

Developping a deep-sea station for observing benthic recycling at high temporal resolution

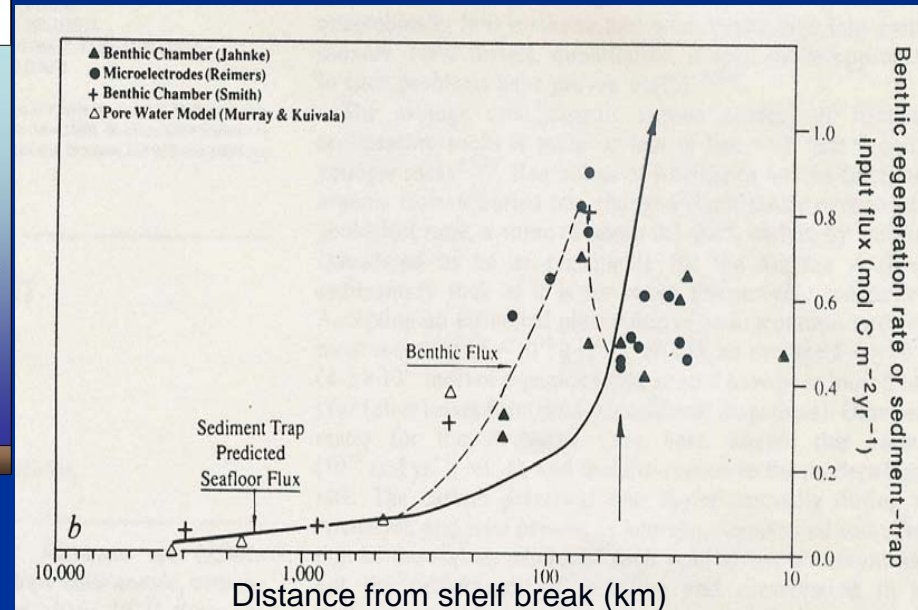
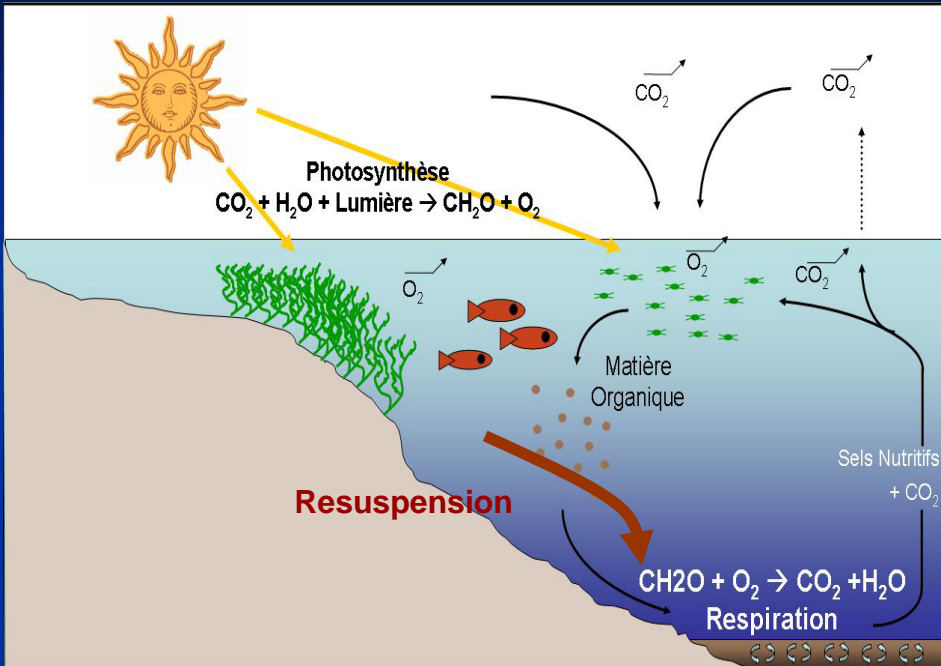
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Introduction



- Vertical or lateral transport of particles (frequency and intensity) influences benthic recycling
- Temporal variability can be large and is mostly ignored due to poor observation frequencies

Objectives

Measure time series of benthic recycling

- Normal frequency (1 per day)

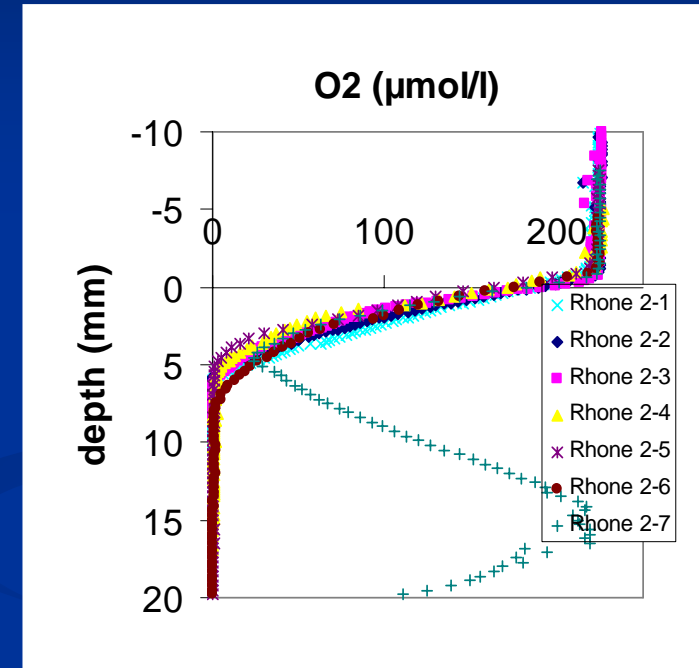
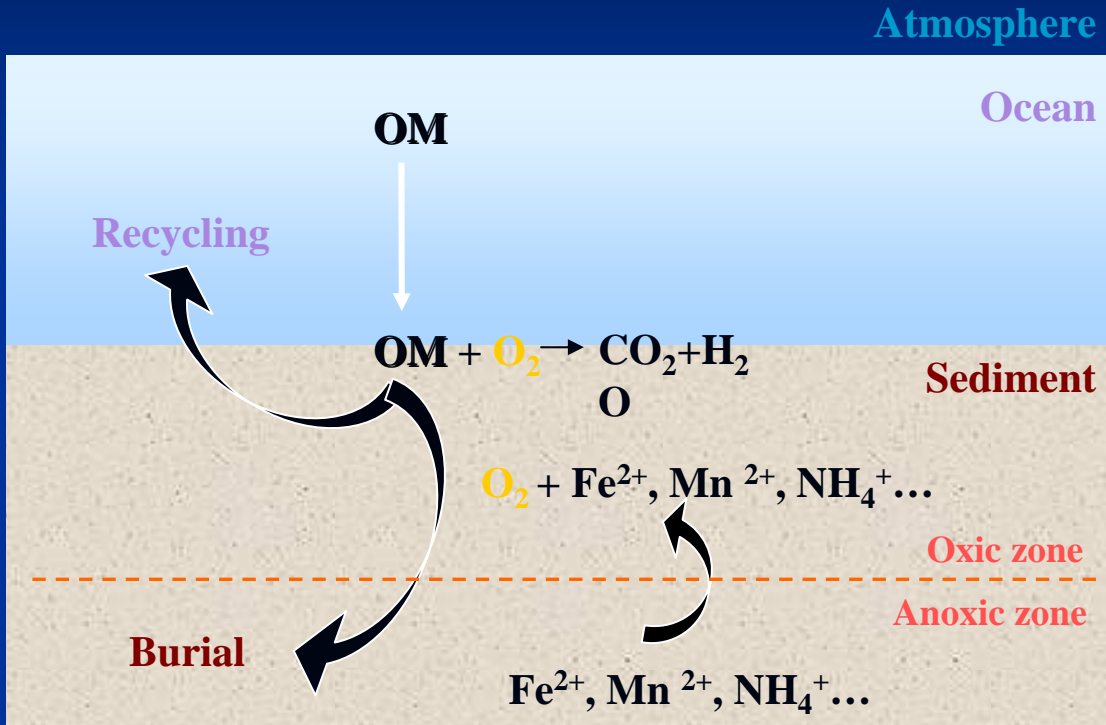
 - ⇒ Temporal variability

- In case of events: trigger higher frequency by environmental sensors (T, S, O₂, Turb.)

 - ⇒ Input events

Méthodology - concepts

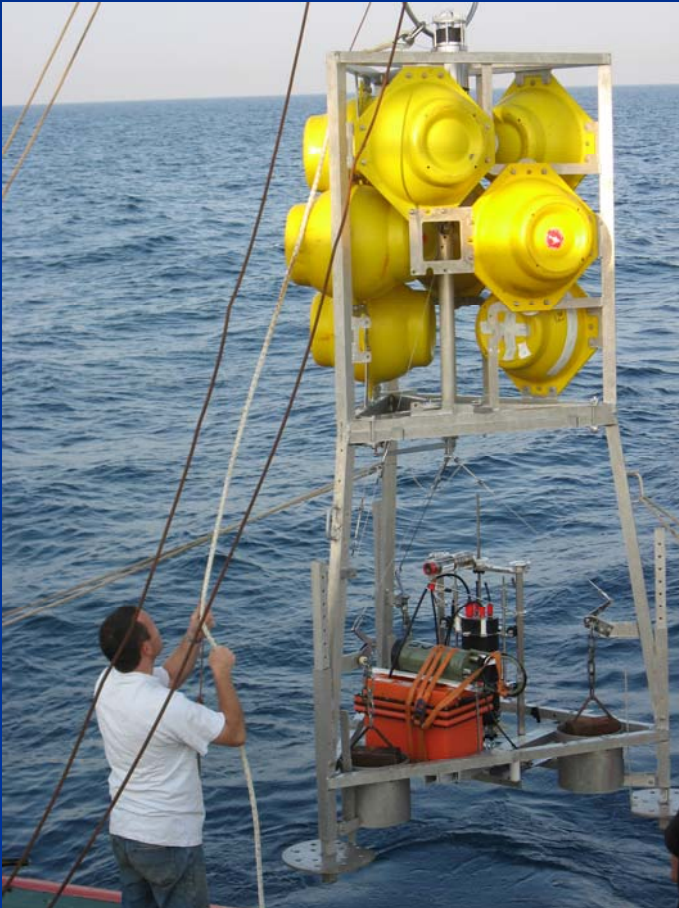
- Fate of organic matter in sediments



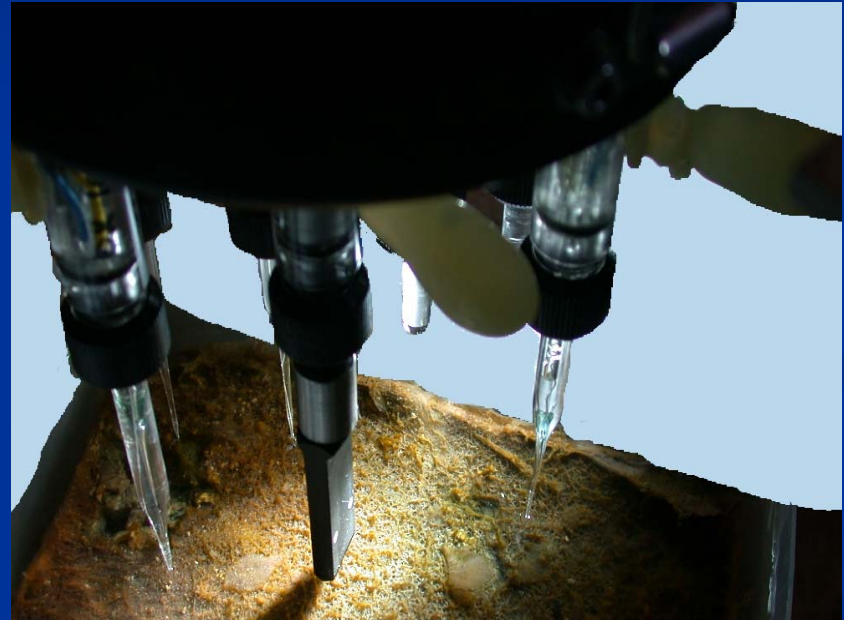
- Measurement of dissolved O_2 vertical distribution in interstitial waters of sediments
 - ⇒ Quantification of remineralisation fluxes of organic C

Méthodology – existing instrumentation

- *in-situ* measurements with a profiler equipped with O₂ microelectrodes



In situ autonomous profiler



Clark micro-electrodes (100 μm)

Developing an autonomous benthic station

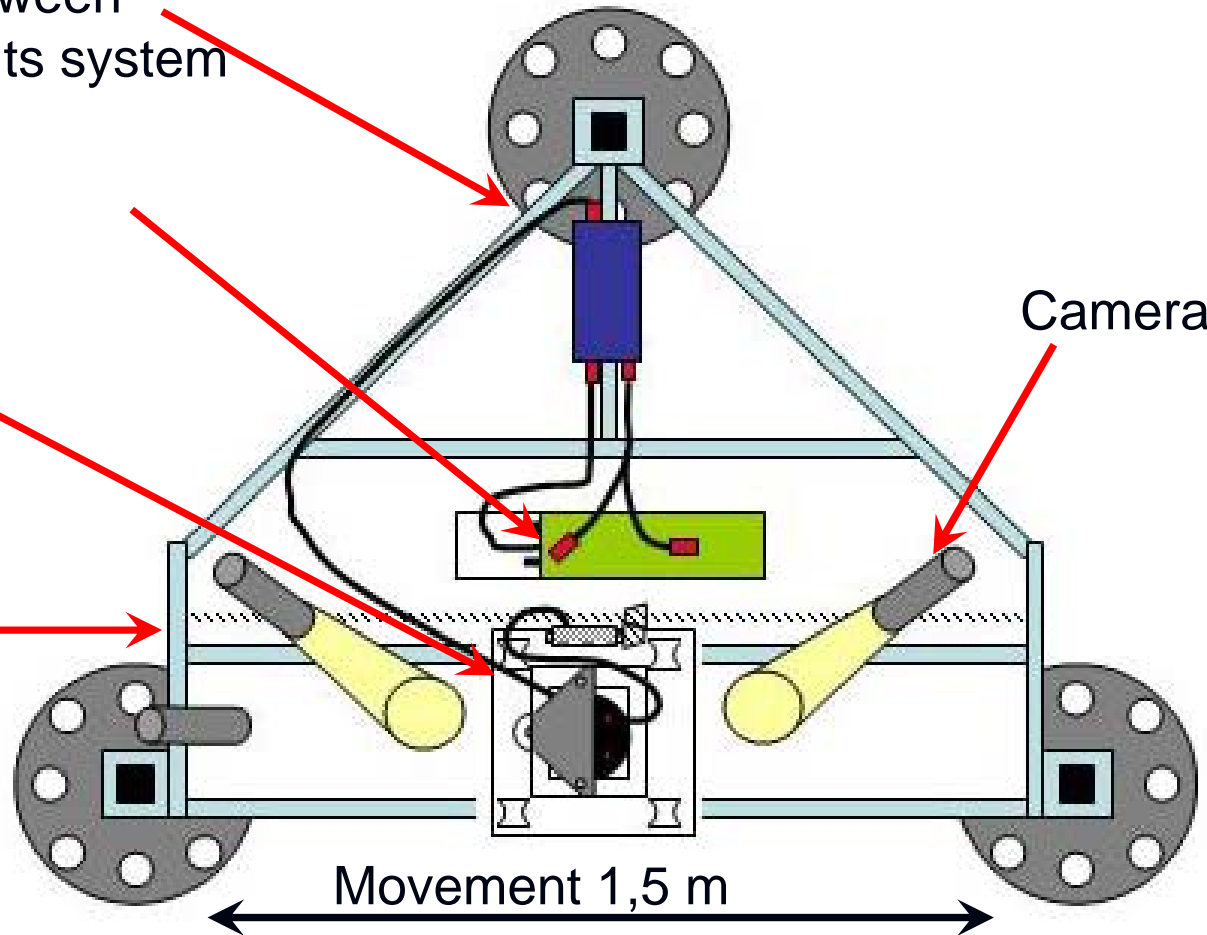
Control Unit: Interface between sensors and measurements system

Environmental Sensors

Measurement system
(O₂ microsensors)

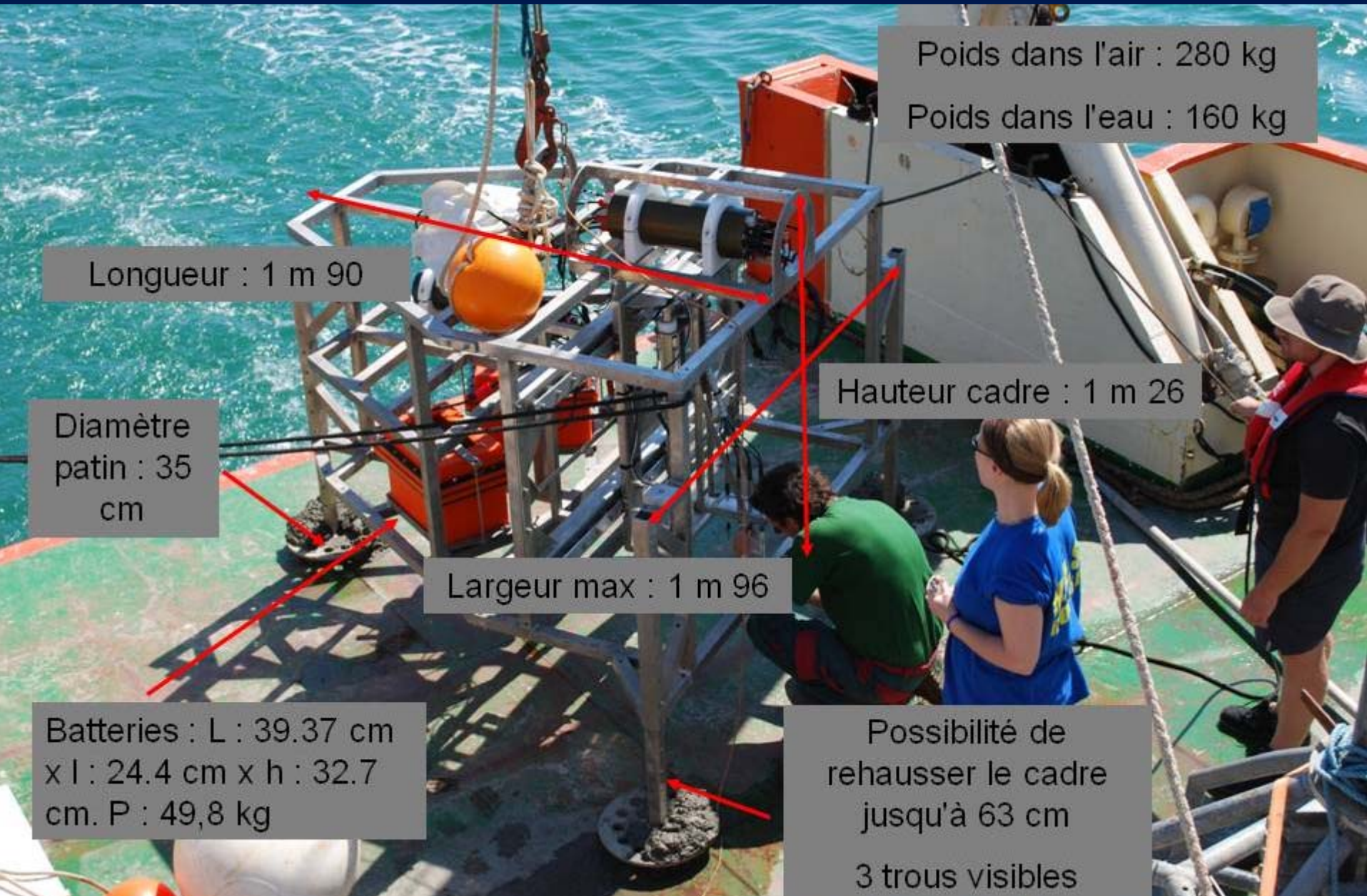
Frame

Camera



Movement 1,5 m

Real view on boat



Poids dans l'air : 280 kg

Poids dans l'eau : 160 kg

Longueur : 1 m 90

Diamètre
patin : 35
cm

Hauteur cadre : 1 m 26

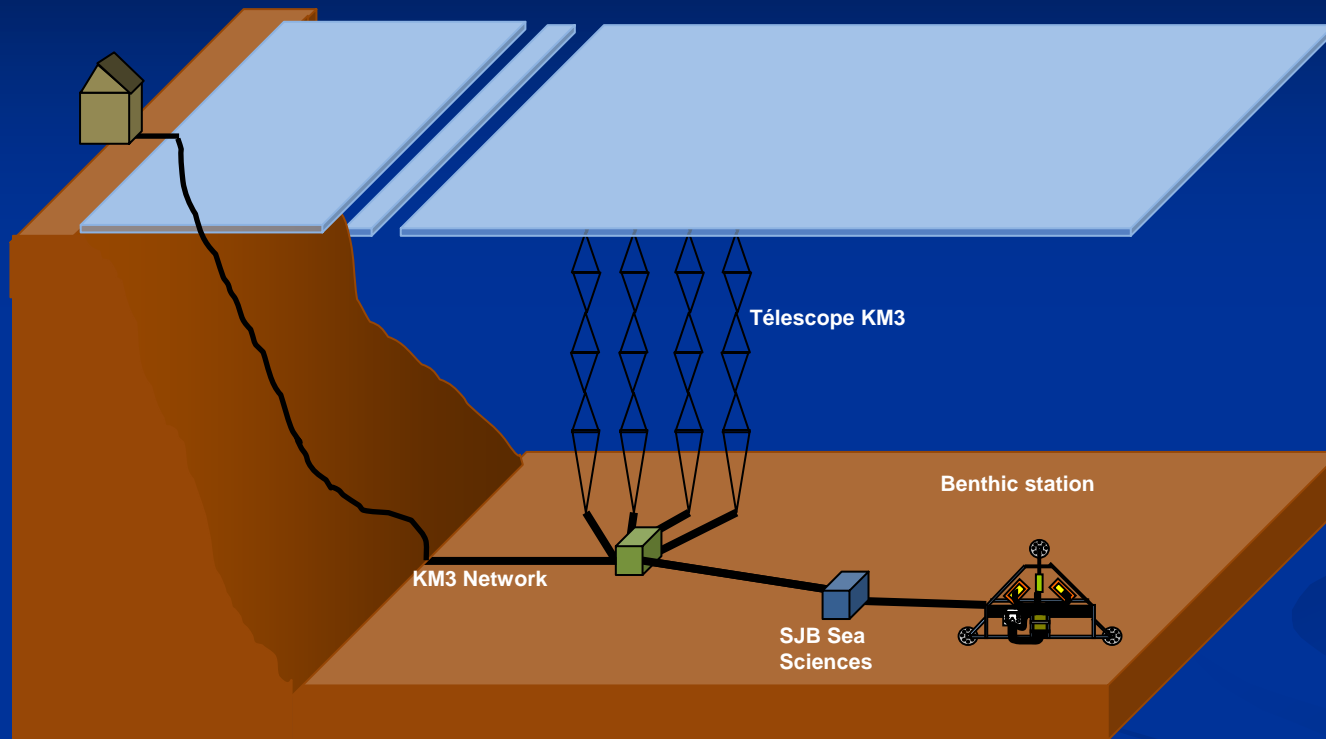
Largeur max : 1 m 96

Batteries : L : 39.37 cm
x l : 24.4 cm x h : 32.7
cm. P : 49,8 kg

Possibilité de
rehausser le cadre
jusqu'à 63 cm

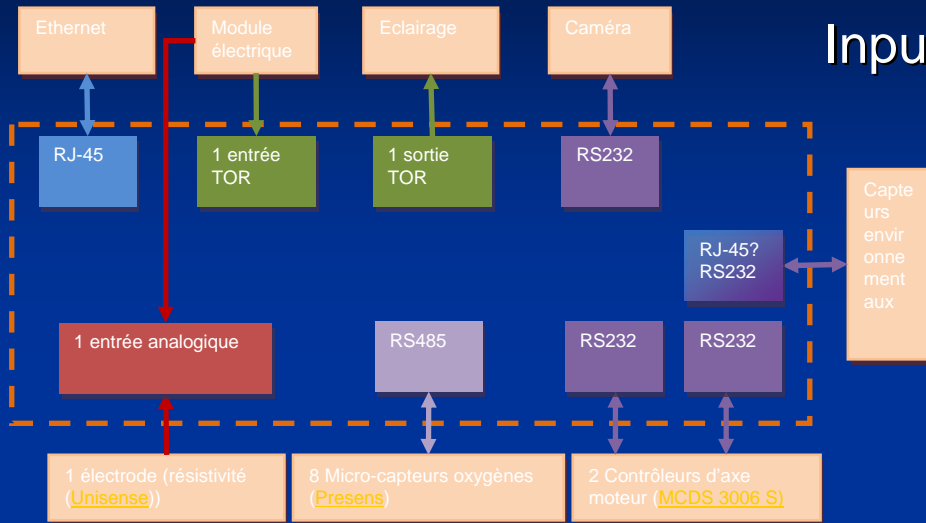
3 trous visibles

Connection to the SJB

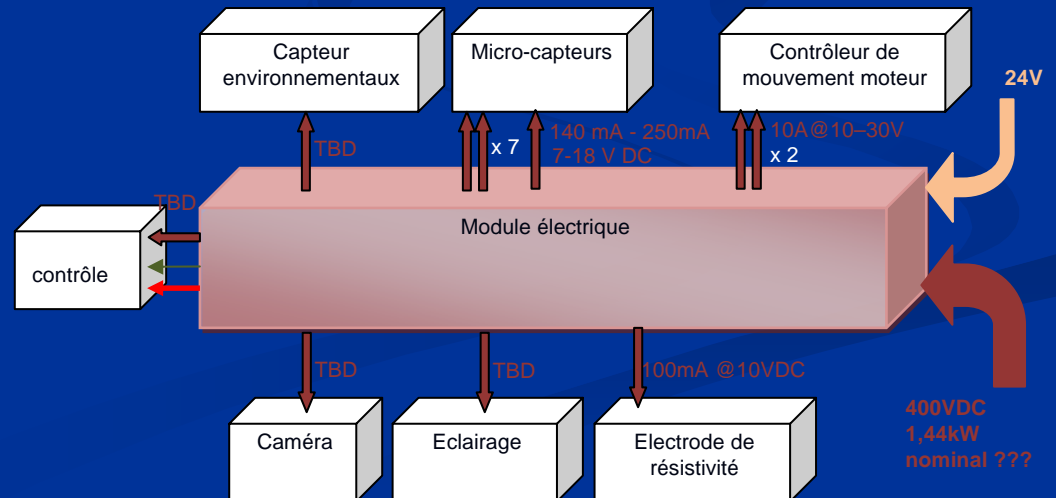


CEA benthic station – IRFU and LSCE

Synergy and interaction : power supply and data circulation



Power supply management



Conclusion

- **Development of a benthic station for deep-sea recycling of organic matter**
 - Temporal evolution of recycling
 - Effect of events on recycling

- **Synergy with km3Net**
 - Electrical power
 - Data in real time
 - Modification of functioning in remote mode