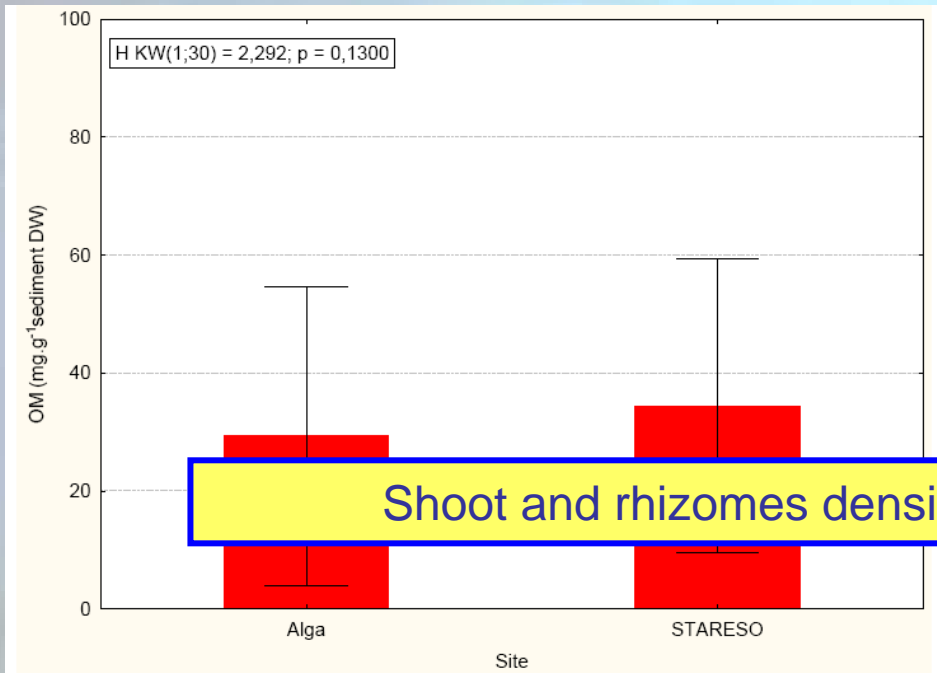
June: hydrodynamism

June

March

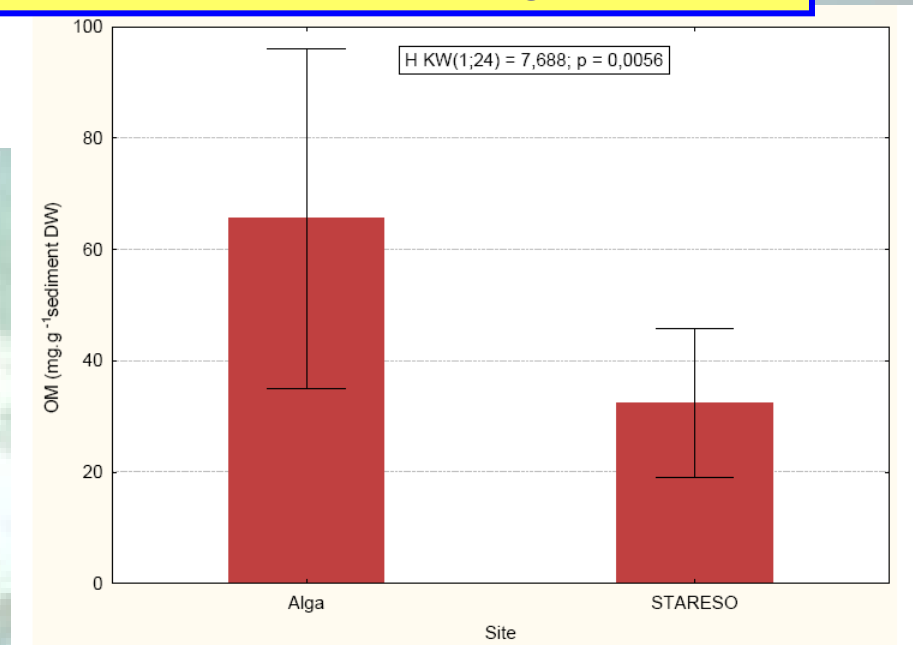


Results : Biomass of organic matter

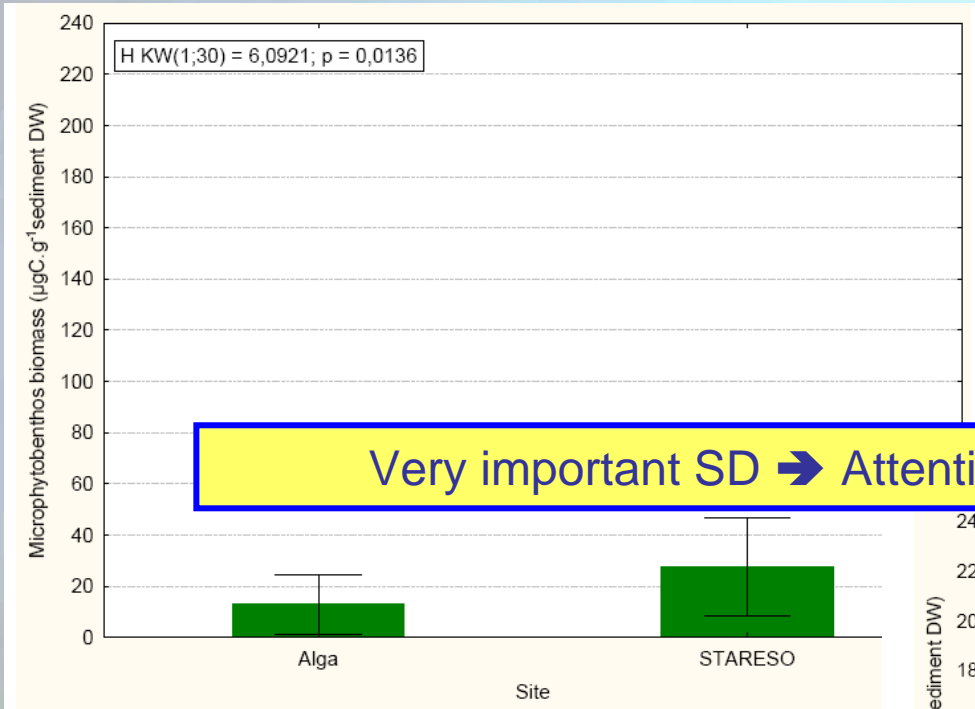


June

March

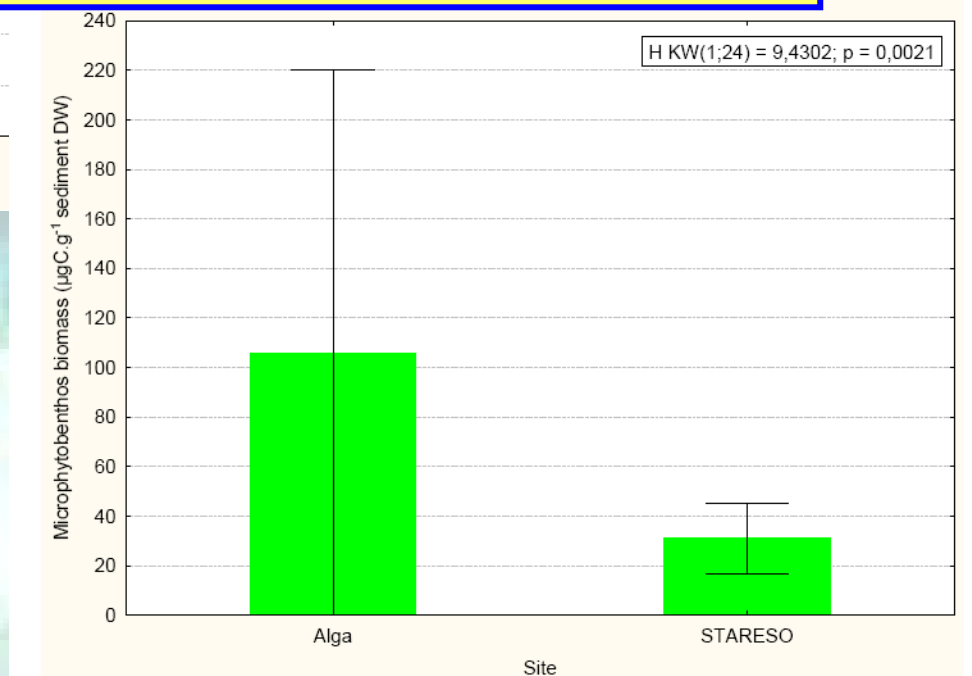


Results : Biomass of microphytobenthos



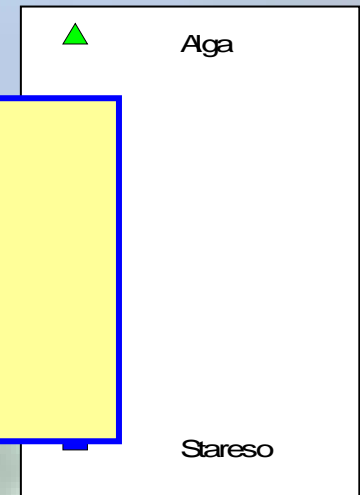
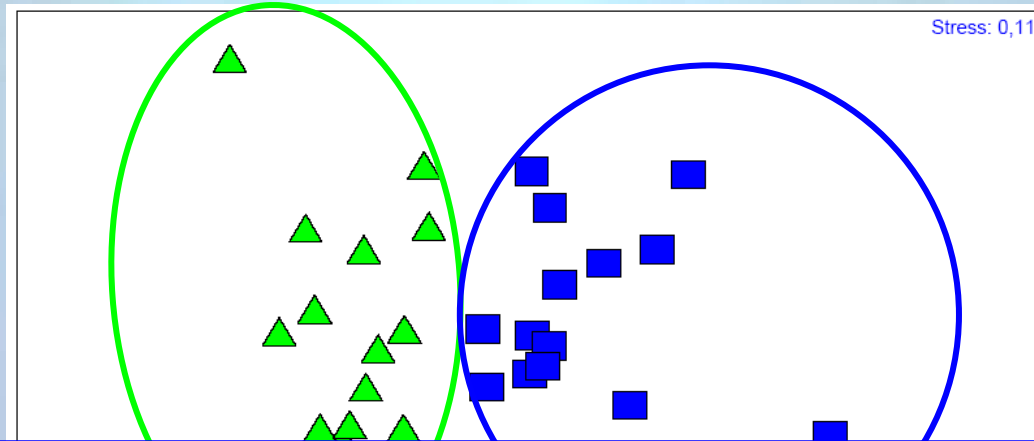
Very important SD → Attention to sampling strategy...

June



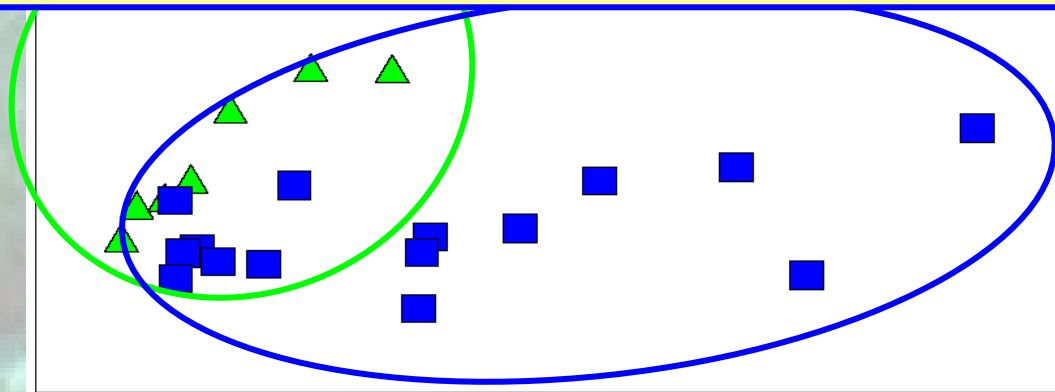
Results : Similarity (bacterial biomass, abundance and morphotypes, microphytobenthos biomass, organic matter content)

Mars 2007



Significant separation in March.
Non significant separation in June
→ Small scales variations?
→ Perturbations in both zones?

Juin 2007



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!!!).

A scenic photograph of a sunset over a large body of water. The sun is low on the horizon, creating a bright, shimmering reflection on the water's surface. The sky is filled with scattered clouds, some of which are illuminated by the setting sun. In the foreground, the dark silhouette of a rocky cliff or shore is visible. The overall mood is peaceful and serene.

Thank you very much!!!