

A satellite image of the Black Sea, showing the surrounding landmasses of Europe and Asia. The sea is a deep blue, and the surrounding land is green with some white clouds. The title text is overlaid on the sea.

Identification and modelling of uncertainties in the analysis and forecasting of Black Sea ecosystems using a probabilistic approach

Promotors:

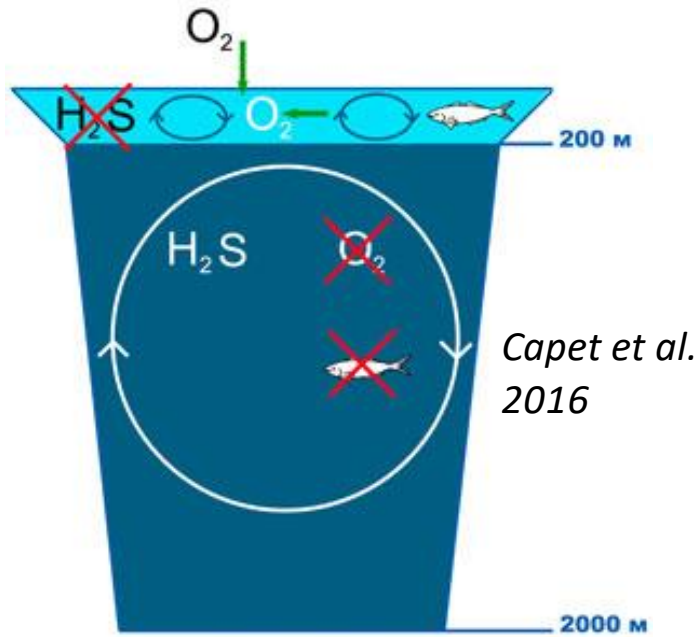
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Permanent deep sea anoxia



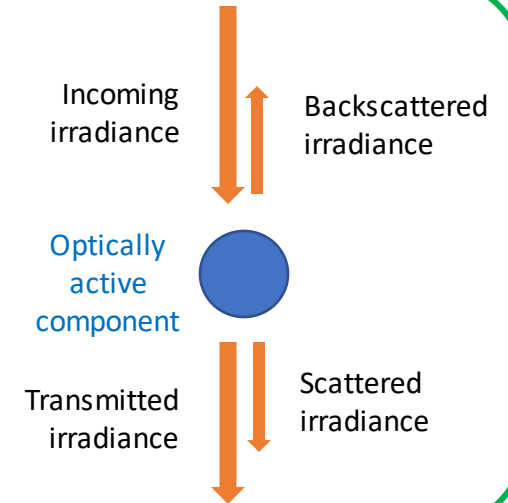
With consequences on:

- Habitat of aerobic species
- Coupled biogeochemical cycles

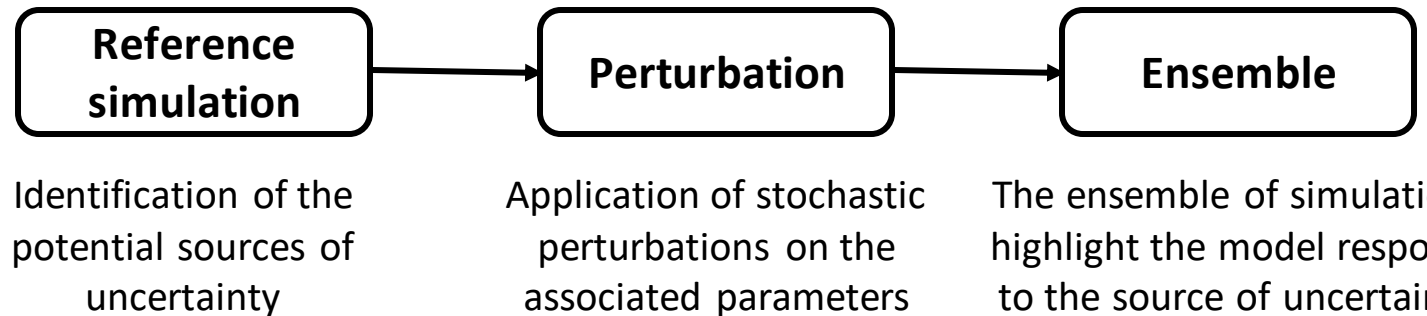
Why high uncertainties ?

No equivalent to the Navier-Stokes equations
Numerous empirical formulations
Few observations

Goal: Provide uncertainties on biogeochemical variables for the analysis of Black Sea ecosystems

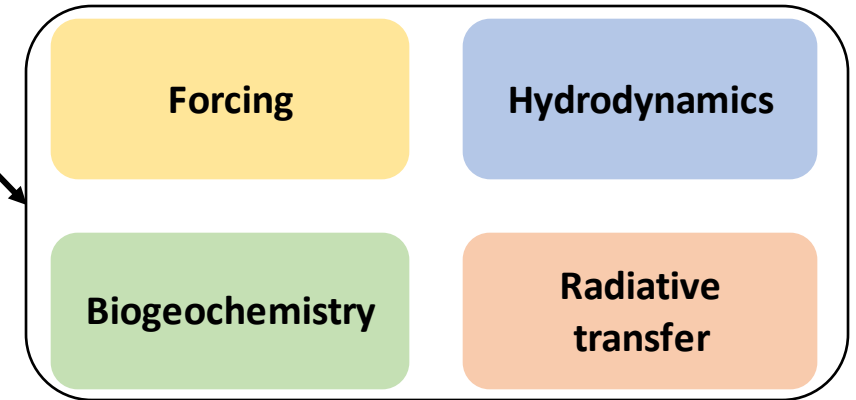


How ?

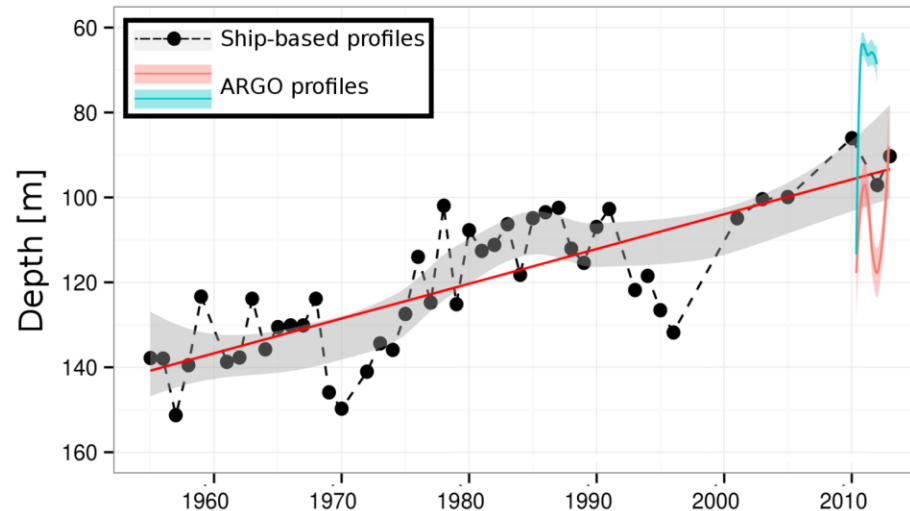


Identification and modelling of uncertainties in the analysis and forecasting of Black Sea ecosystems using a probabilistic approach

- What are the main sources of uncertainty in biogeochemical modelling?
- What are their consequences for predictions on the decadal scale?



Evolution of oxygen penetration depth (Capet et al., 2013)

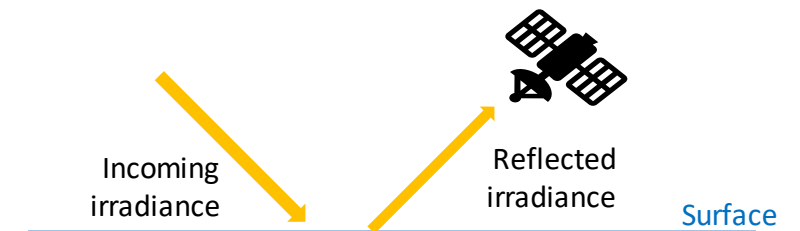


Ocean health and climate indicators

- Ocean deoxygenation
- Nitrogen cycling
- Phytoplankton blooms

With uncertainties on the predictions

To take it further: data assimilation



Assimilation of surface reflectance data
-> Reduce uncertainties on ocean indicators