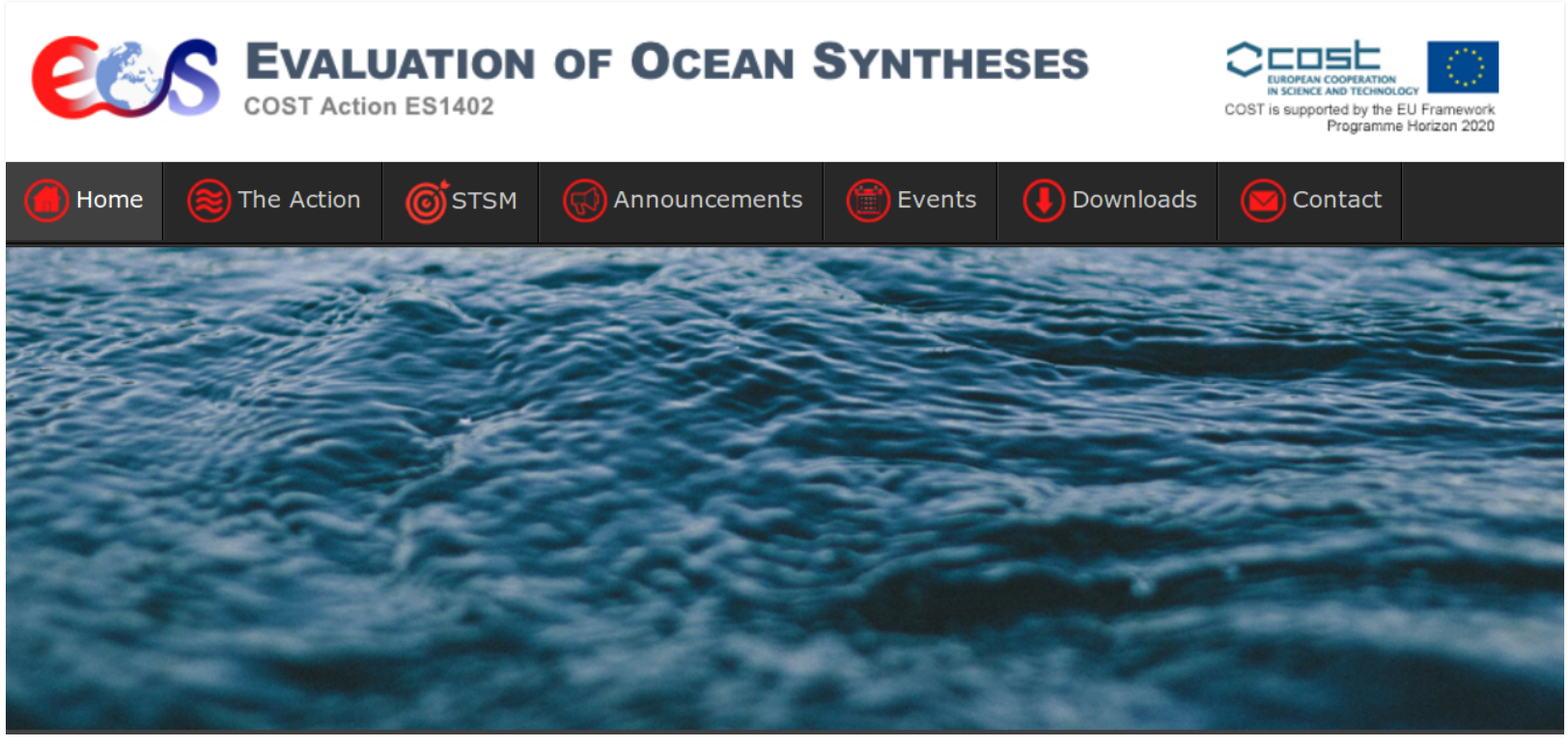
Oceanographic data interpolation

ctroupin
@CharlesTroupin
0000-0002-0265-1021



http://eos-cost.eu/

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Oceanography in Liège

Why Liège?

Starting in the 1880's...

- Edouard Van Beneden (marine biologist)
- Hubert Damas (zoologist)
- Marcel Dubuisson (zoologist, rector)

1967: Expedition/documentary in the Great Barrier Reef

FNRS 3 - up to 2000 m deep...

Highest point

2864 m

694 m (+ 6 meters)

700 m!!

Coastline length

47 km

67 km

The GHER group

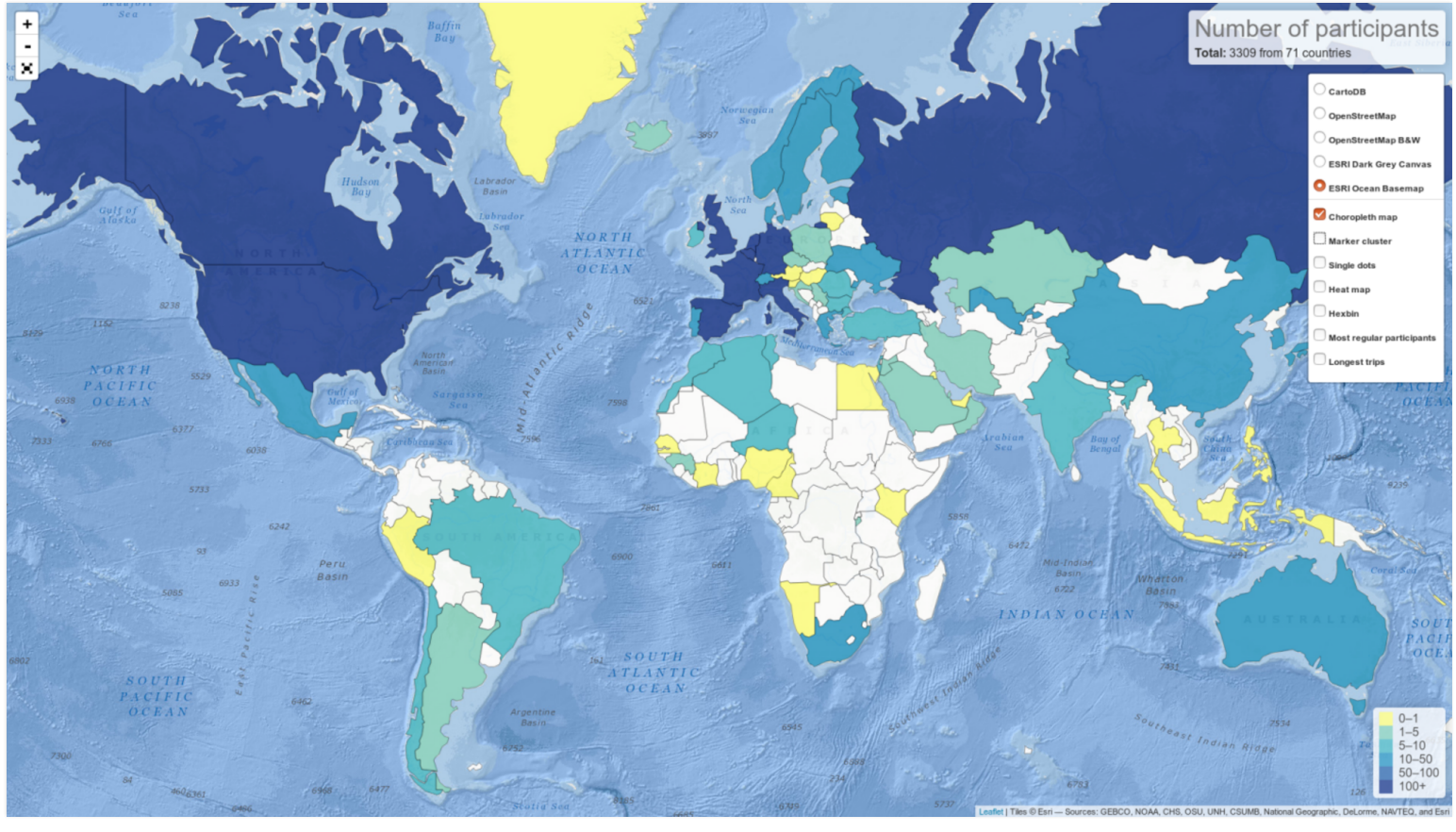
http://labos.ulg.ac.be/gher/
https://github.com/gher-ulg

1. Numerical modelling (physics, biology)
2. Data assimilation
3. Spatial interpolation tools

Prof. **Jacques Nihoul**
Francqui Prize in 1978
Initiator of the Liège Colloquium

International Liège Colloquium on Ocean Dynamics

Since 1969...



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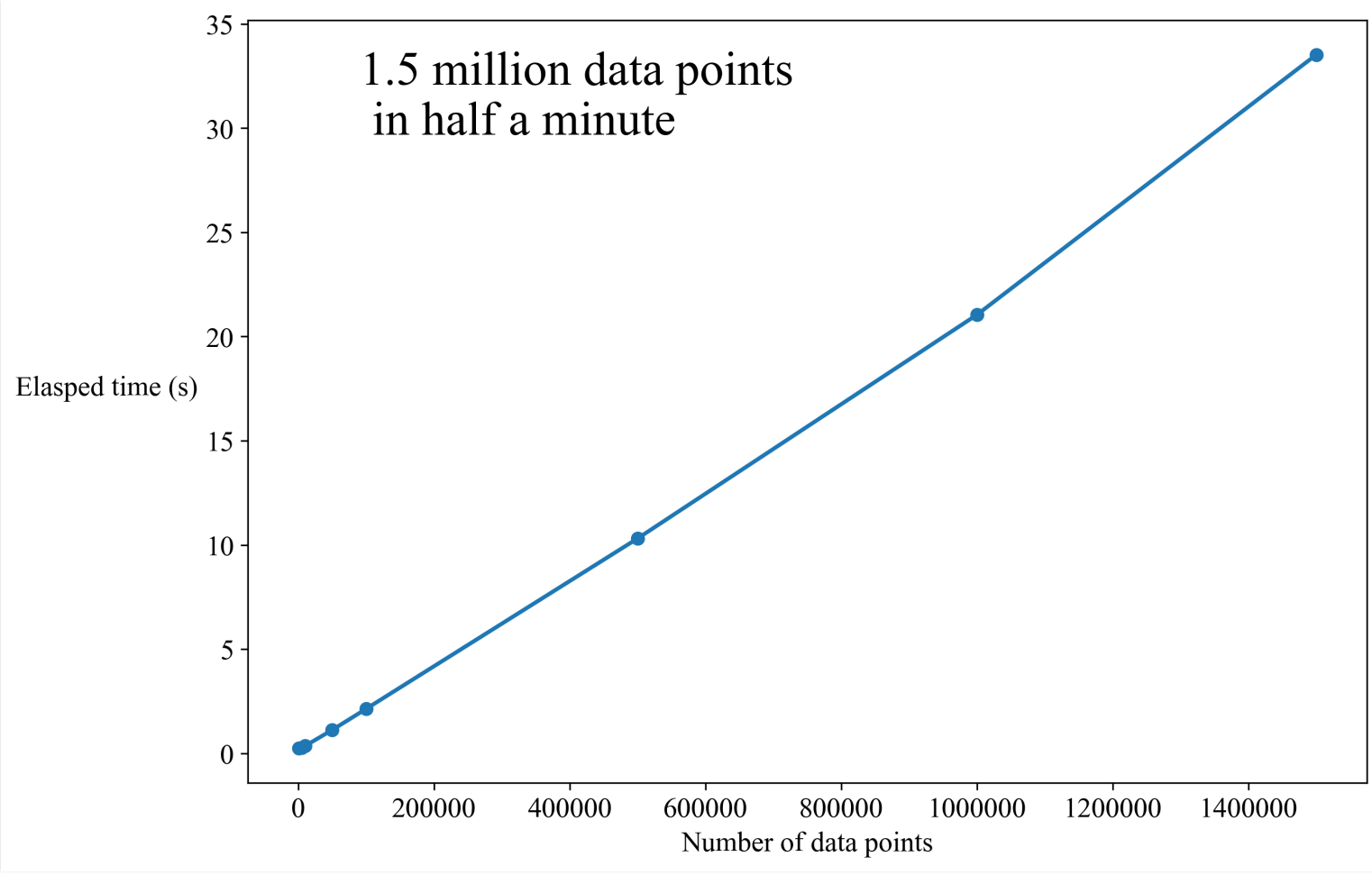
Interpolation tools

Constraints

1. **Closer** observations have a **stronger** influence
2. **Confidence** in some measurements
3. **Physical** barriers and currents
4. Deal with up to **millions** of points
5. Many sources of **errors**

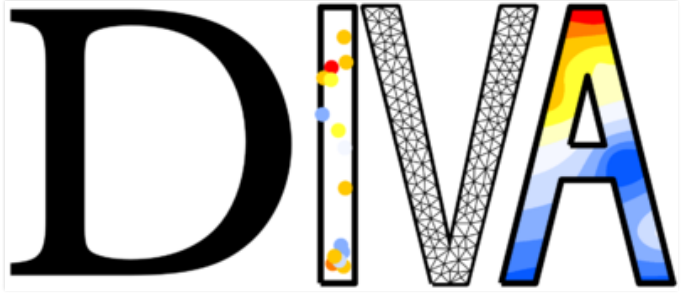
Numerical cost



DIVA

Data-Interpolating Variational Analysis
https://github.com/gher-ulg/DIVA

DOI 10.5281/zenodo.1407062



DIVAnd

n-dimensional generalisation of DIVA
https://github.com/gher-ulg/DIVAnd.jl

DOI 10.5281/zenodo.1466985

Geosci. Model Dev., 7, 225–241, 2014
www.geosci-model-dev.net/7/225/2014/
doi:10.5194/gmd-7-225-2014

Geoscientific Model Development
Open Access

`divand`-1.0: *n*-dimensional variational data analysis for ocean observations

A. Barth[1,*], J.-M. Beckers[1], C. Troupin[2], A. Alvera-Azcárate[1], and L. Vandenbulcke[3,4]

[1]GHER, University of Liège, Liège, Belgium
[2]IMEDEA, Esporles, Illes Balears, Spain
[3]seamod.ro/Jailoo srl, Sat Valeni, Com. Salatrucu, Jud. Arges, Romania
[4]CIIMAR, University of Porto, Porto, Portugal

[*] *Invited contribution by A. Barth, recipient of the EGU Arne Richter Award for Outstanding Young Scientists 2010.*

Correspondence to: A. Barth (a.barth@ulg.ac.be)

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Data from Corsica

Why in Corsica?

Why in Corsica?

Claude Strebelle
Architect

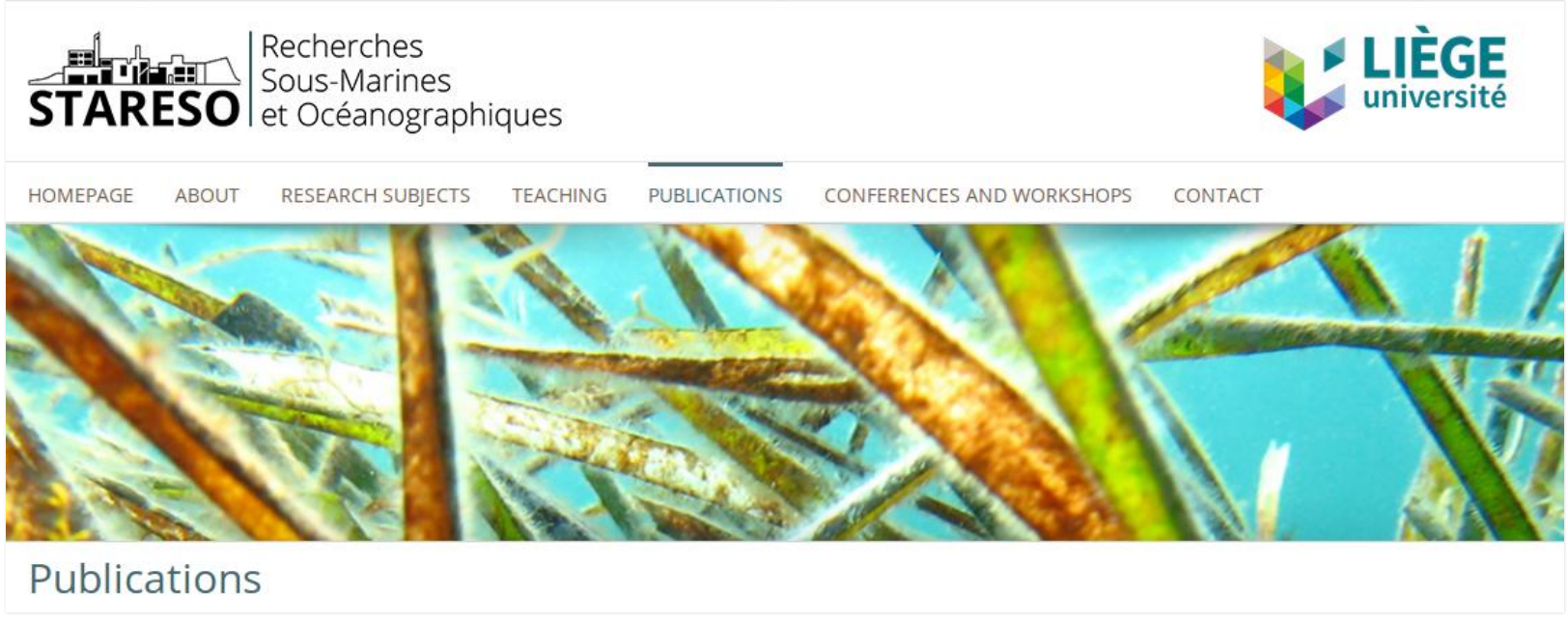
Marcel Dubuisson
Rector


STARESO

Dormitory

Calvi from STARESO

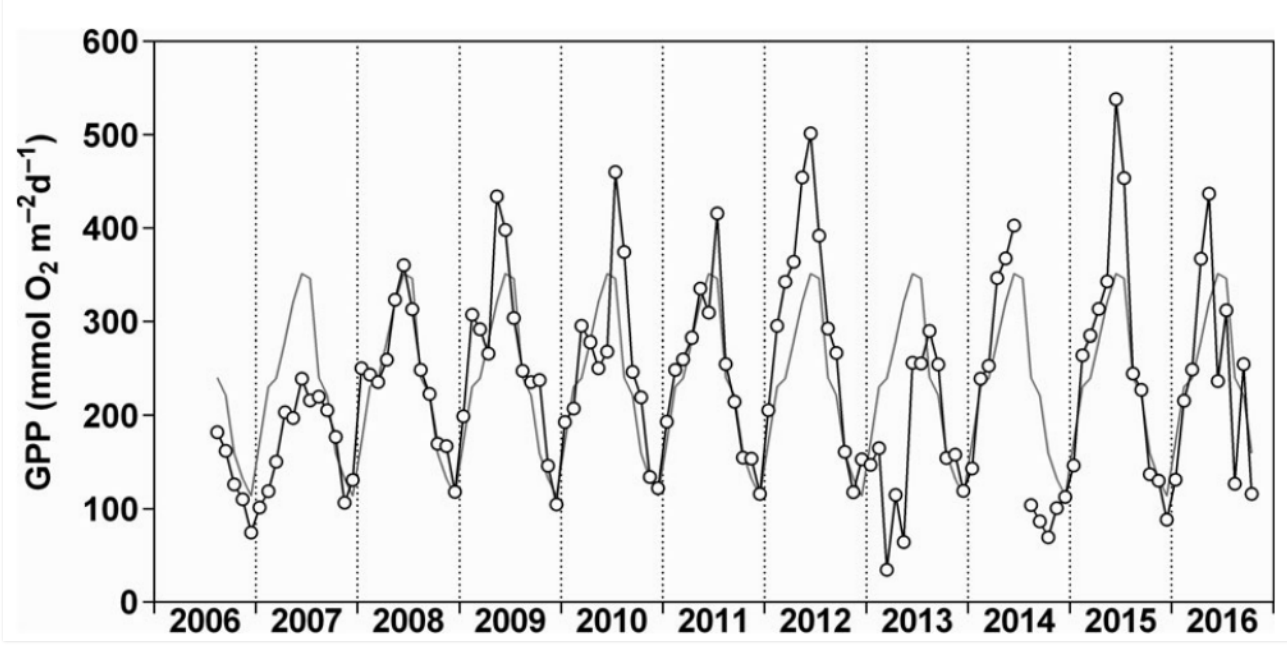
Scientific publications



http://www.stareso.ulg.ac.be/en/publications/

Inter-annual variations over a decade of primary production of the seagrass Posidonia oceanica

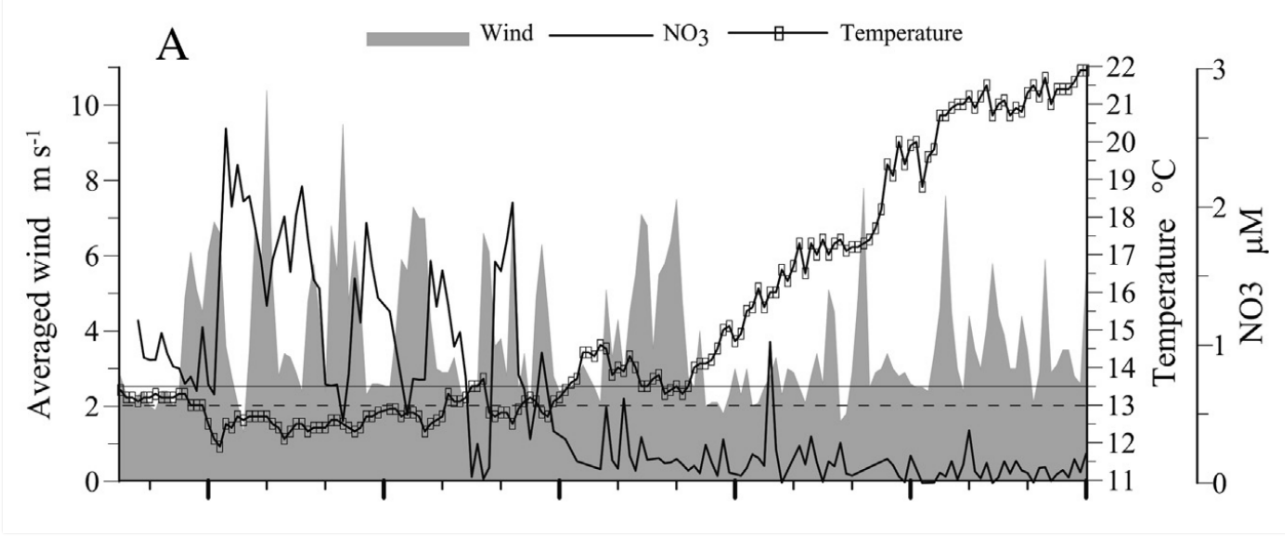
Champenois and Borges (2018)



doi 10.1002/lno.11017

Drivers of the winter–spring phytoplankton bloom in a pristine NW Mediterranean site, the Bay of Calvi (Corsica): A long-term study (1979–2011)

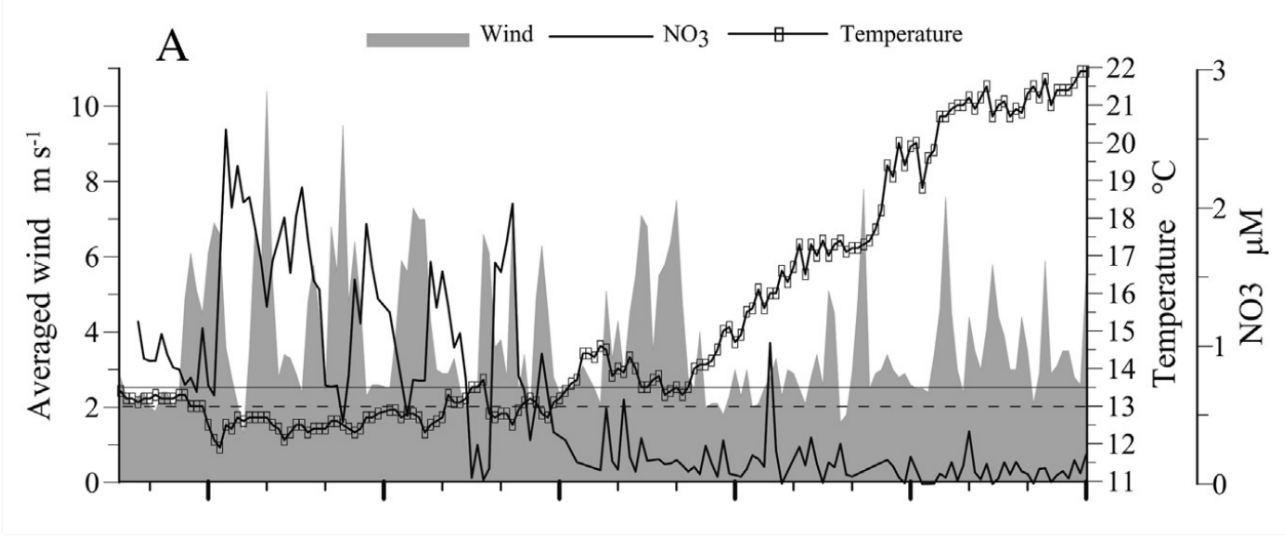
Goffart et. al (2015)



10.1016/j.pocean.2015.05.027

Composantes météorologiques de la base de données océanographique RACE de STARESO (Baie de Calvi – Corse)

Binard (2017)



https://orbi.uliege.be/bitstream/2268/214694/1/Binard_final.pdf

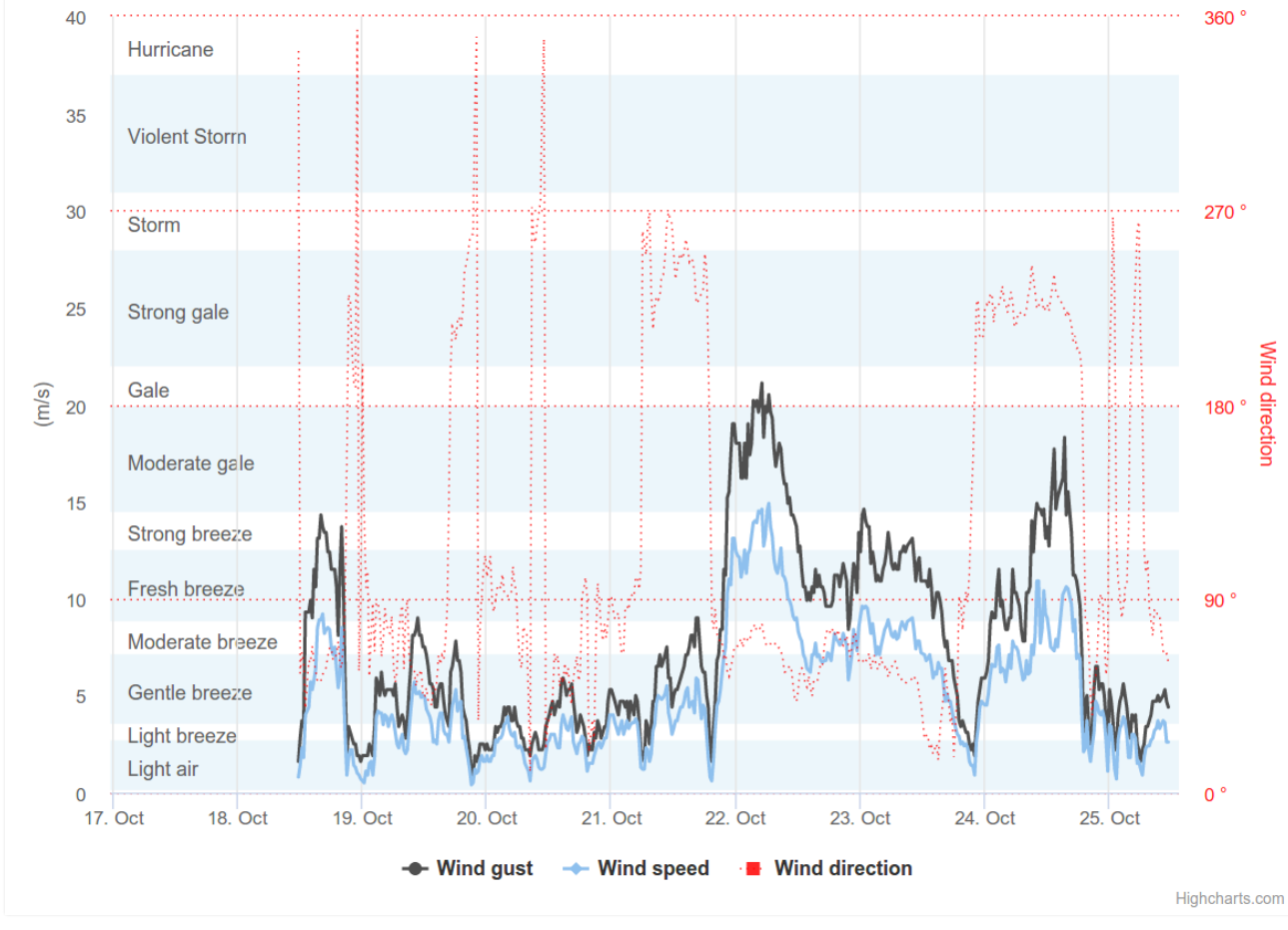
Available data

http://www.gitan.ulg.ac.be/cms/index.php?page=donnees-de-stareso

- Water **temperature** and **wind**: Continuous from 1979
- Total **chlorophyll a**: 1979-2005 with interruptions, continuous from 2006
- **Nutrients**: 1986-2005, continuous from 2006
- **Phytoplankton** pigments: 1988-2005, continuous from 2006
- **Microphytoplankton** composition and mesozooplankton biovolume: Continuous from 2006
- Main **zooplankton** groups in some years

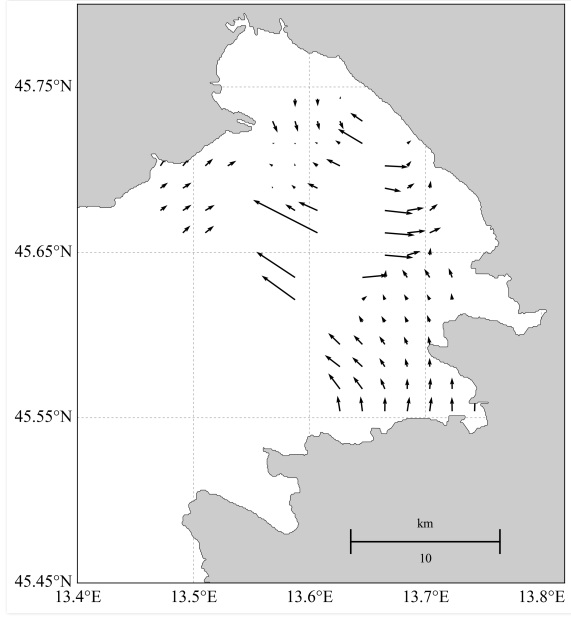
Real-time data

http://www.gitan.ulg.ac.be/cms/index.php?page=graphiques



Summary

1. Development of data interpolation tool (open source)
2. Availability of long-time series at STARESO
3. Possible collaborations in the production of gridded fields



Many thanks to...

Anja, Vlado, Branko, Gašper, Matjaž