

A natural HighTech: the great scallop as a sensor of potential effects of submarine cables

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OASICE project

Context

Transmission cables from offshore wind farms in coastal areas are expected:

- to grow rapidly in the coming years
- To increase potential environmental impacts.

Very little research has been conducted on the role of increased turbidity, noise and electro-magnetic fields linked to the installation and exploitation of transmission cables in the seabed.

Objectives

Our project called **OASICE** evaluates the disturbances linked to turbidity and noise produced during and after seabed installations of power cables with a natural sensor : **Pecten maximus**, the great scallop. This organism naturally present in shallow coastal marine areas is a potential indicator of ecosystem perturbations.

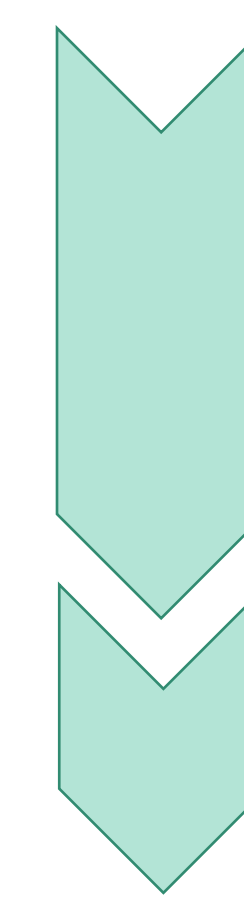
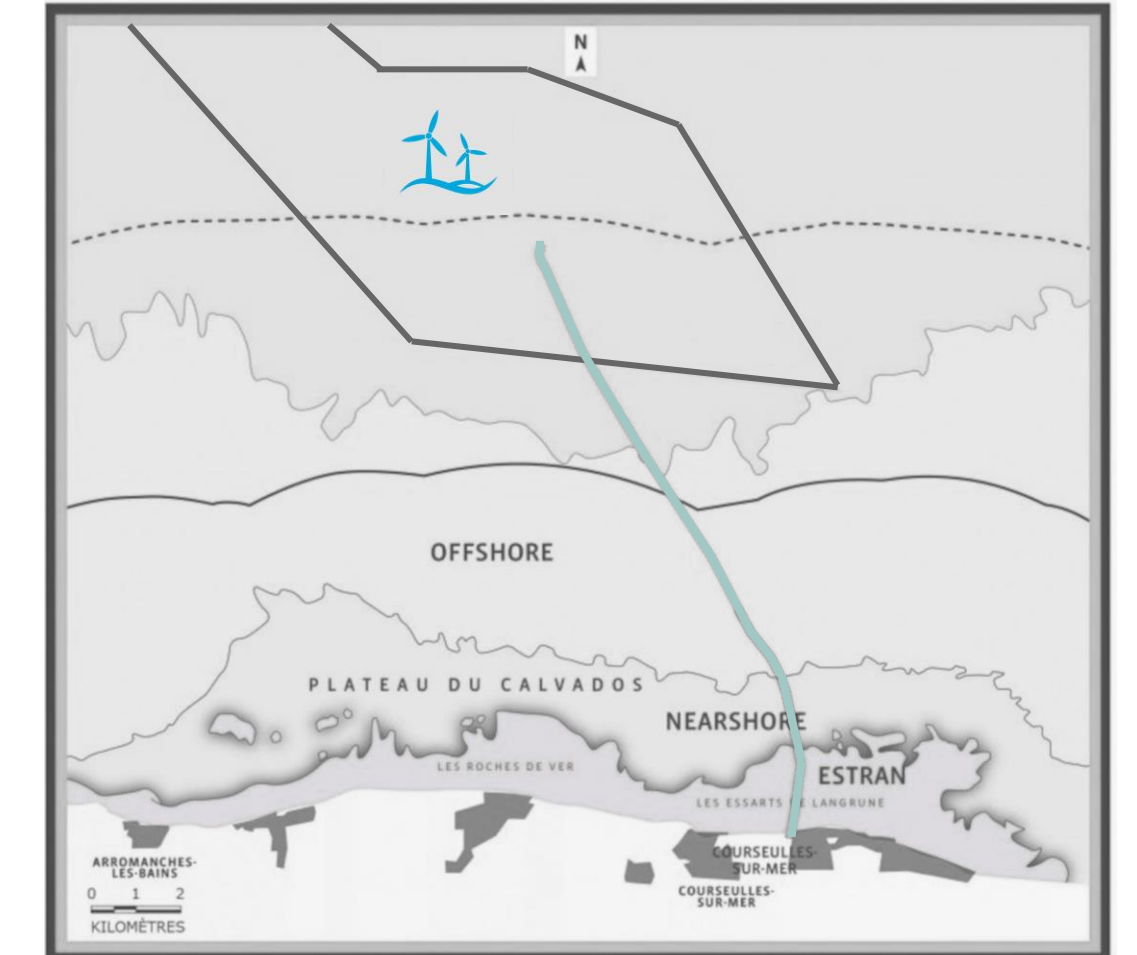
Two stations studied

Interconnection IFA2



Initial state
2017-2018
Work phase
2019
Exploitation phase
2020-2022

Calvados offshore wind farm connection



Initial state
2017-2021
Work phase
2022

RESULTS FROM WORK PHASE MONITORING OF THE TWO PROJECTS

Multiparameter probe

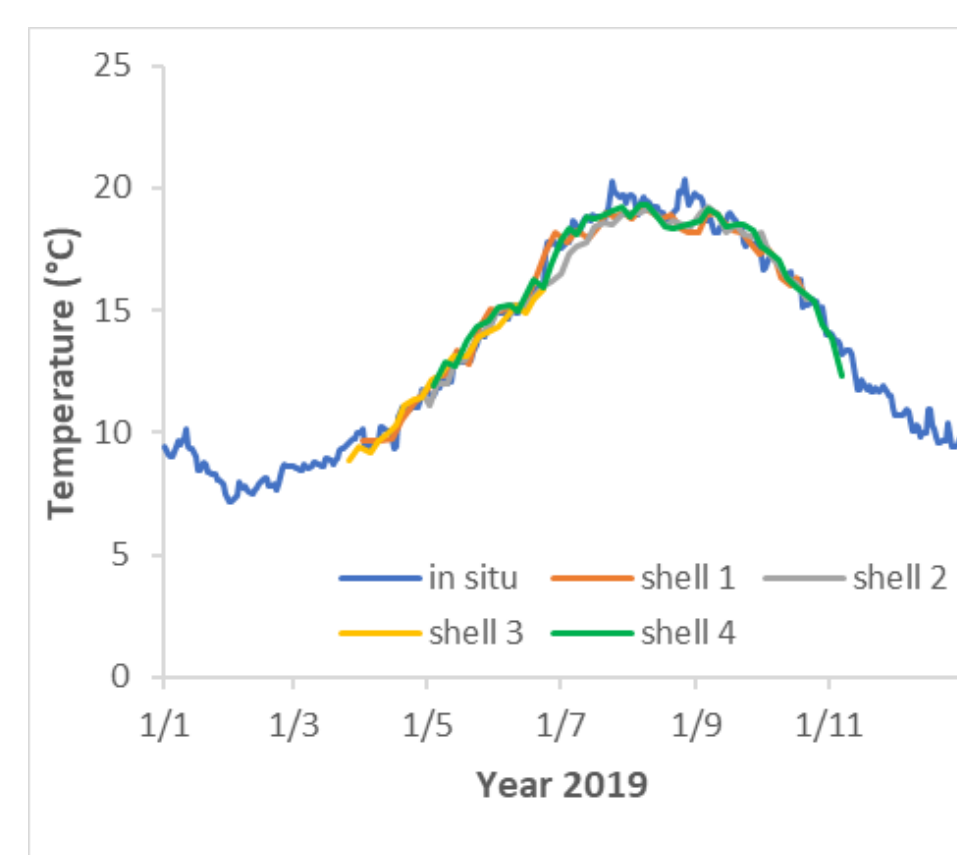


Cours. : Probe shows occasional increases in turbidity with relatively low levels

IFA2 : Probe shows a high turbidity May-June

Isotope composition of shell

For both sites, it shows a good temperature estimation ($\approx 0.5^\circ\text{C}$), no growth stop



Chemical composition of shell

For both sites, no heavy metal pollution found



IFA2 : Indicators of strong riverine inputs

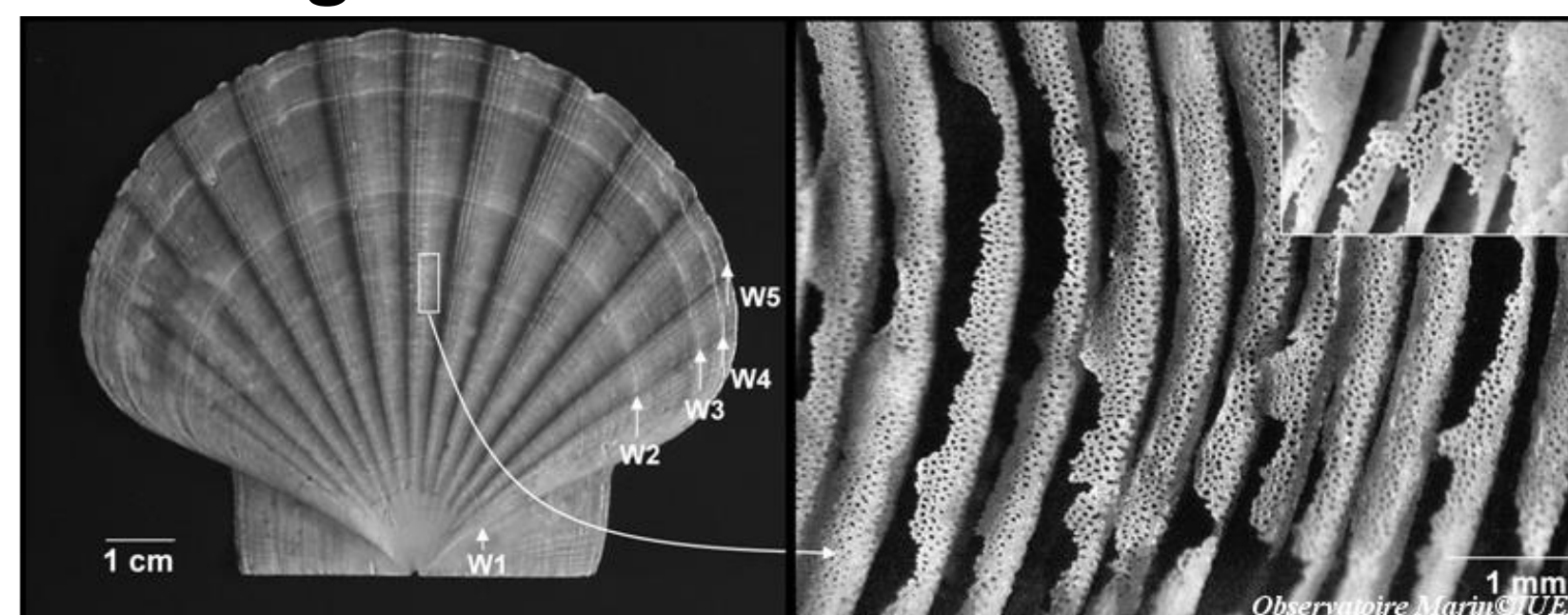
Acoustic recorder



The noise generated for Cours. : increase from 19 dB (30 m) to 40 dB (20 m)

The noise generated for IFA2 : increase from 15 dB (80 m) to 40 dB (20 m)

Shell growth



IFA2 : Slowdown during works before a return to normal

Cours. : no disruption of shell growth

Behavior

IFA2: In June, scallop lost day/night rhythm, with low activity.

Then back to normal



Cours. : no disruption of shell behavior

CONCLUSION



Monitoring during installation phase of IFA2 submarine cable showed an effect on growth and behavior on great scallop. This was followed by a rapid return to normal conditions. These effects were not observed during Courseulles working phase. The response observed at IFA2 was amplified by a highly turbid environment due to significant river inputs. In the two cases, no mortality was observed.