

# Biodiversity changes in soft-bottom benthic community

## Velella

Effects induced by a floating wind turbine

### Context and objectives

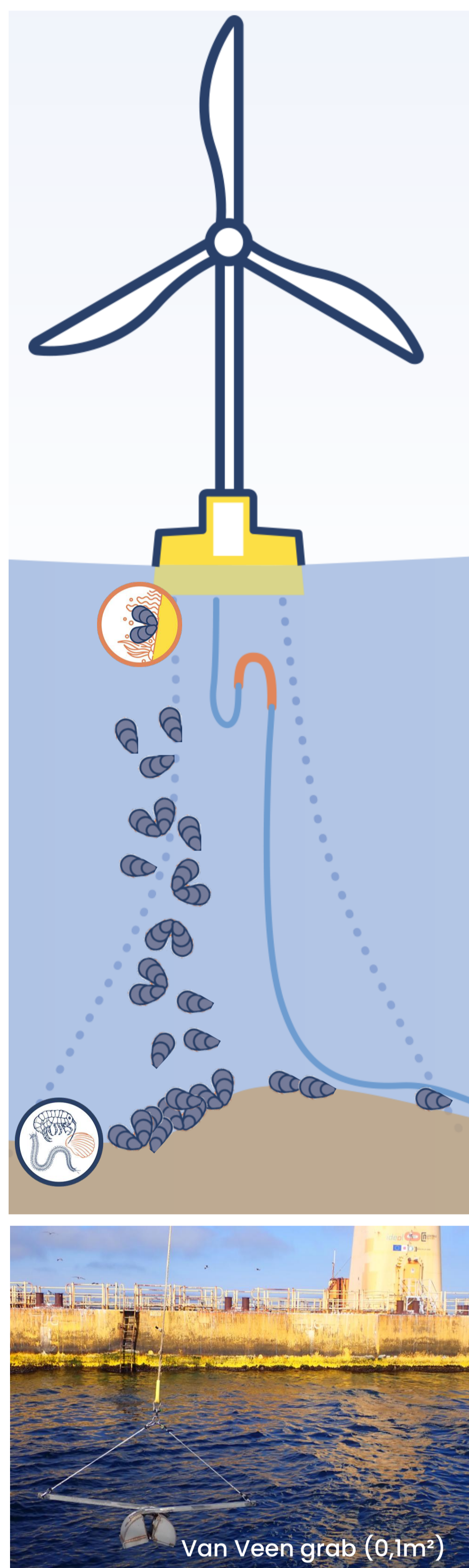
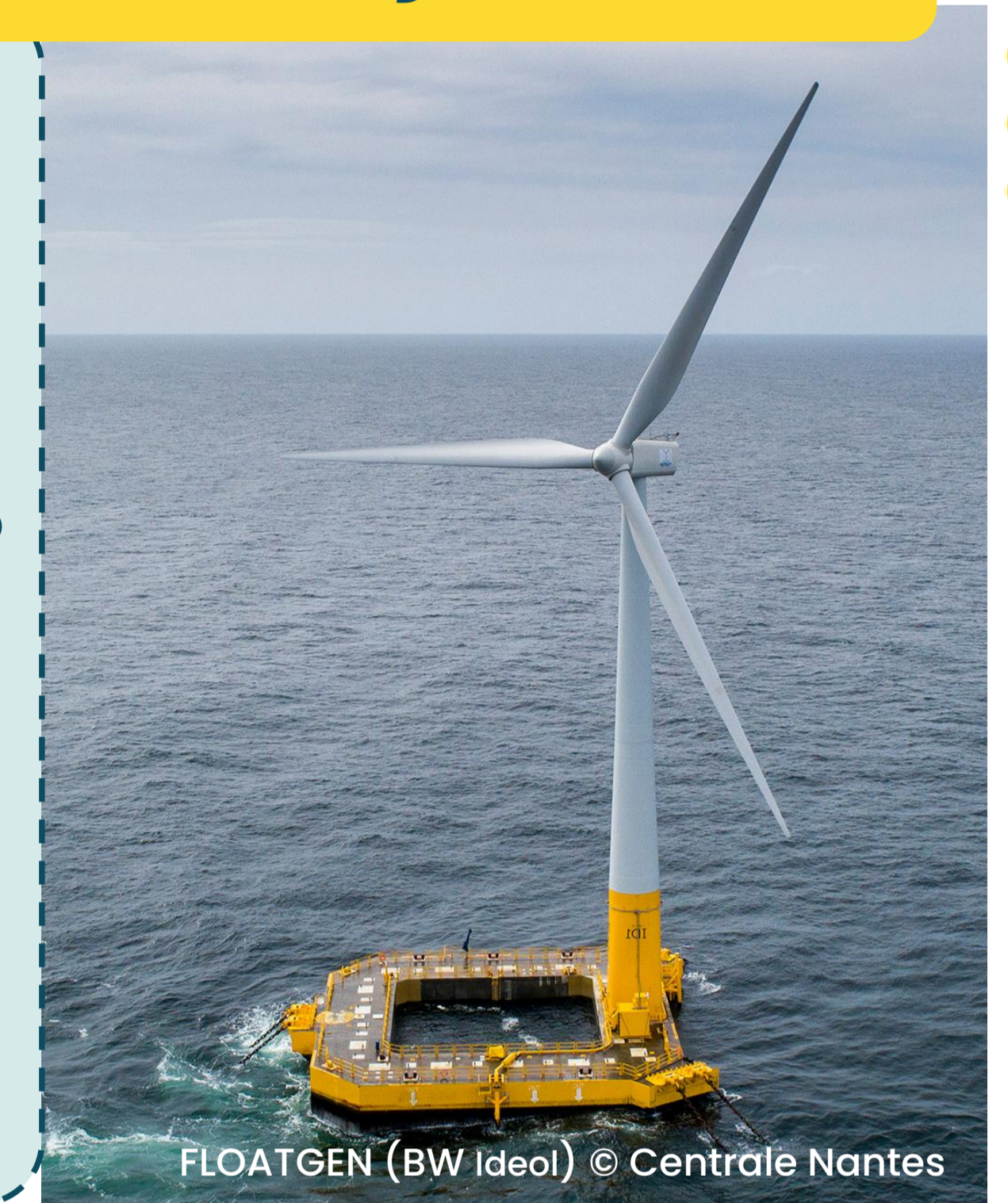
**VELELLA** 's eco-design approach -> environmental impact monitoring at early stages of innovation.

Floater and subsea cables create a surface-bottom connectivity

How does the species composition of soft-bottom invertebrate communities change with distance from the turbine's foundation ?

Depending on the distance from the floater, we can expect:

- Modification of the sediment
- Change of biodiversity and increase of spatial heterogeneity
- Modification of the trophic regime of species



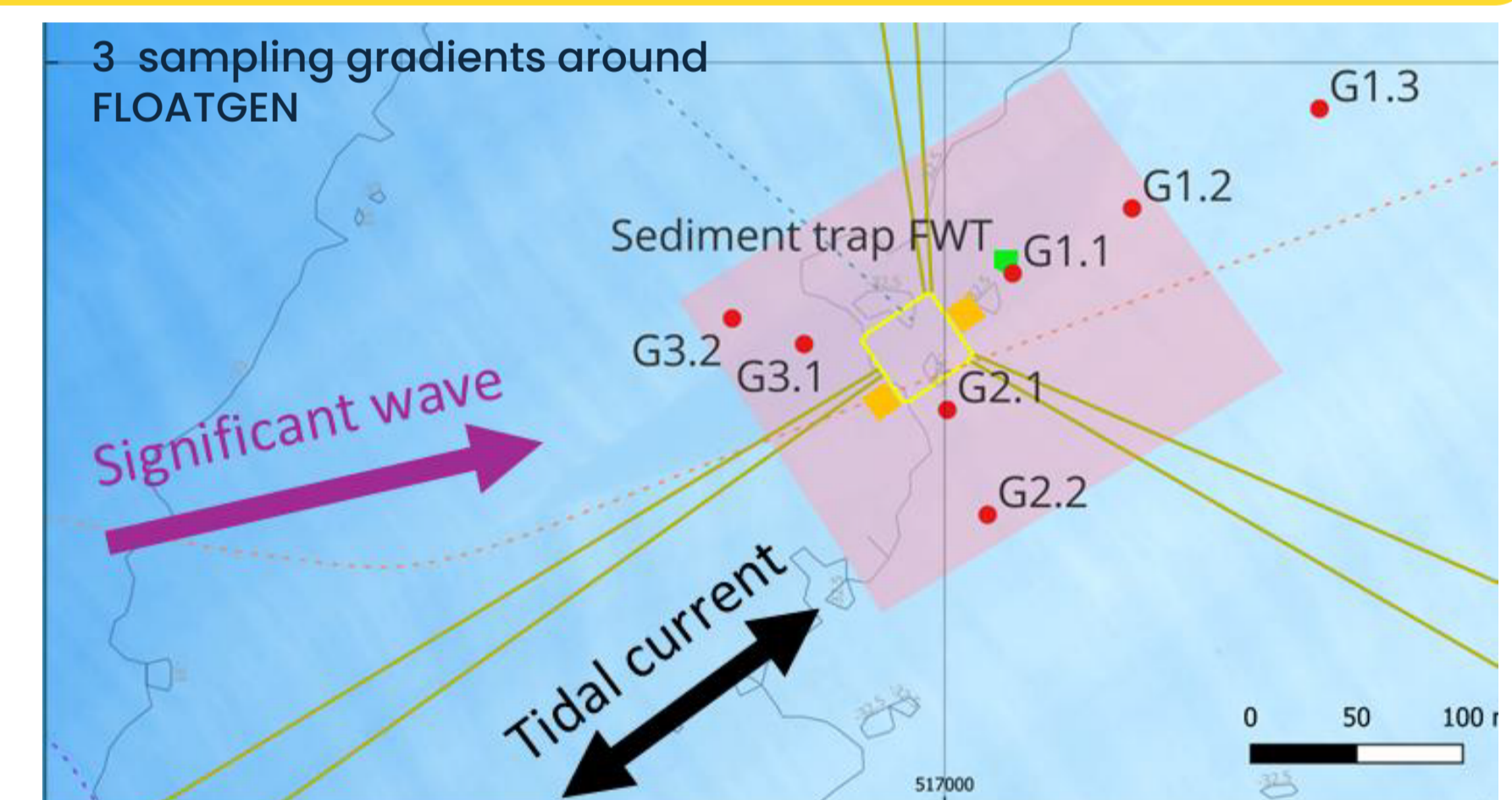
### Method

**Data collection : Macrofauna (>1mm) :**

- 2 years (2023 and 2024)
- 2 seasons each year (spring and autumn)
- 3 gradients G1, G2 and G3 (30 to 500m from FWT)
- 8 stations in total (6 replicates)

**Data Processing:**

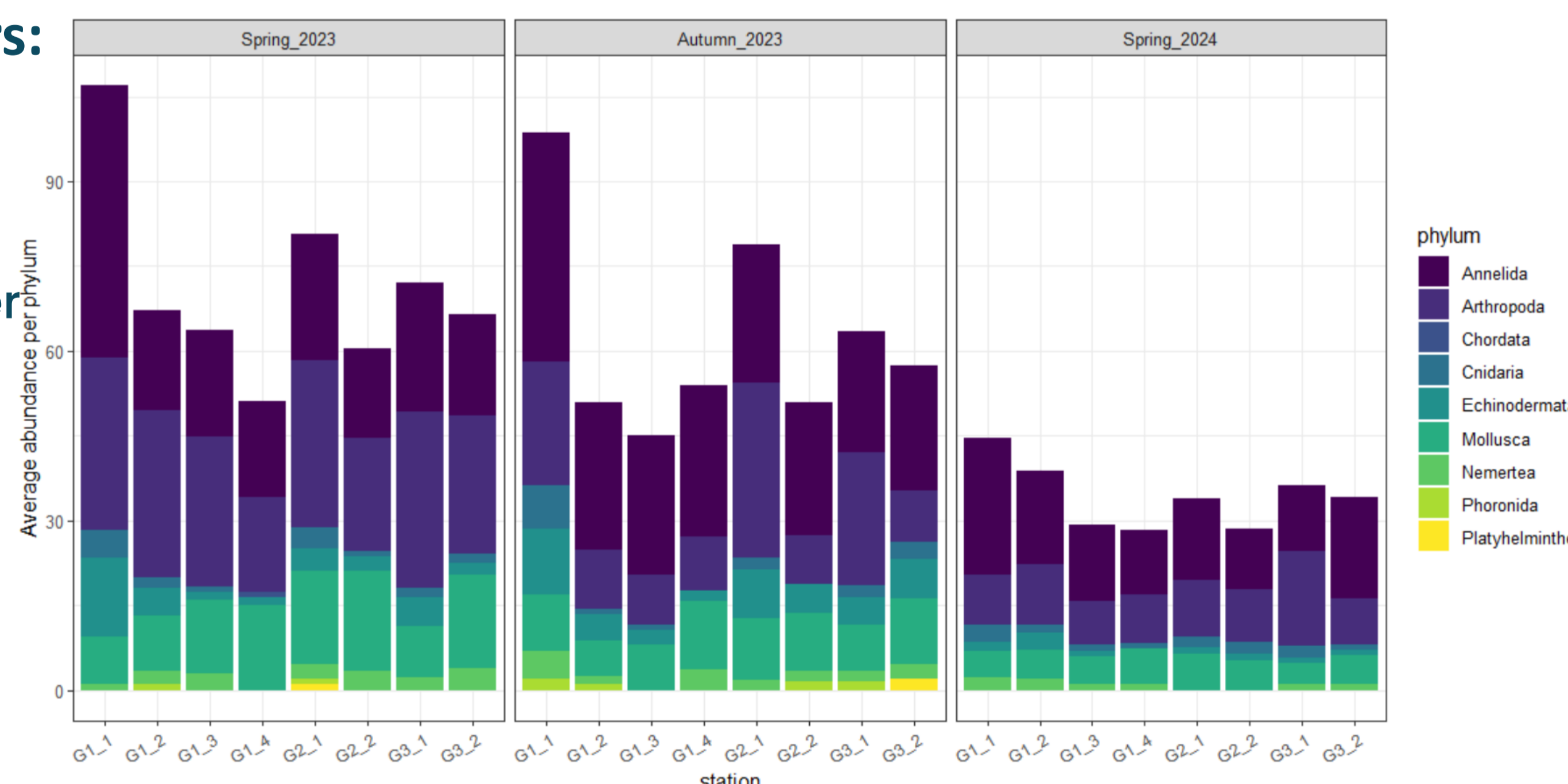
- Taxonomy, relative abundances, stable isotopes
- biological traits (mobility, diet, position in the sediment,)



### Preliminary results

**Physical parameters:**

Granulometry (e.g. weight of mussels' shells) and % organic matter (OM) change at local scale, especially on gradient #1



**Spatial change of of benthic biodiversity:** increase of species richness and abundance at local scale (< 50m), explained by coarse fraction of sediment

**Temporal change of benthic biodiversity:** consistent trajectories across stations, with strong seasonal effect. Impact observed for G1-1 in Spring 2023, then dampened in Autumn 2023 and Spring 2024.

### Conclusions

**Analysis in progress, at this stage:**

- Impact on sediment spatially limited: accumulation of live and dead mussels; no significant enrichment of organic matter
- Change of biodiversity near the floater due to drop-off fouling (e.g., mussels, anemones and serpulids) and species with affinity to organic enrichment.
- Community composition changes: mainly along the direction of tidal current and dominant waves
- FWTs may impact functional diversity and the functioning of the food web.