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Response of phytoplankton to climate-driven changes in a Mediterranean coastal area : results from 4 decades of observations (1979 - 2018)

Anne GOFFART [1,*], Pierre LEJEUNE[2], Francis GOHIN[3], Sylvain COUDRAY[3]

[1] University of Liège, Belgium [2] STARESO , Calvi, France [3]IFREMER, France

* A.Goffart@uliege.be

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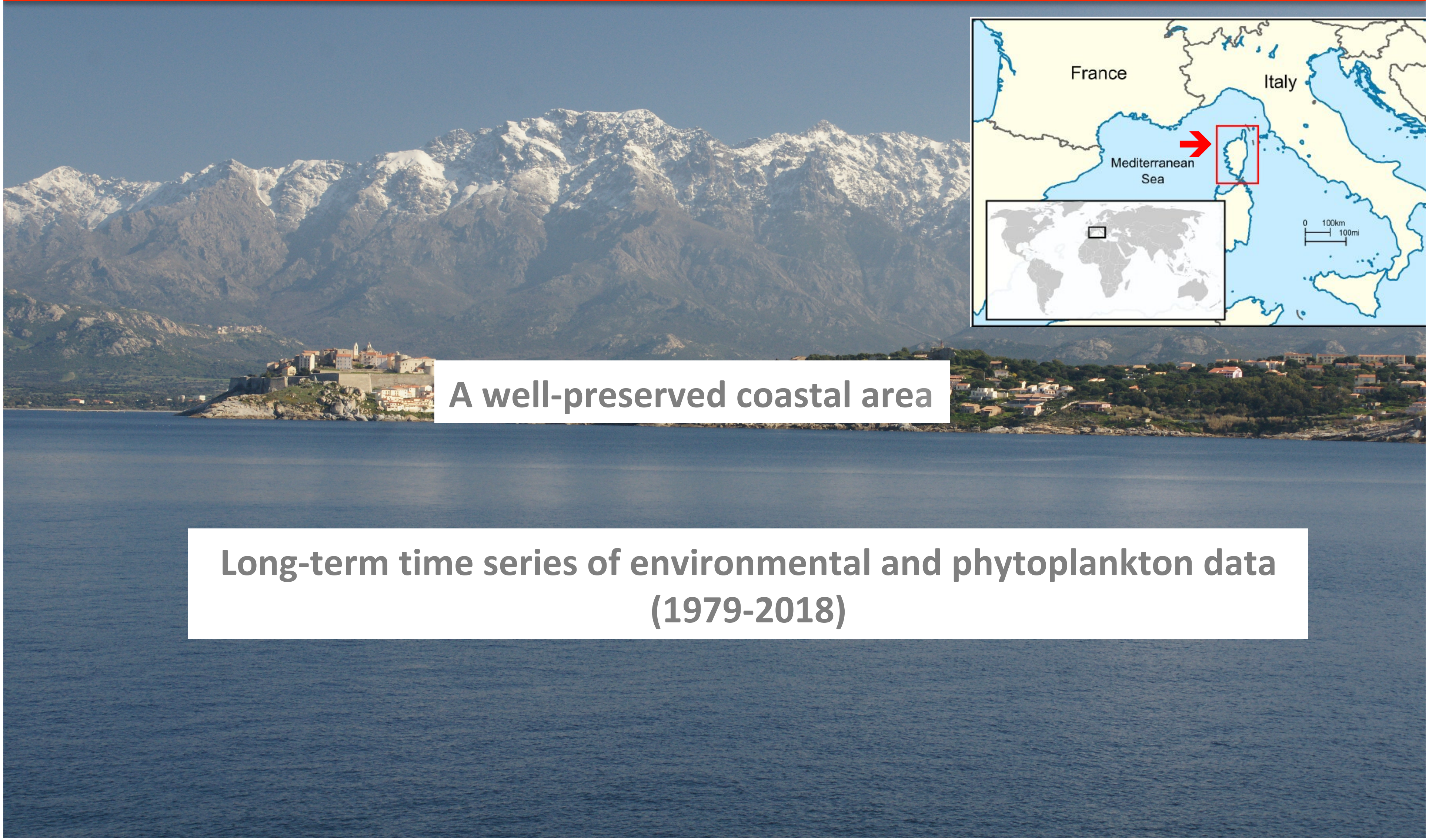
The studied area : the Bay of Calvi, Corsica, Western Mediterranean

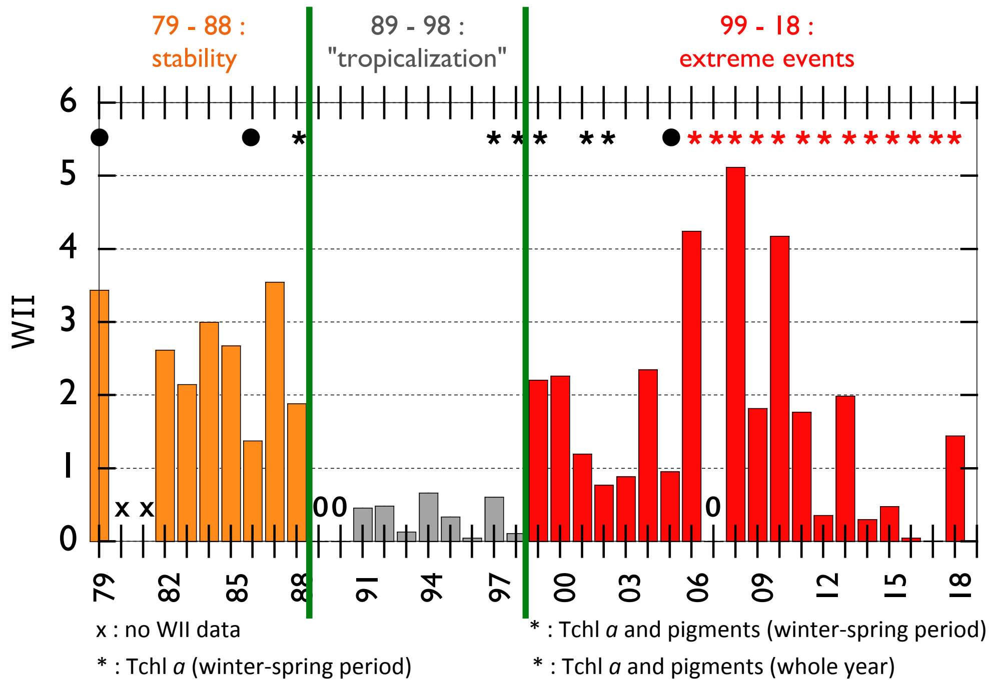


A well-preserved coastal area

Long-term time series of environmental and phytoplankton data (1979-2018)

Main results

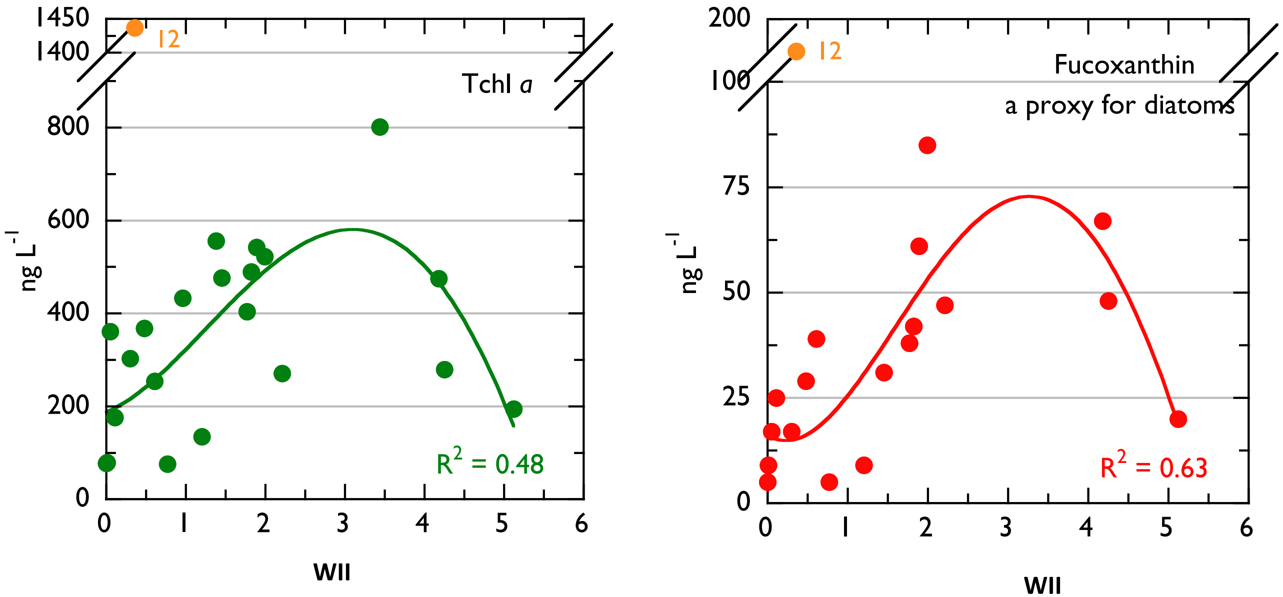
1. There is a long-term variability in winter intensity, characterized by the WII index, with **three distinct periods**. There are evidences that breaks between the periods resulted in **ecosystem shifts**.



Temporal changes in Winter Intensity Index (WII) in the Bay of Calvi.

Main results

2. Winter intensity is a **key driver** of phytoplankton biomass and composition during the winter-spring period over the 40 years of observations. It influences both winter-spring phytoplankton distribution and community structure. Among the dominant phytoplankton functional groups, **diatoms** are the most sensitive to winter intensity.



Scatter diagrams of mean subsurface Tchl *a* and fucoxanthin as a function of the Winter Intensity Index (WII). Data acquired between 1979 and 2018.

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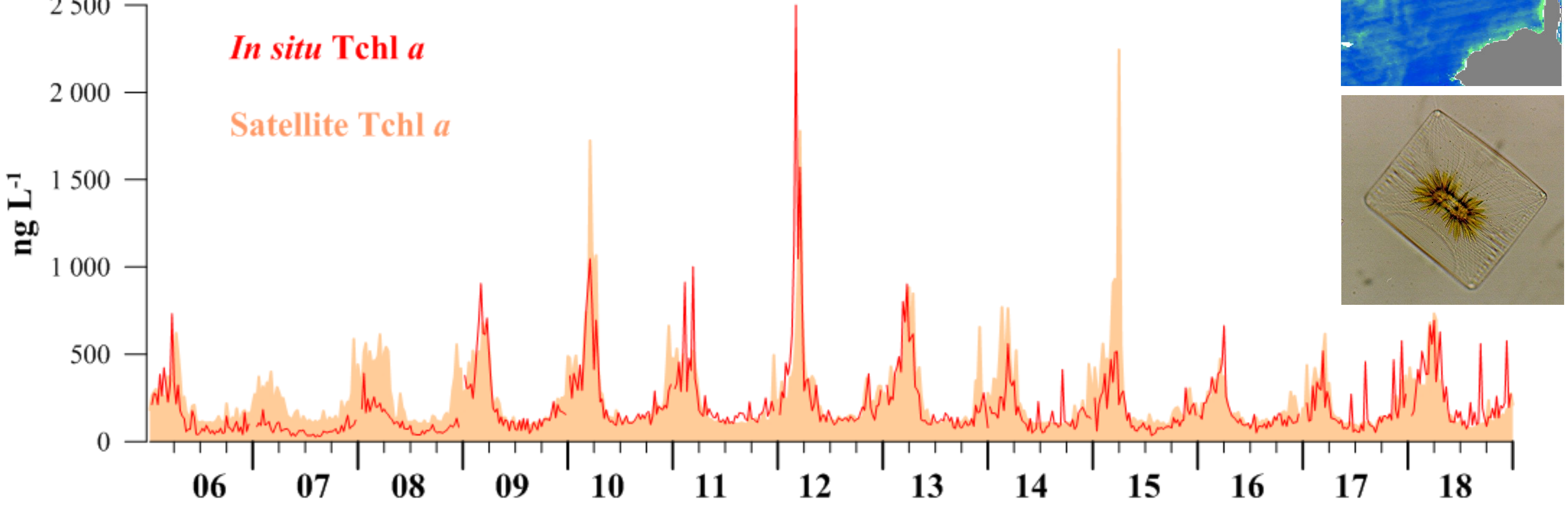
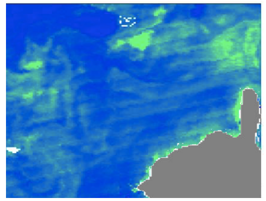
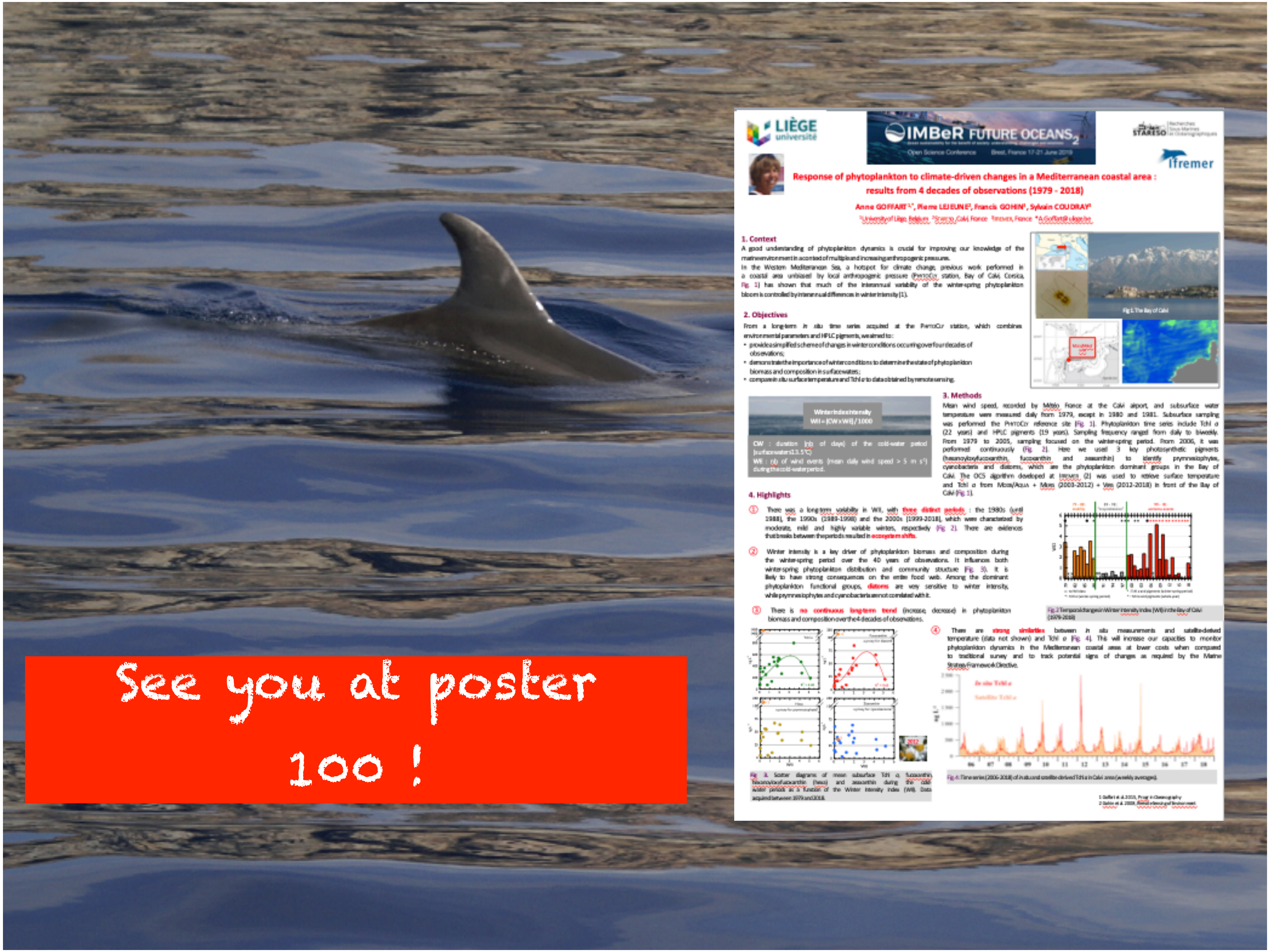
Main results

3. There are **strong similarities** between *in situ* measurements and satellite-derived temperature and Tchl *a*. This will increase our capacities to monitor phytoplankton dynamics in the Mediterranean coastal areas and to track potential signs of changes as required by the Marine Strategy Framework Directive.





Time series (2006-2018) of *in situ* and satellite derived Tchl *a* in Calvi area (weekly averages).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2. Objectives
3. Methods
4. Highlights