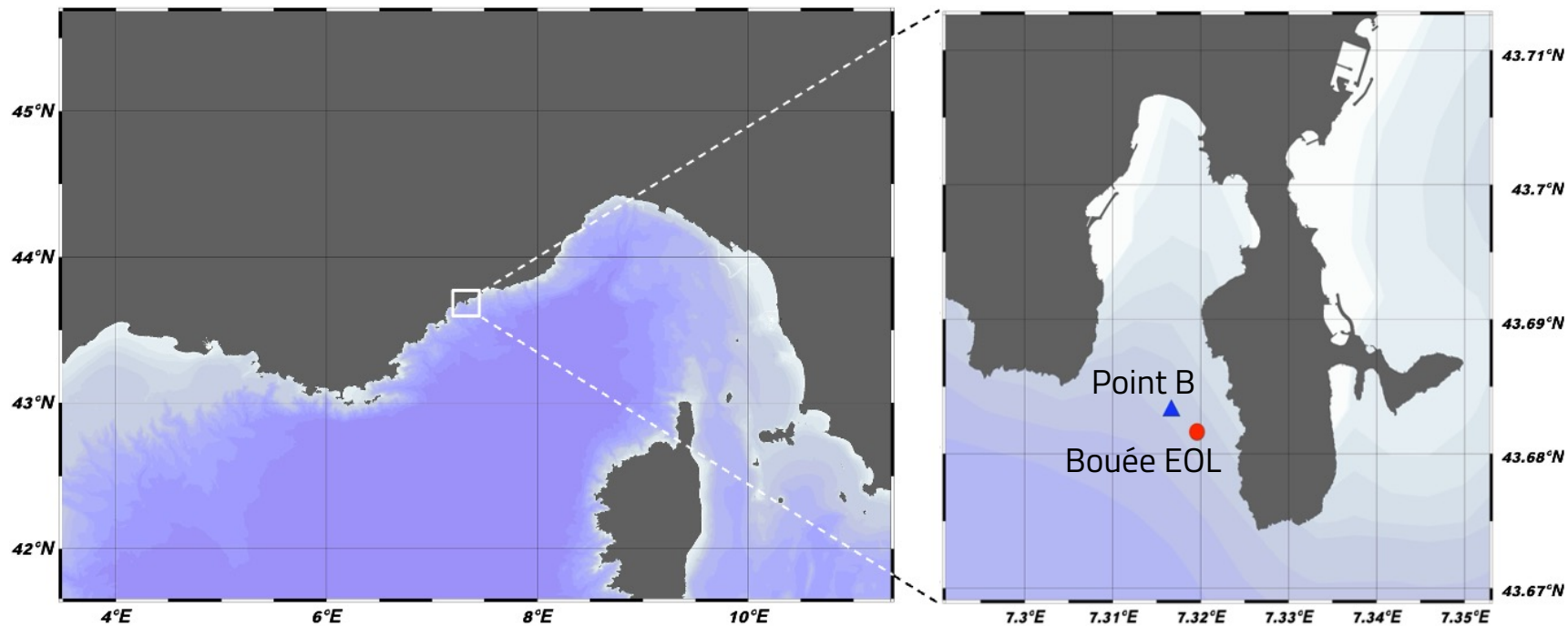


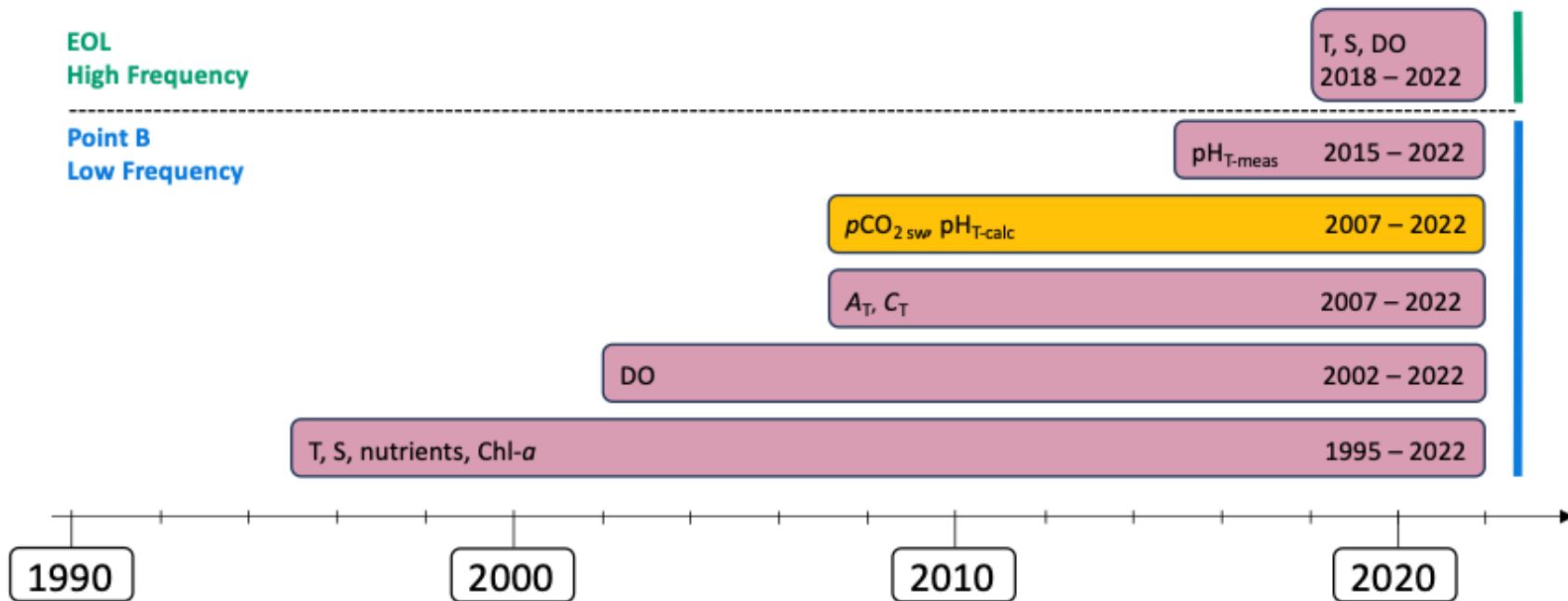
ÉVOLUTION PLURI-DÉCENNALE DES PARAMÈTRES CLIMATIQUES ET BIOGÉOCHIMIQUES EN MÉDITERRANÉE NORD-OCCIDENTALE

ÉQUIPES LOV/IMEV/OSU STAMAR

COMME ÇA JE N'OUBLIE PERSONNE....

Journée scientifique SOMLIT – 03 octobre 2024







Séries basse-fréquence au Point B

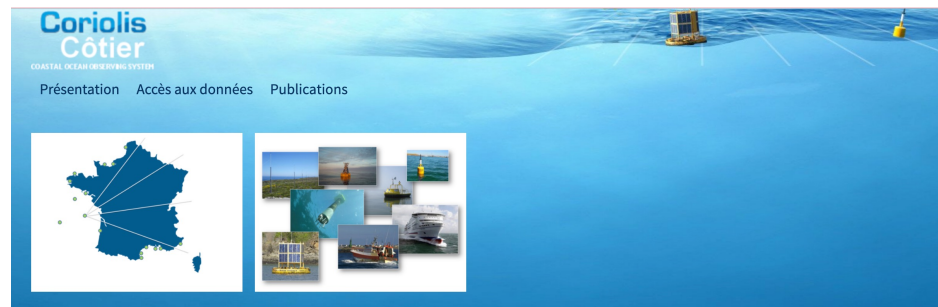
Départ : 1995

Fréquence : hebdomadaire

Mesures à 1 m (et 50 m)



Variables : température, salinité et sels nutritifs (depuis 1995), O_2 (depuis 2022), A_T et C_T (2007), pH (2014)



DOI 10.17882/91965

Environmental Observatory of the Littoral (EOL) biogeochemical data from the Northwestern Mediterranean sea.

DATE 2022-12-19

TEMPORAL EXTENT 2013-2022

AUTHORS [Alliouane Samir](#)¹, Grisoni Jean-Michel¹, [Gazeau Frédéric](#)¹

AFFILIATIONS 1. Sorbonne Université, CNRS, Laboratoire d'Océanographie de Villefranche, LOV, F-06230 Villefranche-sur-Mer, France

DOI [10.17882/91965](#)

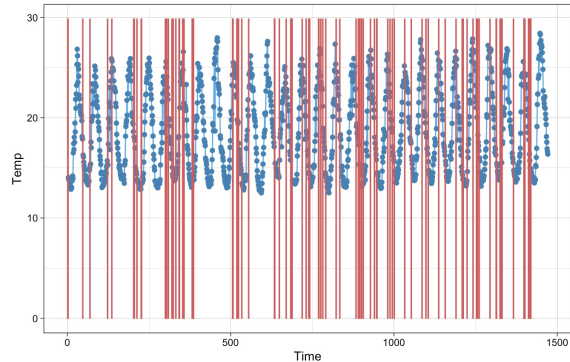
PUBLISHER [SEANOE](#)

The EOL (Environmental Observation of the Littoral) buoy is operated since 2013 in the bay of Villefranche-sur-Mer (France, 43°40'54.0"N 7°19'10.8"E). This buoy (3.6 m wide, 4 tonnes), equipped with solar panels, allows performing, in an autonomous way, measurements of physico-chemical parameters on a mooring mode (2.5 m depth). This buoy was developed as part of a partnership between the Observatoire Océanologique de Villefranche (OOV; now Institut de la Mer de Villefranche, IMEV) and the company Mobilis. Data transmission is performed on a daily basis and data stored on a server on land (<http://www.obs-vlfr.fr/data/view/eol/surface/>). The buoy is currently involved in the COAST-HF network as part of the Coastal Ocean and Nearshore Observation French Research Infrastructure (ILICO). In particular, the buoy is equipped with a Sea-Bird SBE SMP-ODO deployed at the surface (2.5 m). An extra CTD is available in order to rotate during calibration at the manufacturer. Underwater cleaning of the sensors is performed on a monthly basis. In addition, a proper

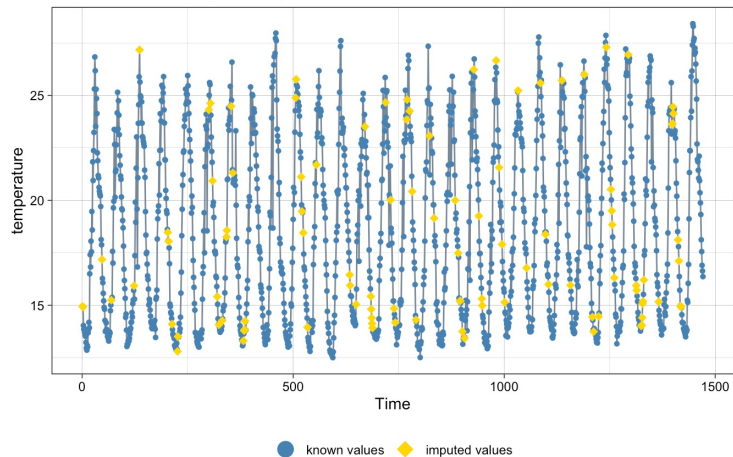


Variable	Acquired data (%)
Point B	
Period 1995-2022	
T	93.3
S	92.4
$Chl-a$	90.3
Period 2002-2022	
DO	85.1
Period 2007-2022	
A_T	90.2
C_T	89.3
pCO_{2-sw}	87.8
Period 2015-2022	
pH_{T-meas}	86.3
EOL	
Period 2018-2022	
T	89
S	88.9
DO	89

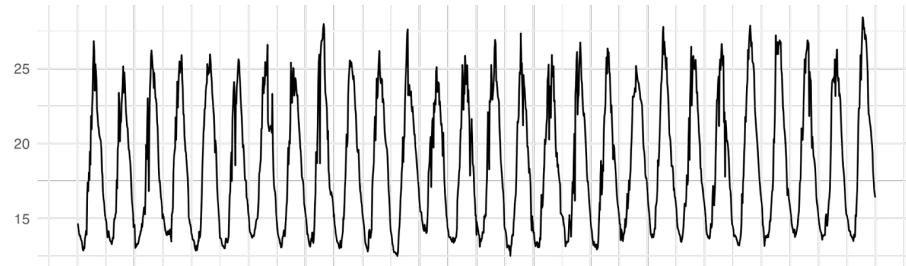
Distribution of Missing Values
Time Series with highlighted missing regions



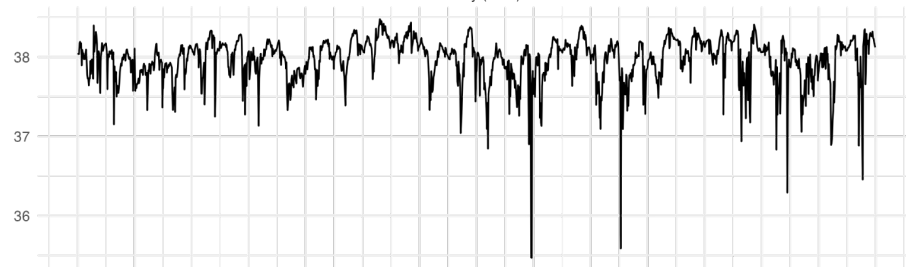
Interpolated data
Visualization of missing value replacements



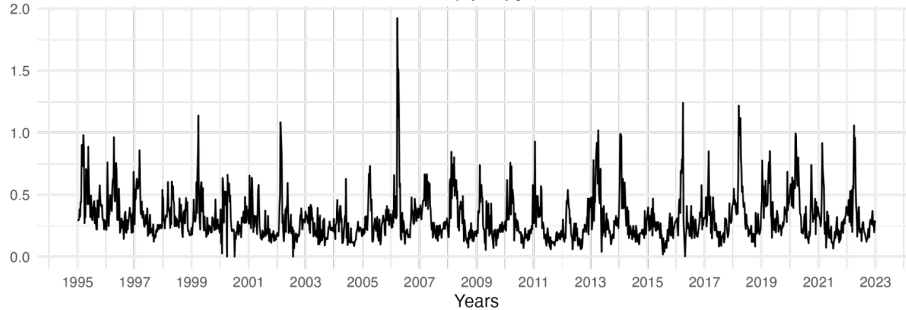
Temperature (°C)



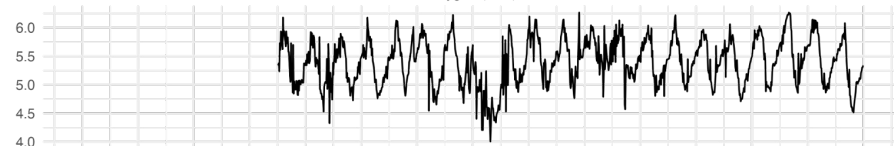
Salinity (PSU)



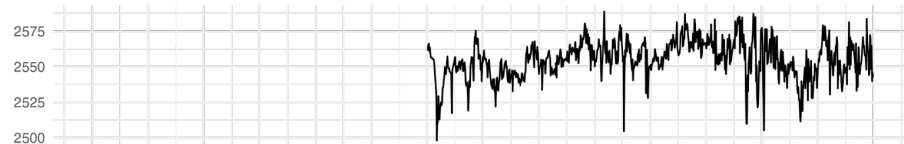
Chlorophyll-a (µg/L)



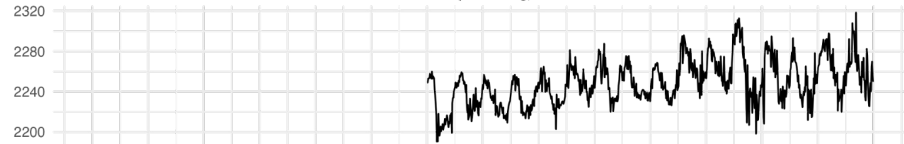
Oxygen (ml/L)



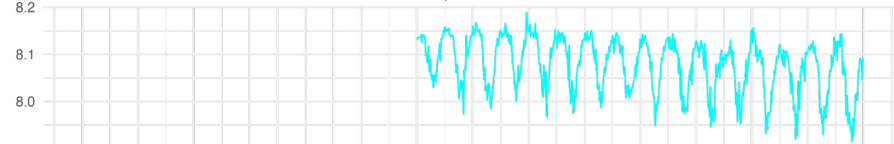
AT (µmoles/Kg)



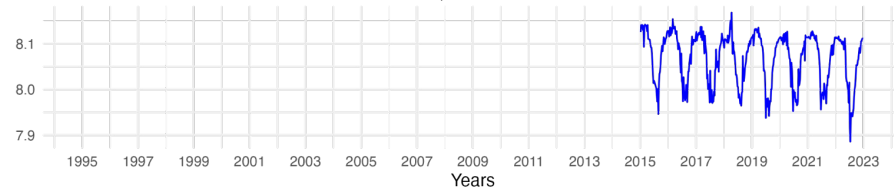
CT (µmoles/Kg)

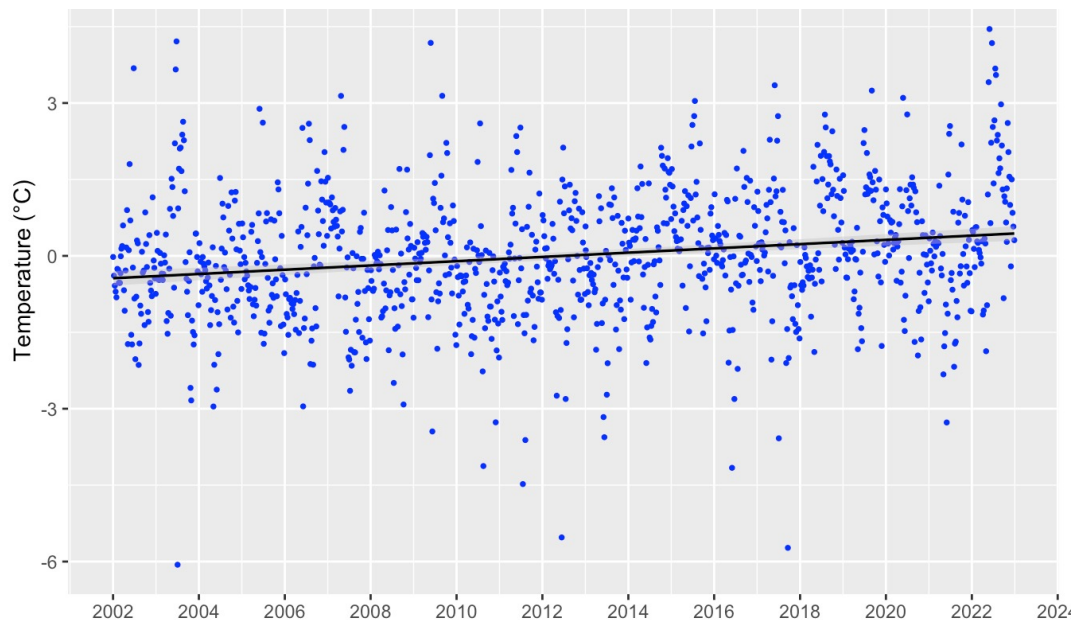


pHT-calc



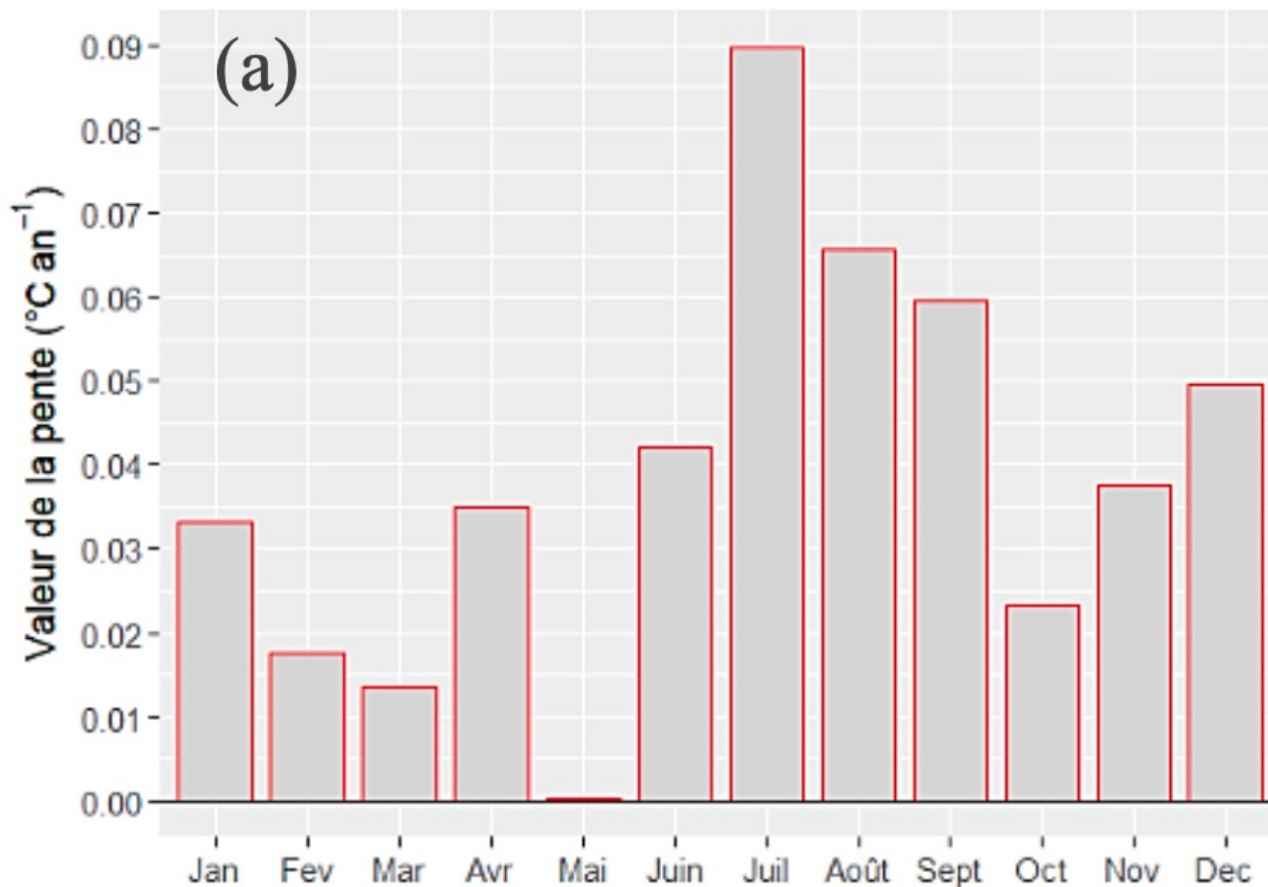
pHT-meas

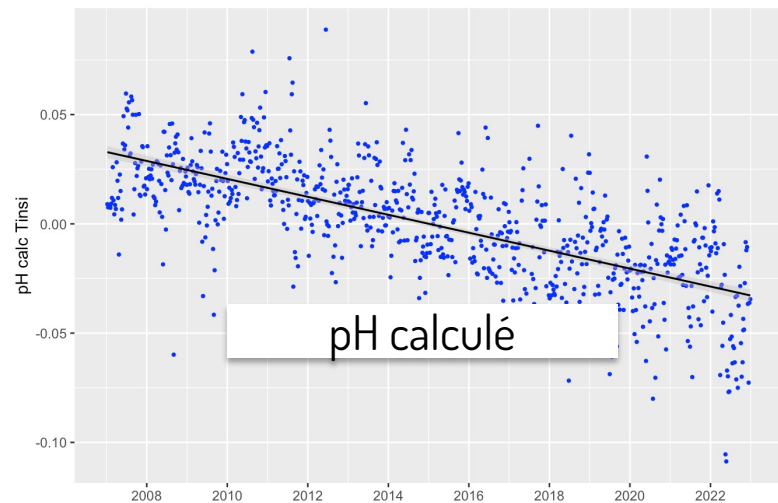




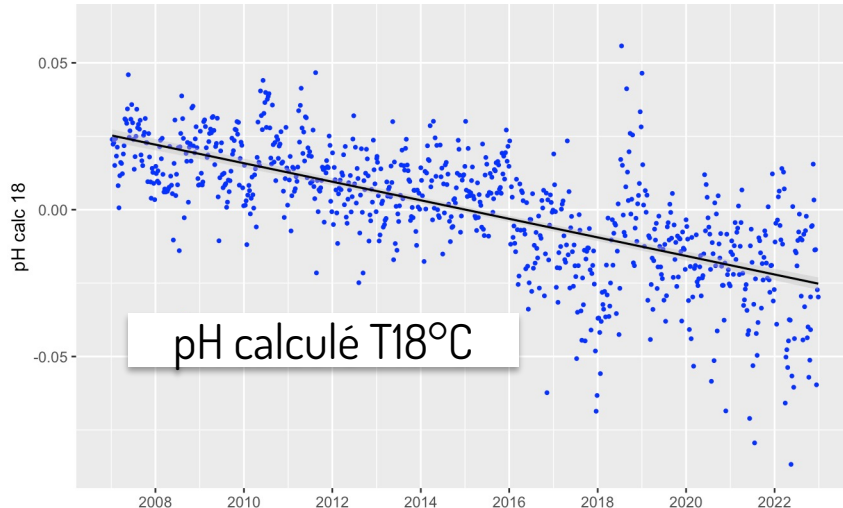
GIEC SROCC : 0,009 – 0,013 °C / an

Variables	Slope (/year)	SE	p-value
Period 1995-2022			
T	0.0379	0.0039	0.000
S	-0.0004	8e-04	0.601
Chl- a	-0.0004	5e-04	0.368
Period 2002-2022			
DO	0.0083	0.0013	0.000
Period 2007-2022			
A_T	0.5128	0.0937	0.000
C_T	2.3651	0.1049	0.000
pH_{T-calc}	-0.0041	2e-04	0.000
pCO_{2-sw}	4.8313	0.1905	0.000
Period 2015-2022			
pH_{T-meas}	-0.0035	4e-04	0.000



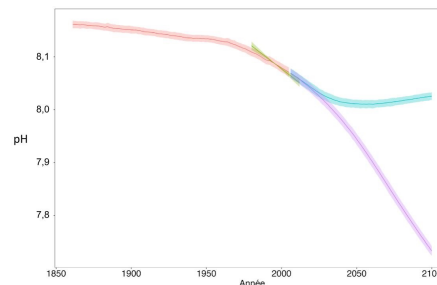


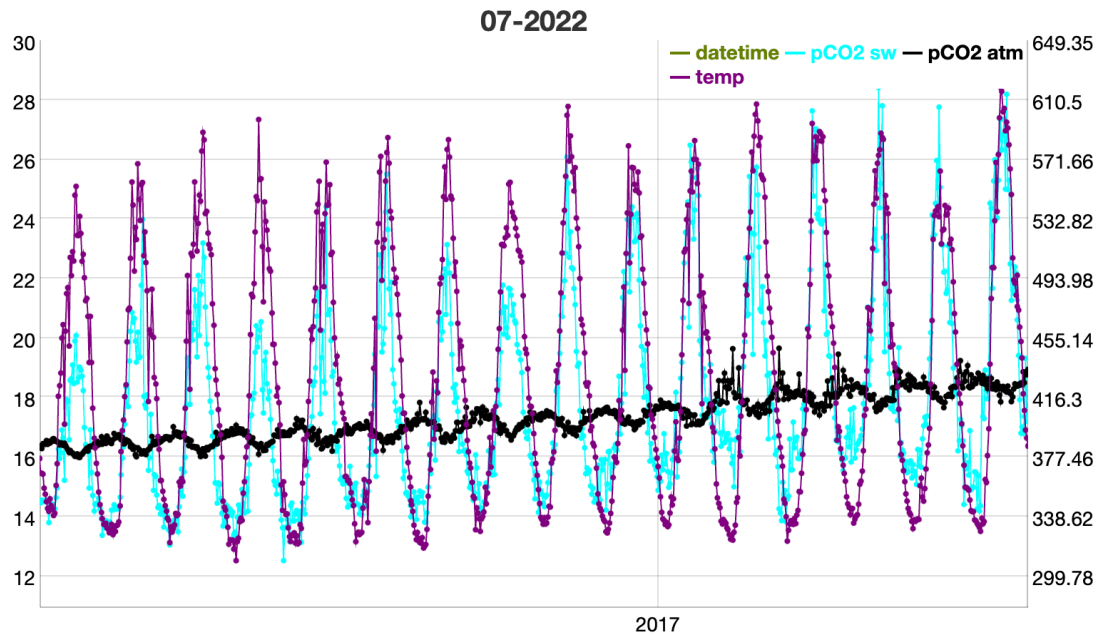
-0.0041 unités pH / an



-0.0032 unités pH / an

GIEC : -0,0017-0,0027 unités pH par décennie





$p\text{CO}_2$ atmosphérique : ~3 ppm / an
 $p\text{CO}_2$ marine : 4,8 ppm / an

$p\text{CO}_2$ thermique : 1,2 ppm / an
 $p\text{CO}_2$ non thermique : 3,7 ppm / an

$$FCO_2 = k \times \alpha \times \Delta pCO_2$$

↳ en mol de CO₂ m⁻² h⁻¹

Vitesse des vents
à 10 m

k : vitesse de transfert du gaz (m s⁻¹)
 α : solubilité du CO₂ (mol atm⁻¹ m⁻³)
 $\Delta pCO_2 : pCO_2 \text{ océanique} - pCO_2 \text{ atmosphérique}$



1 valeur de flux / semaine
Période : 2009-2021



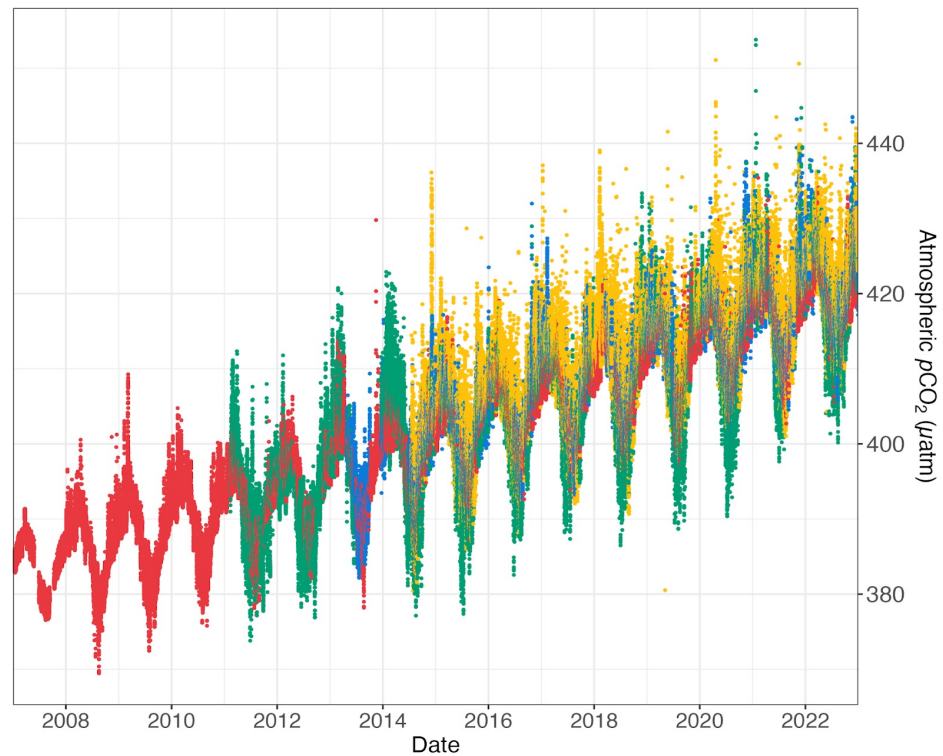
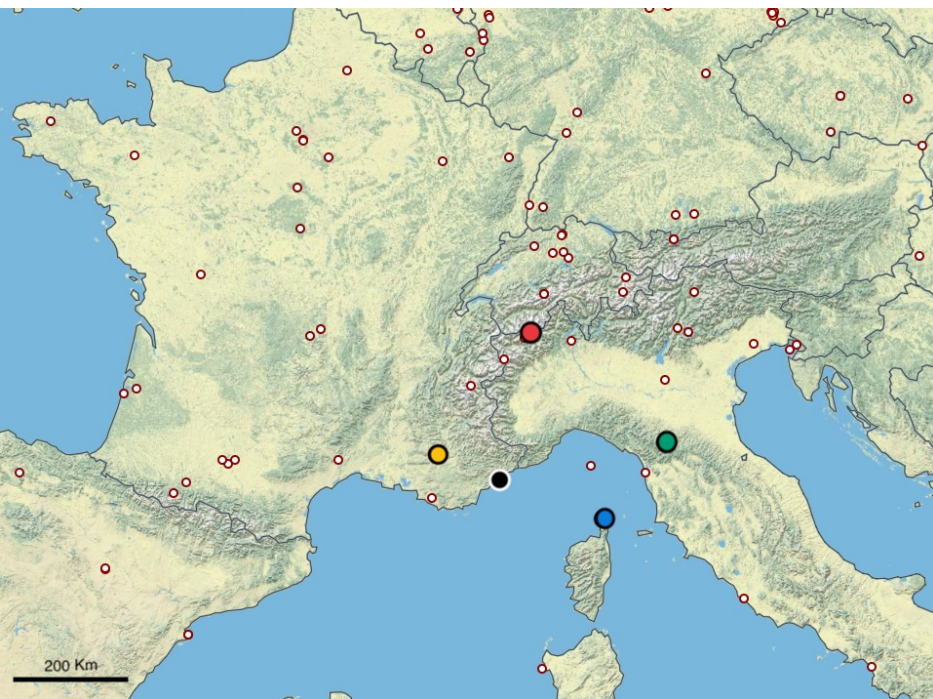
pCO_2 atmosphérique et vitesses des vents à 10 m

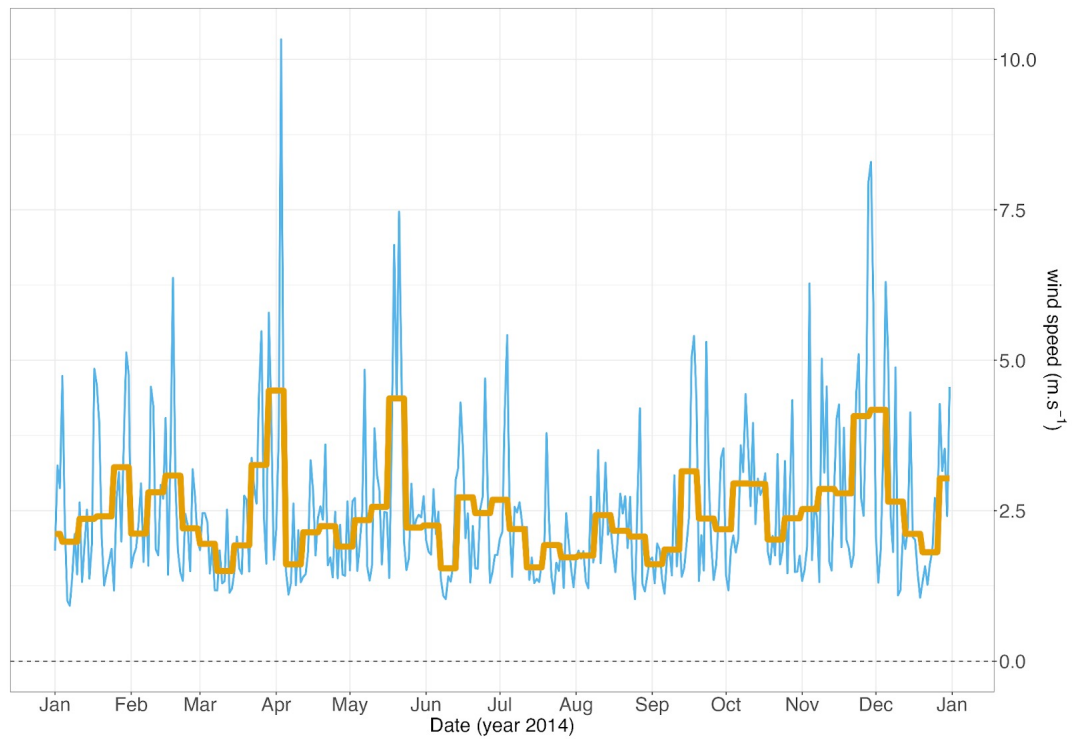
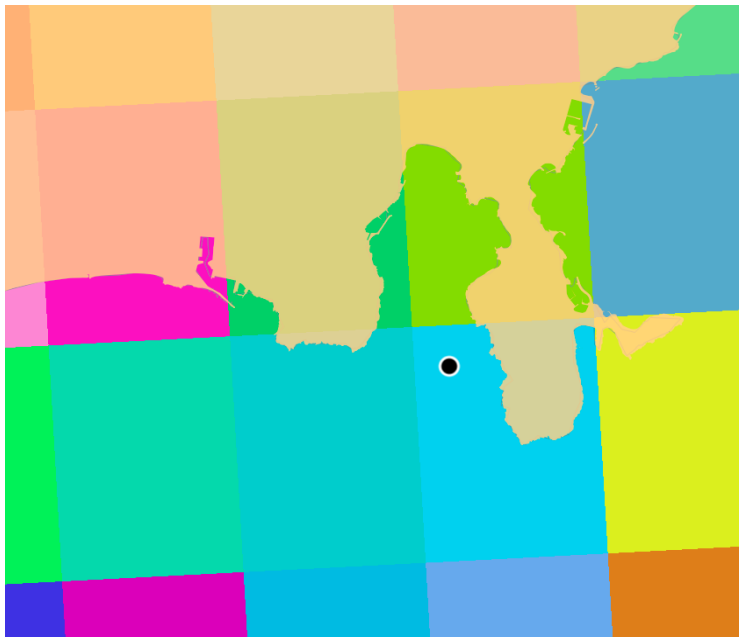


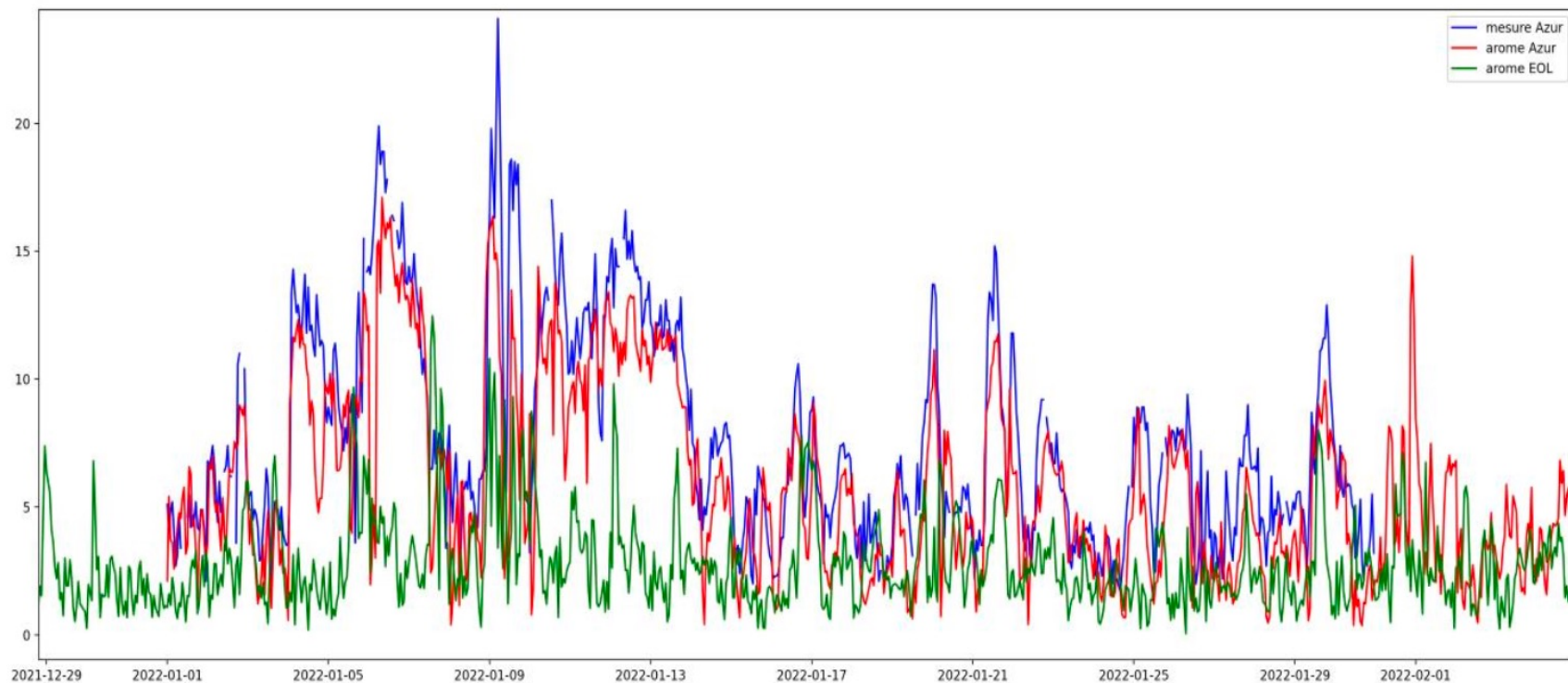
Sélection des données

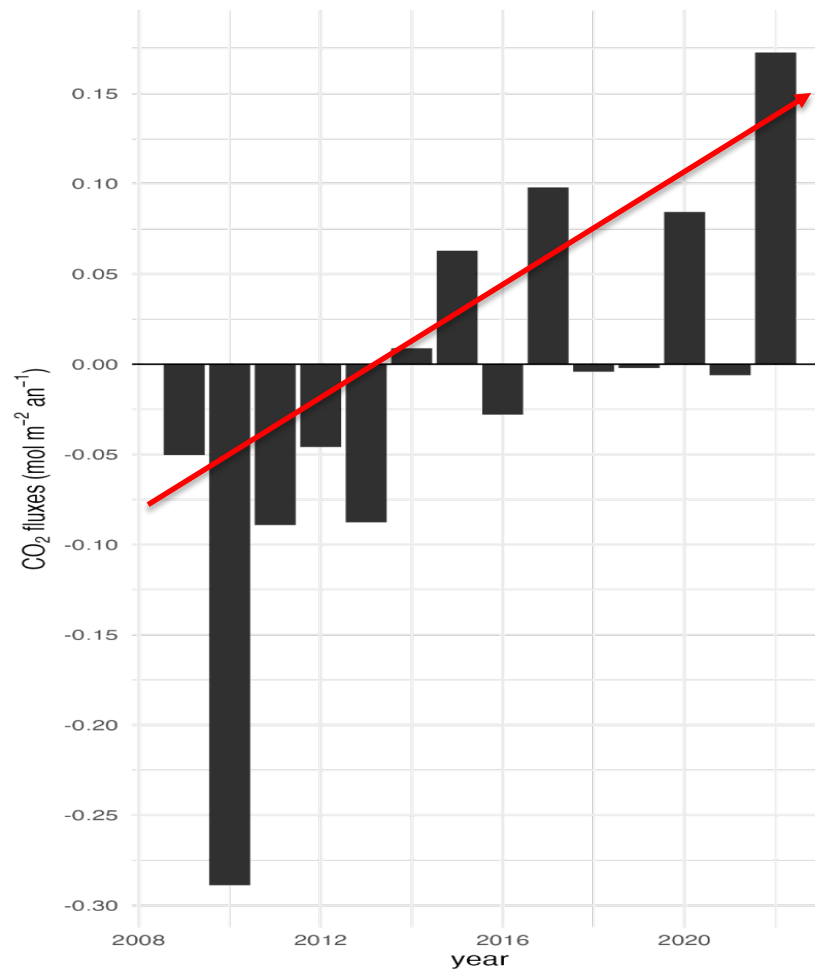


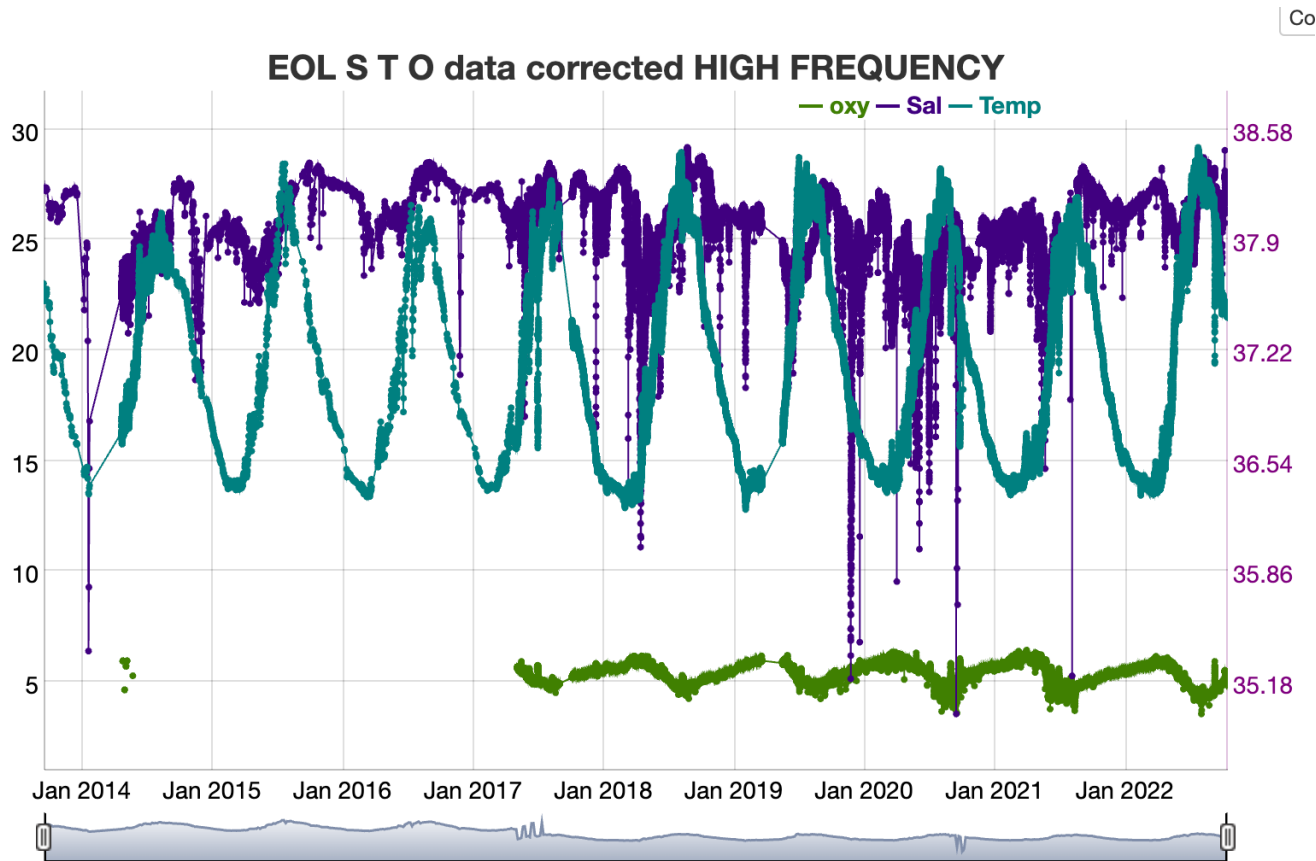
1 valeur / semaine
Période : 2009-2021











HF

	Slope	SE Slope	P Slope	Intercept	SE int.	P int.	F
temp_ano	0.0322404	0.0040676	0	-65.14189	8.218505	0	62.8254
sal_ano	0.0263224	0.0007535	0	-53.18294	1.522422	0	1220.3225
oxy_ano	-1.4649535	0.0270565	0	2959.86194	54.666168	0	2931.6077

LF

Variables	Slope (/year)	SE	p-value
Period 1995-2022			
<i>T</i>	0.0379	0.0039	0.000
<i>S</i>	-0.0004	8e-04	0.601
Chl- <i>a</i>	-0.0004	5e-04	0.368
Period 2002-2022			
<i>DO</i>	0.0083	0.0013	0.000

5 ans de données

28 ans de données

MERCI / THANKS

