



Monitoring of high altitude lakes in the Ecrins national Park

Danilo Re 2024 - Kalkalpen National Park



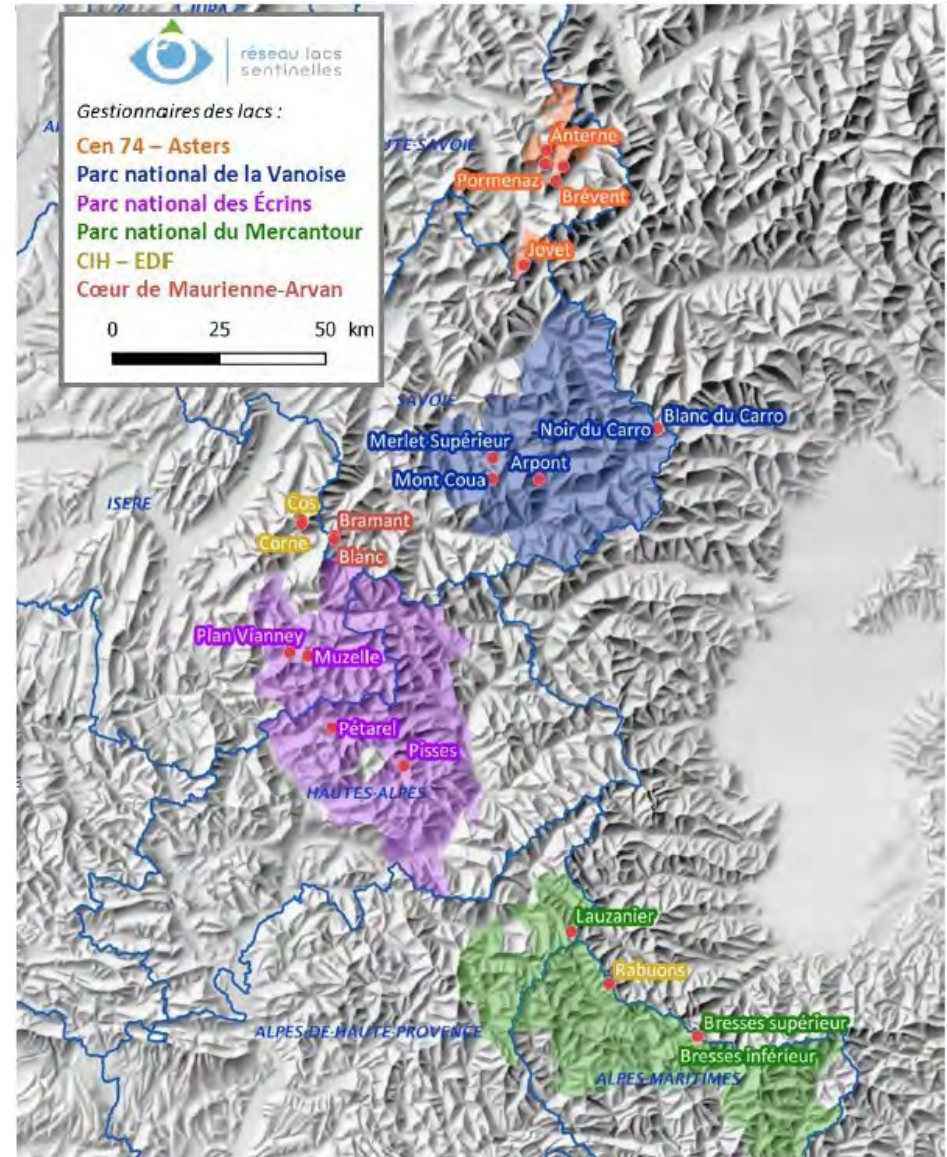


Sentinel lakes network : what is it ?

Network coordinate by

ASTERS 74 Conservatoire Espaces Naturels

Born in 2012 to study about
22 high altitude lakes in the
French alps.





Sentinel lakes network : who ?

Protected area managers



Research organizations



Users



Financial partners





Sentinel lakes network : missions

- Improve knowledge of high altitude lakes functioning

Observations : monitoring of evolutions / physicochemical parameters / biological parameters

- Identify threats about these lakes, in particular the ones from climate changes

Climate changes / atmospheric pollutions / local watershed management

- Define actions to protect these ecosystems



In the Ecrins national park



Plan Vianney lake



Muzelle lake



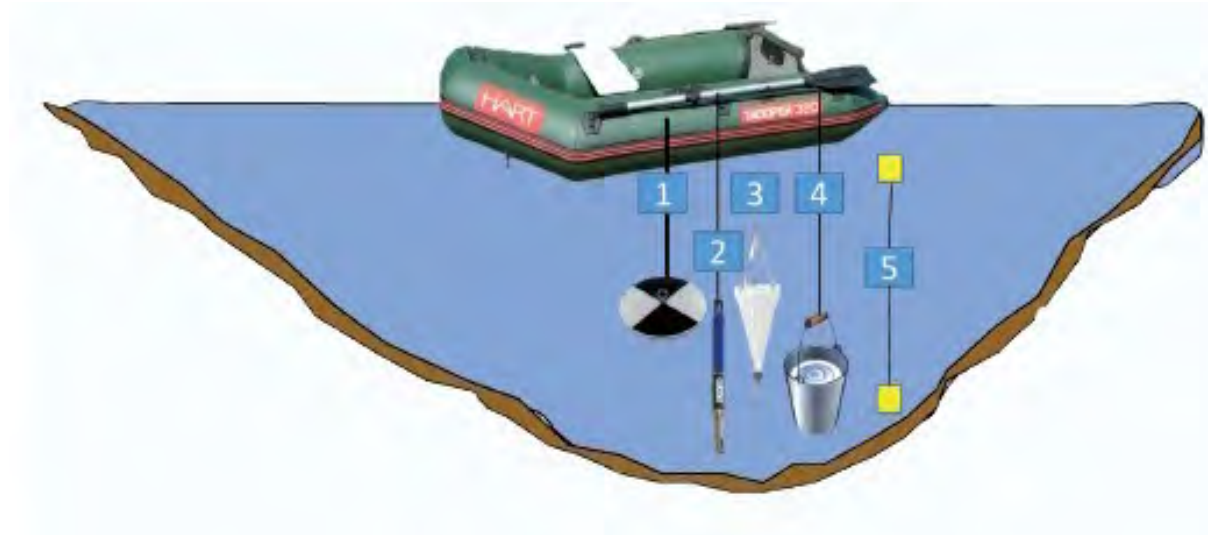
Pétarel lake



Pisses lake



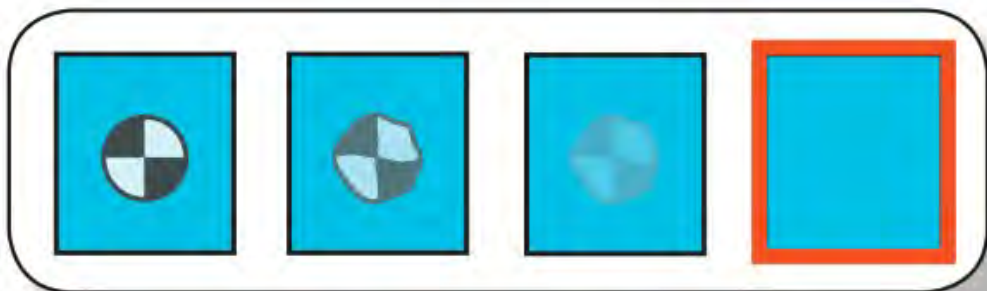
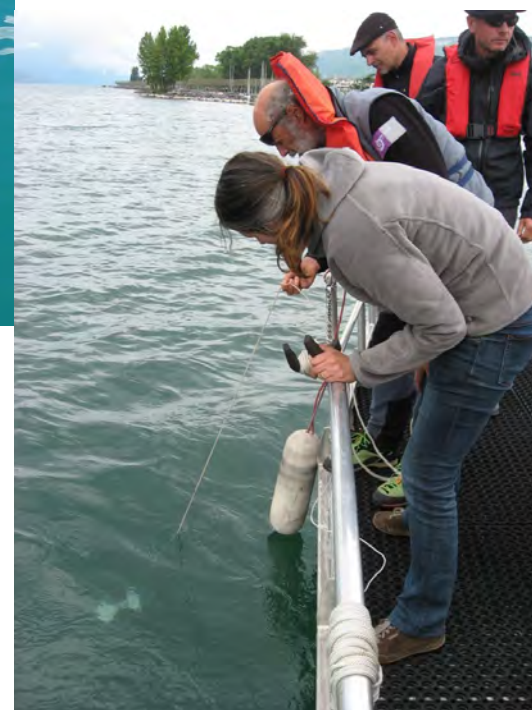
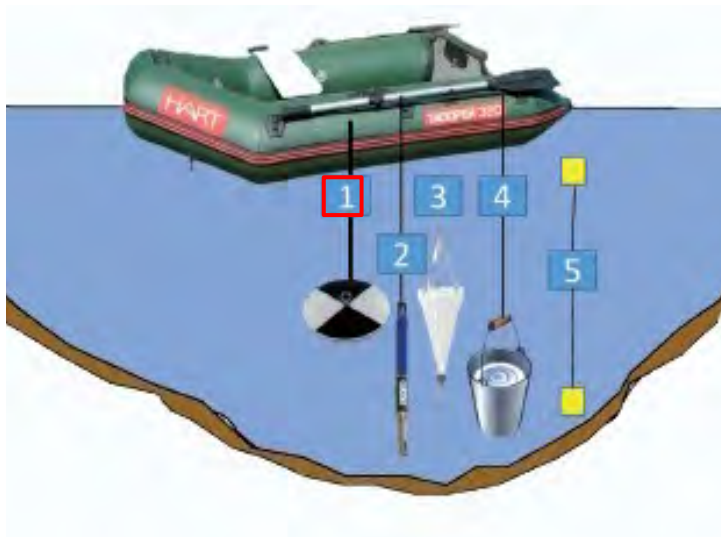
Which protocols ?



1. Water transparency with Secchi disk
2. Vertical profil with multiparameter probe : T°C, pH, conductivity, dissolved oxygen
3. Zooplankton enumeration
4. Water prelevements : chemical analysis, phytoplankton, a chlorophylle
5. Datta loggers : temperature, luminosity, pressure

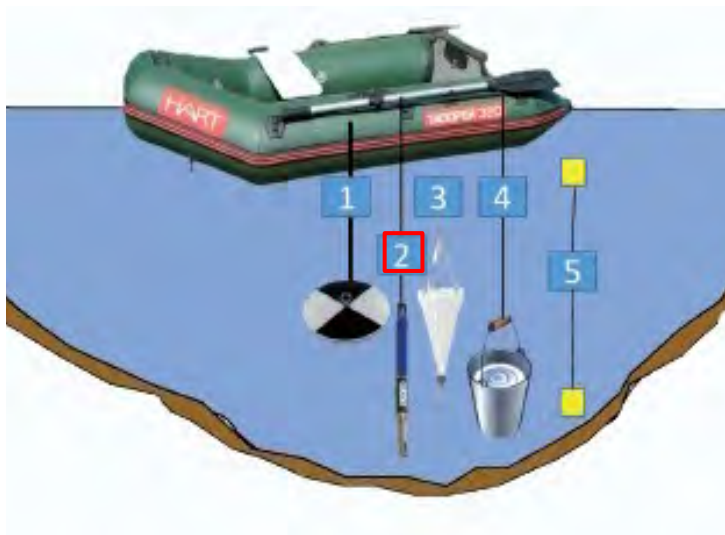


Which protocols ?



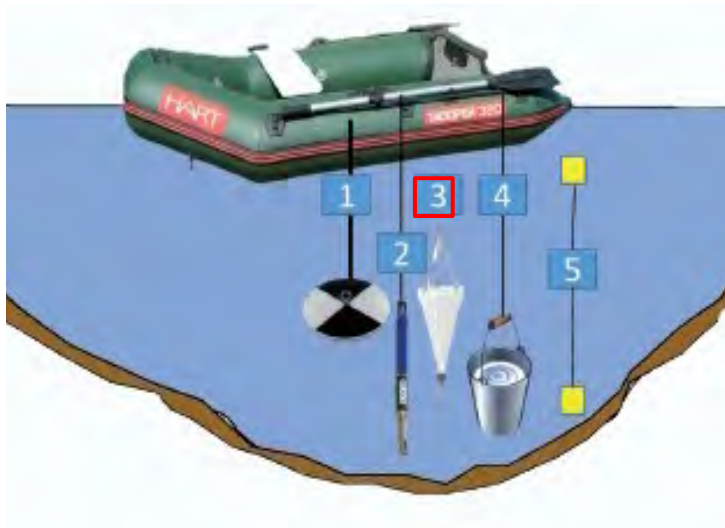


Which protocols ?



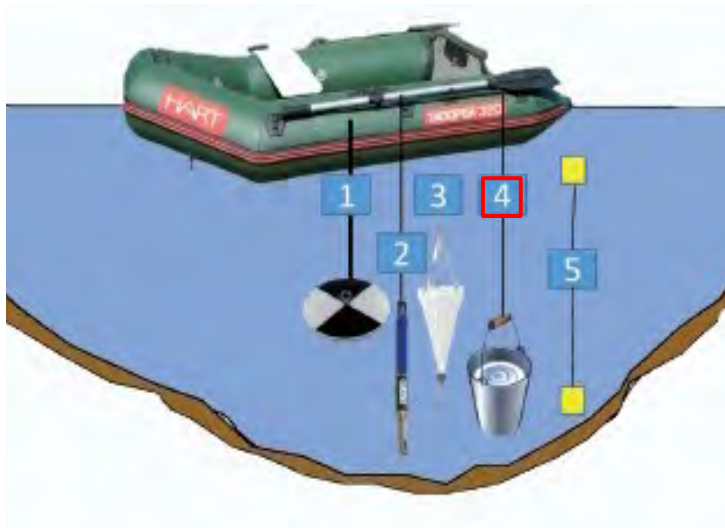


Which protocols ?



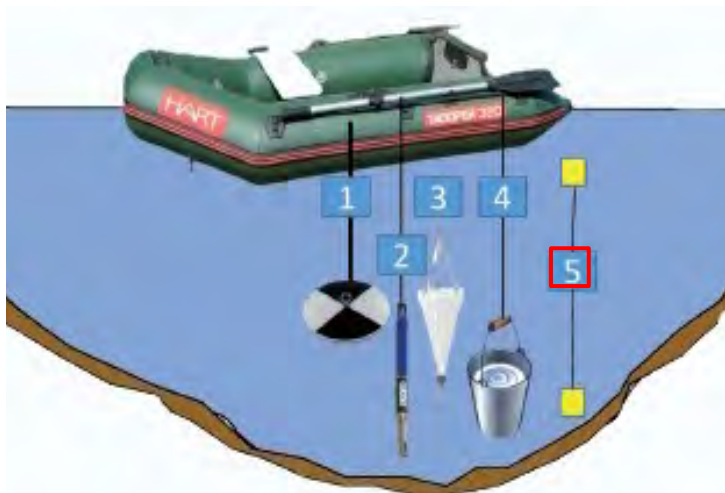


Which protocols ?





Which protocols ?





And sometimes, some specific studies...

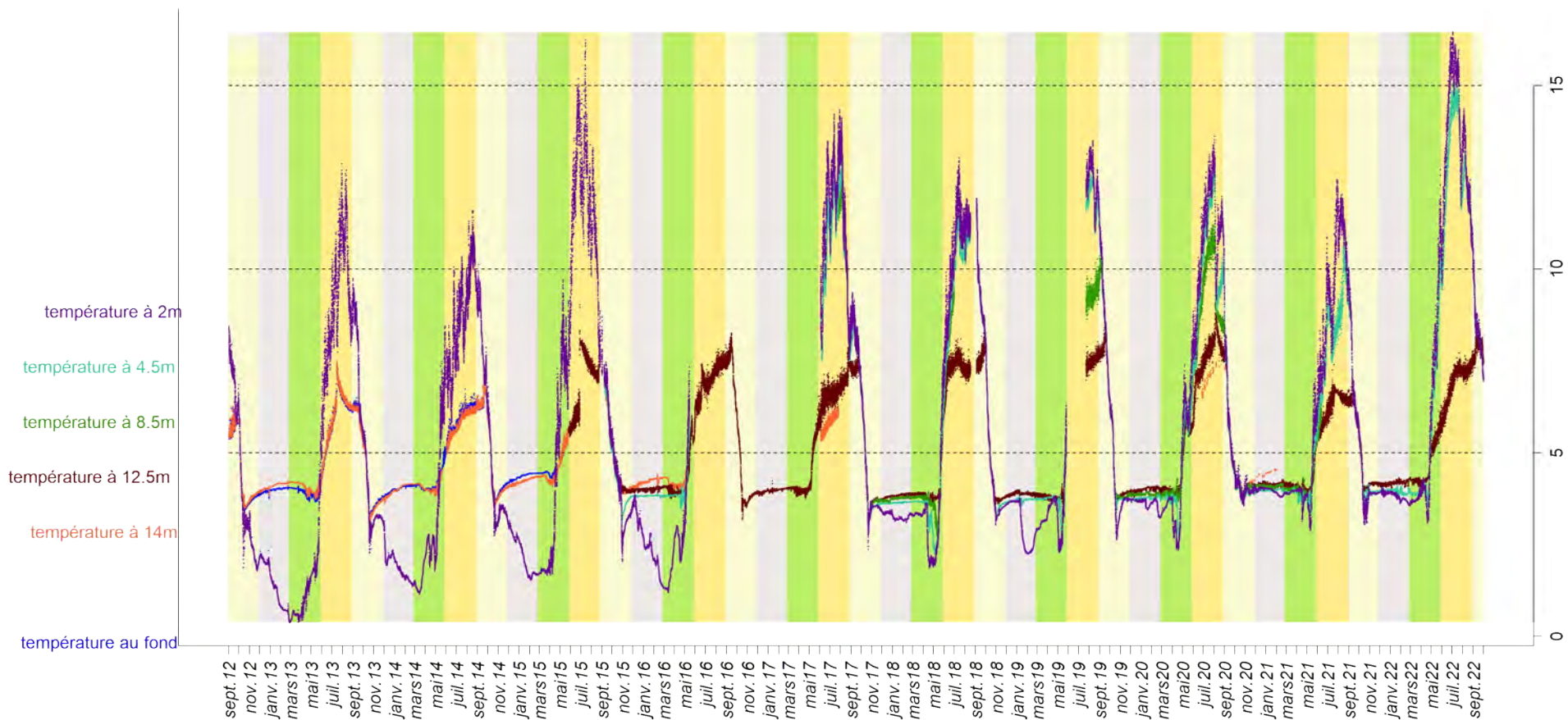
- Minnow population around Pétarel lake
- Sediments prelevements in winter in Muzelle lake
- Microplastics and pollution in Muzelle lake
- Study of past and actual sediments in Plan Vianney and Pisses lakes
- Fish inventory in Muzelle lake





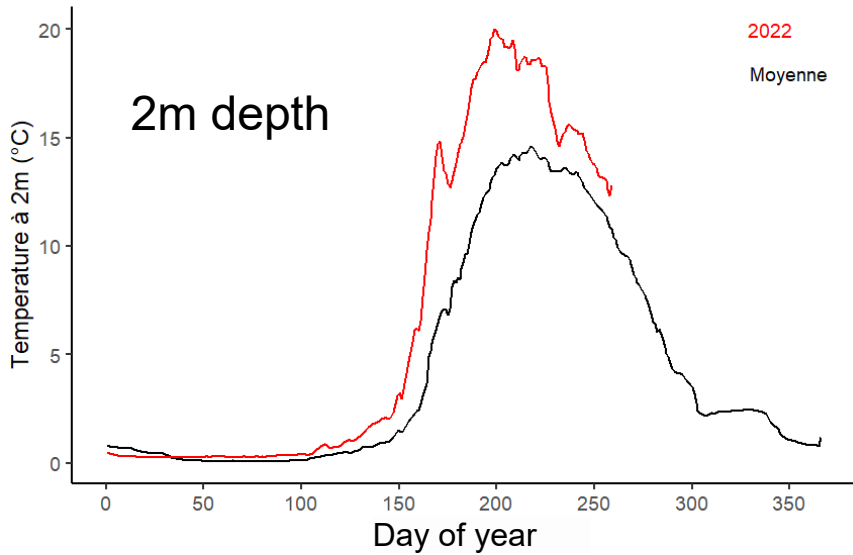
What is the point and what do we learn ?

Muzelle lake temperature

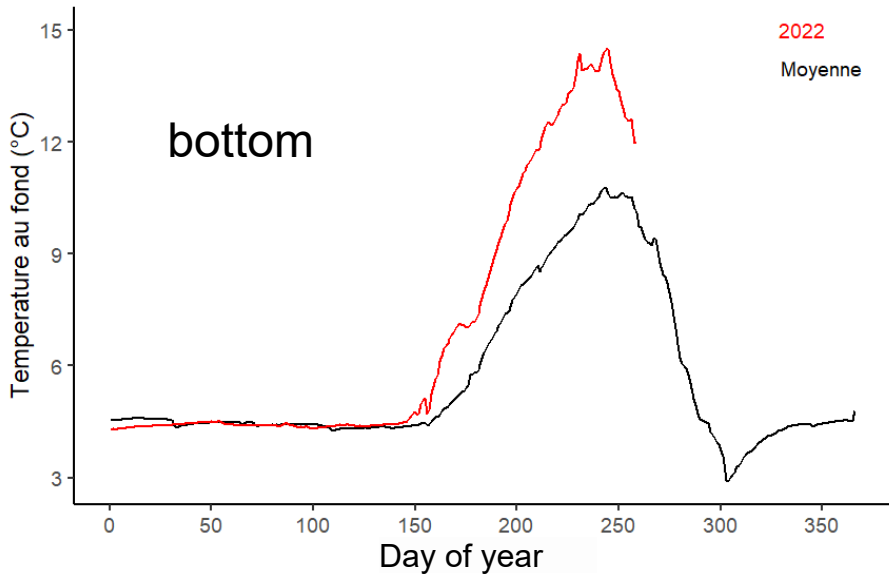
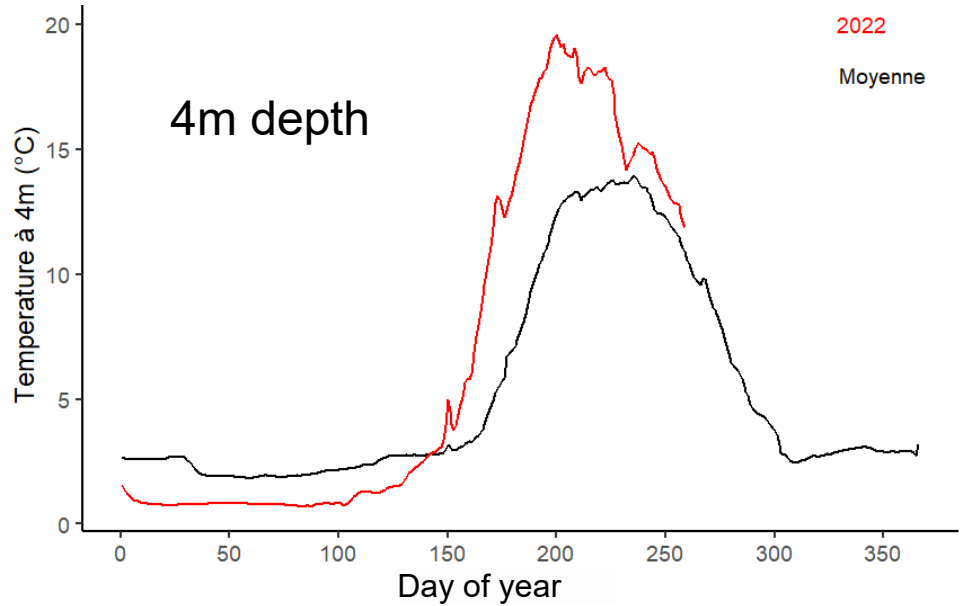




What is the point and what do we learn ?

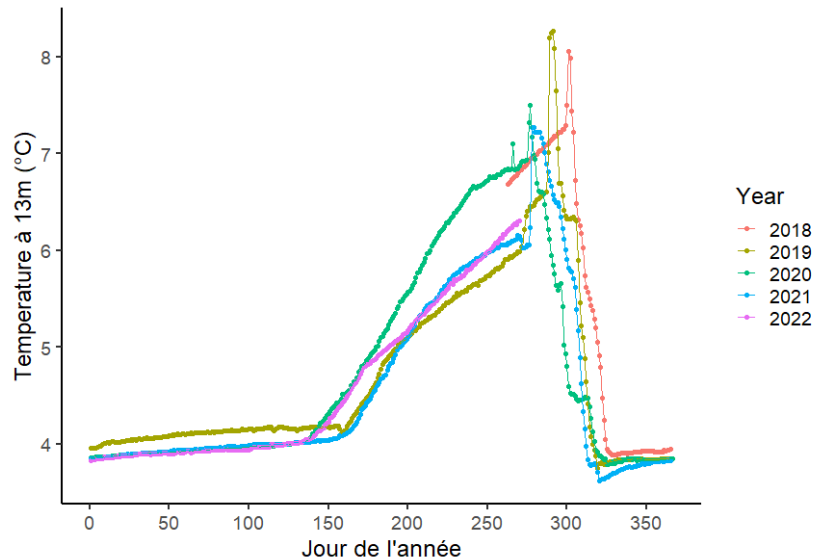
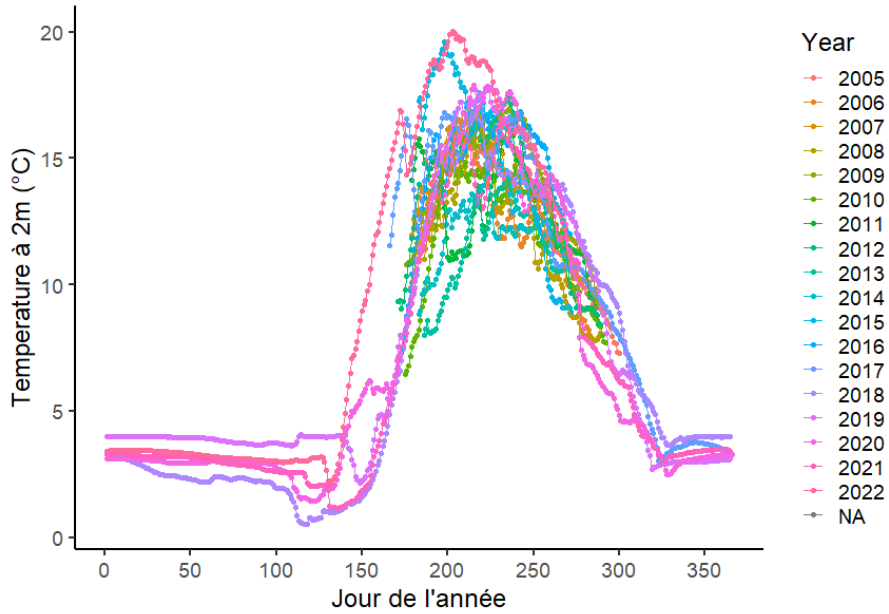


Plan Vianney lake, year 2022 compared to average temperature

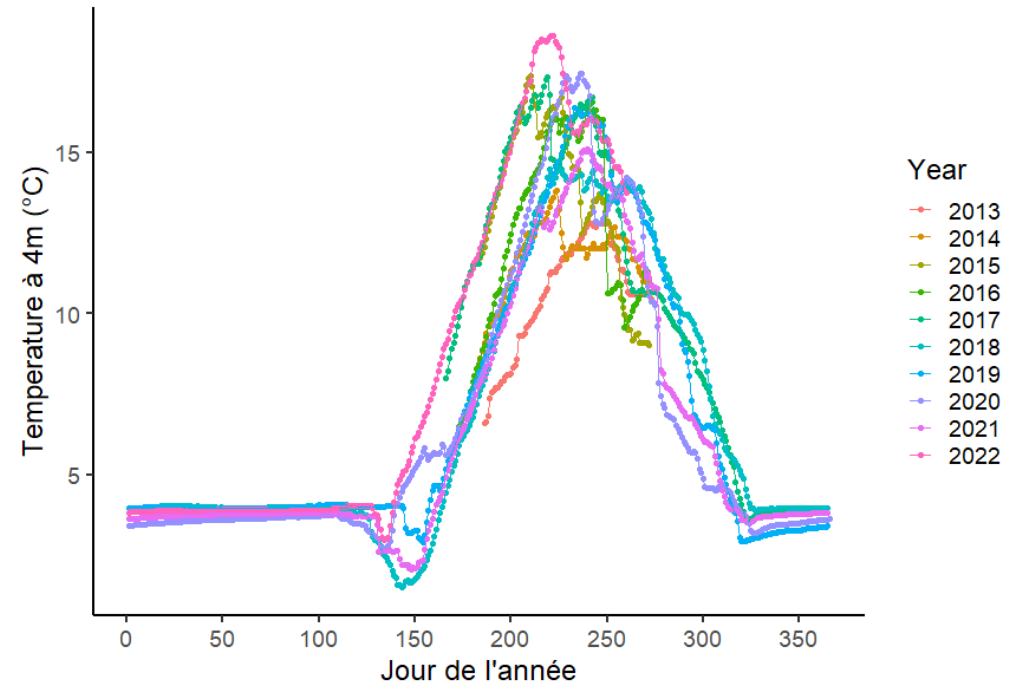




What is the point and what do we learn ?

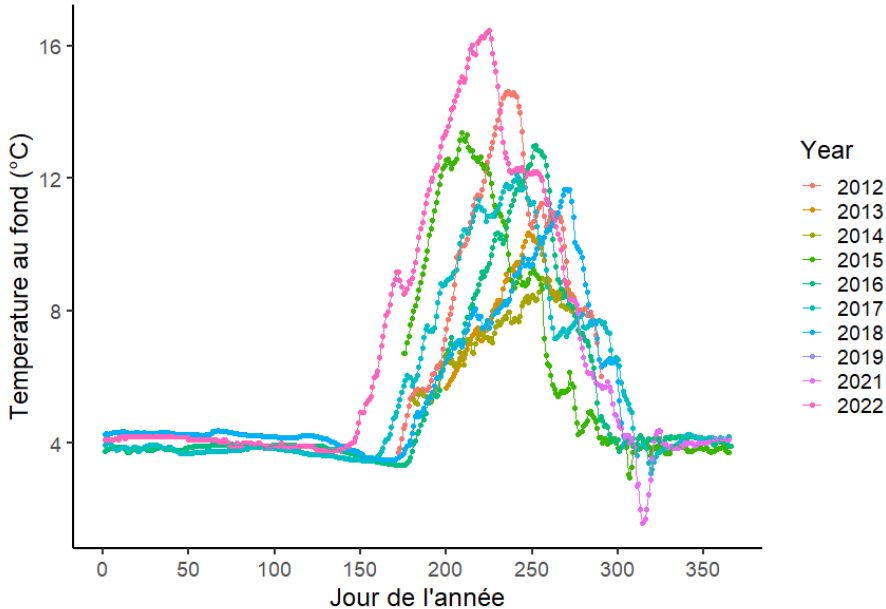
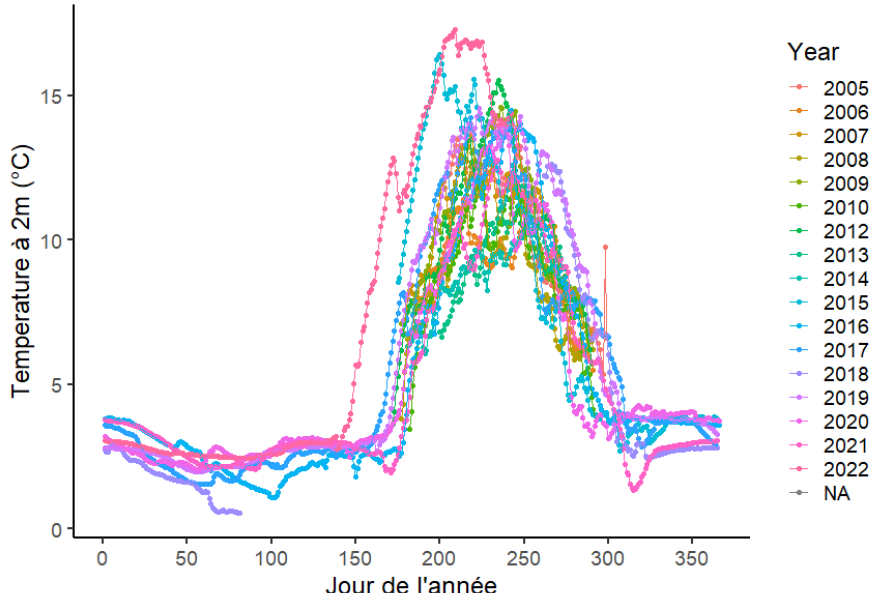


Pisses lake

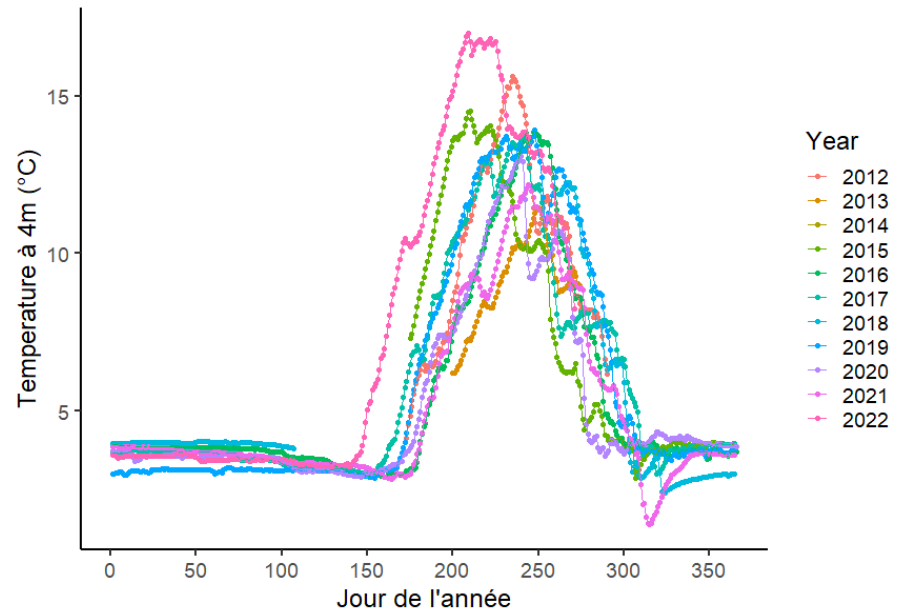




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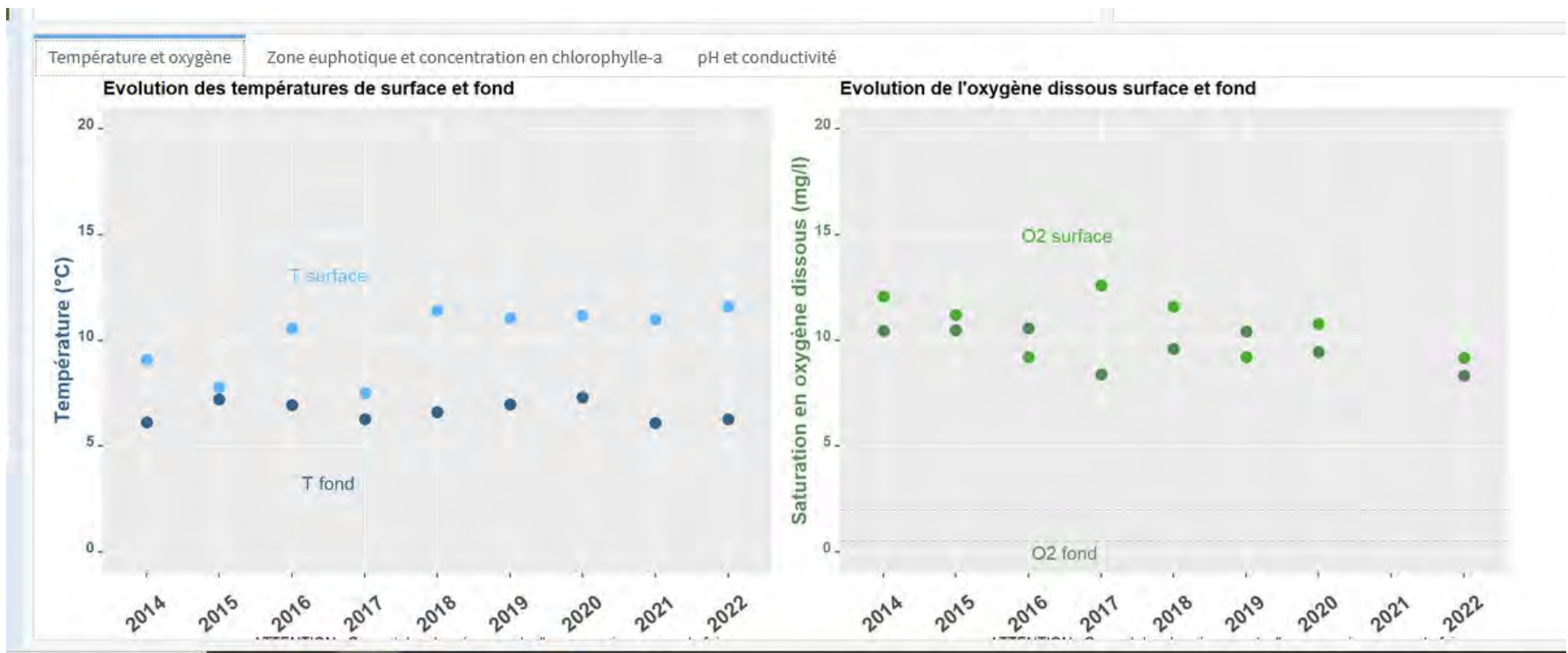
Petarel lake





What is the point and what do we learn ?

For each lake, for all the parameters, all the data are compiled like this :

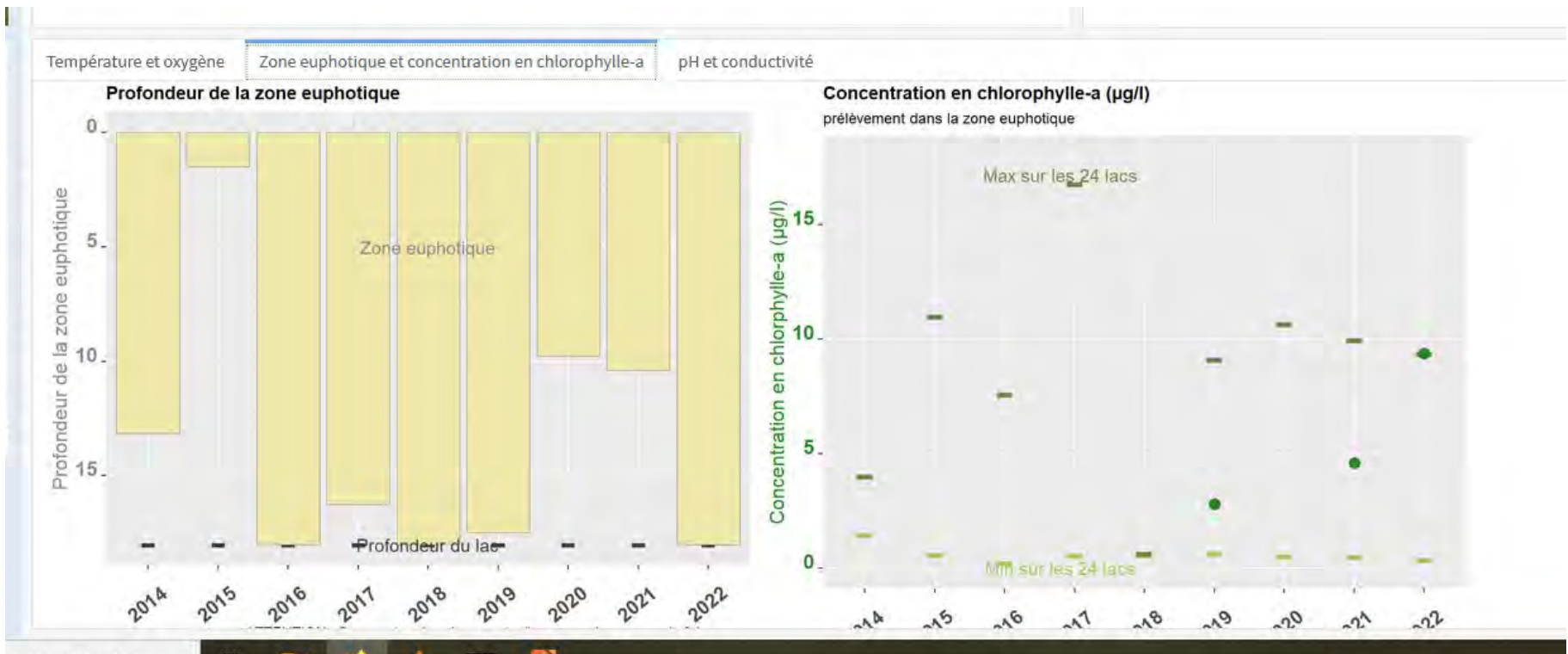


Temperature

Dissolved oxygen



What is the point and what do we learn ?

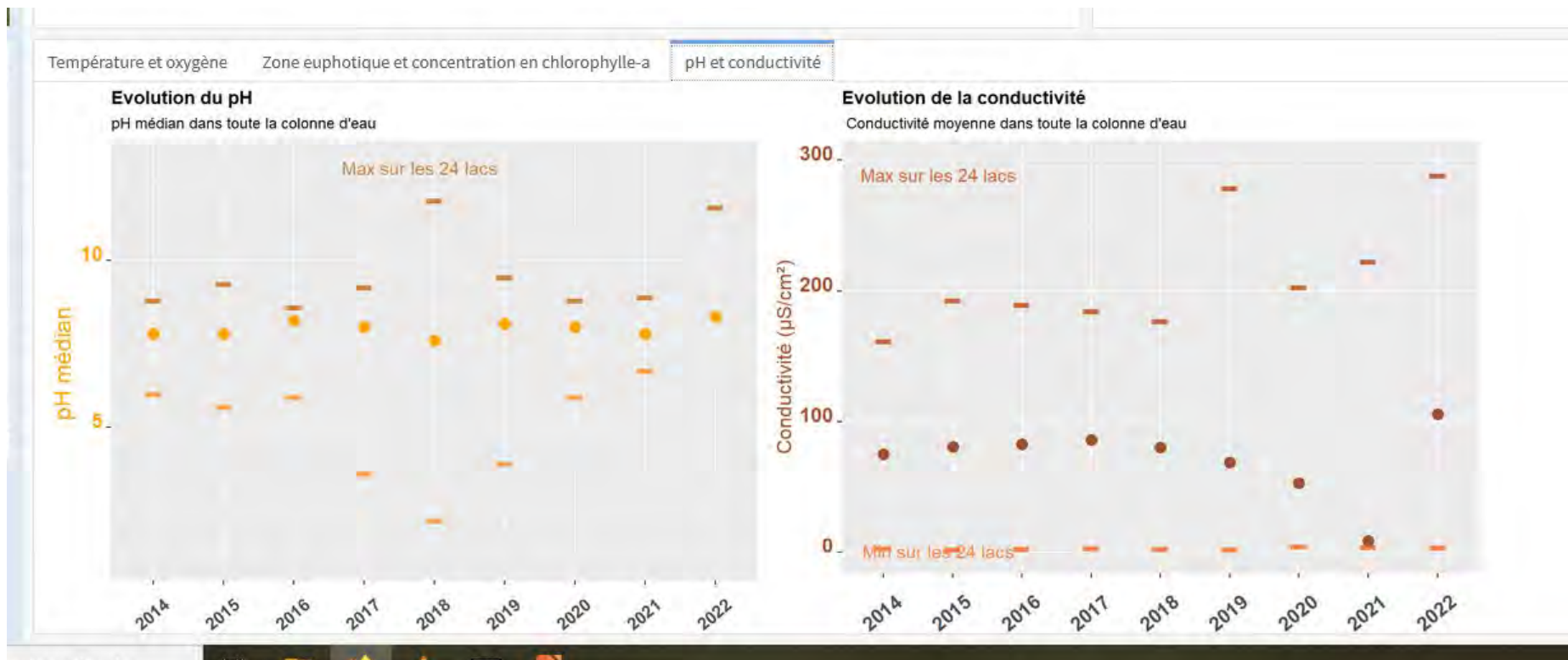


Euphotic zone

A chlorophylle



What is the point and what do we learn ?



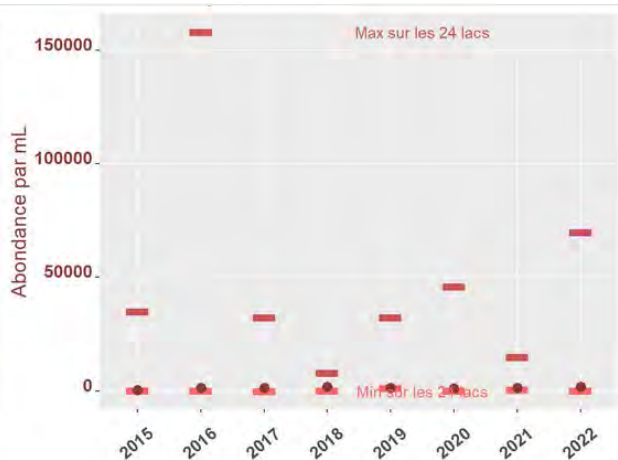
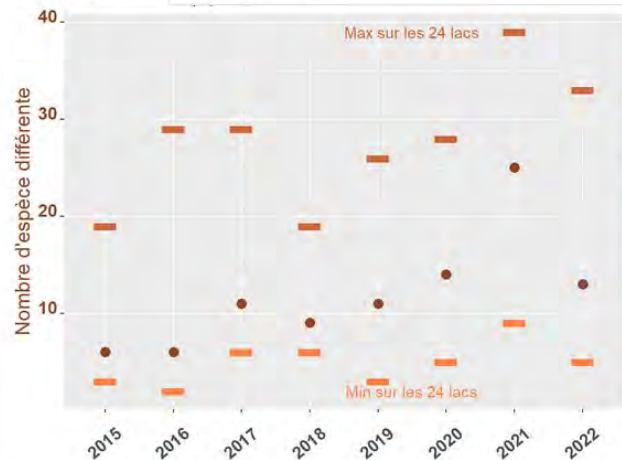
pH

Conductivity



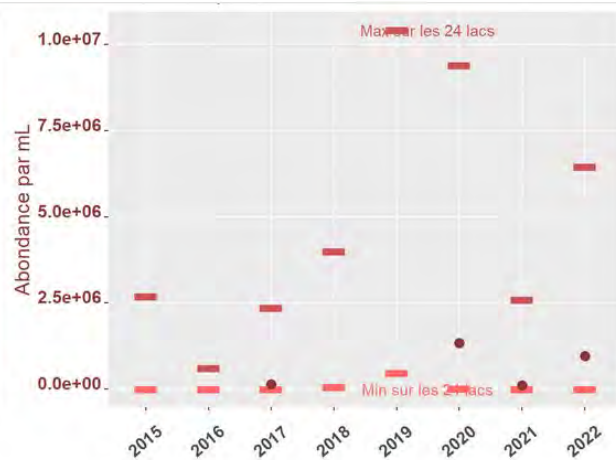
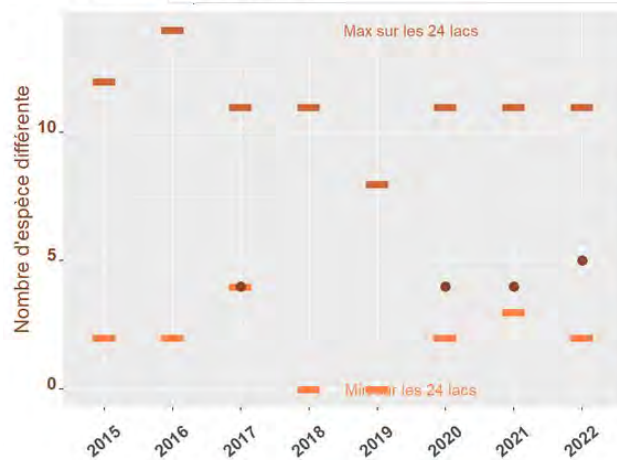
What is the point and what do we learn ?

Richesse et abondance Indices de diversité



← **Phytoplankton : richness and abundance**

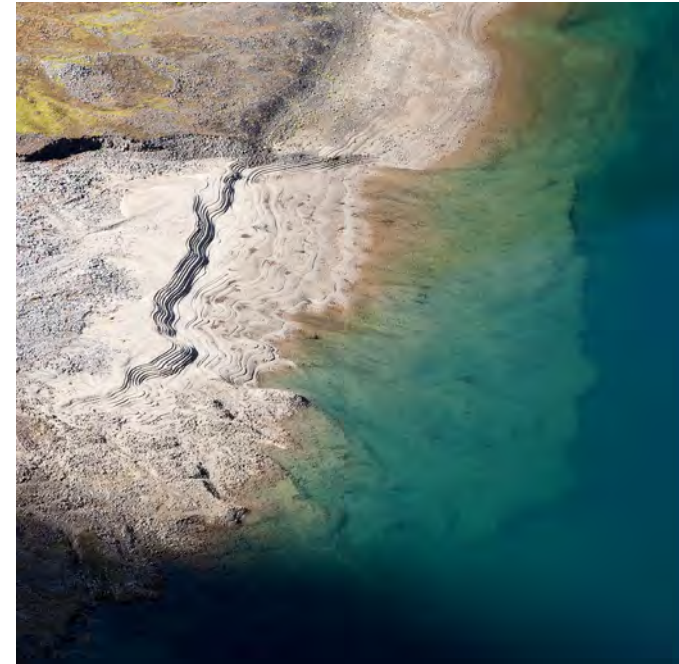
Richesse et abondance Indices de diversité



Zooplankton : richness and abundance →



Two others special lakes in the Ecrins national Park



Lauvitel lake : specific hydrology with important tidal range



Two others special lakes in the Ecrins national Park



Pavé lake : not part of the network but benefits from different monitoring (temperature, pressure, luminosity, etc), high depth (53m)



- Outil évolutif



← Educational tools

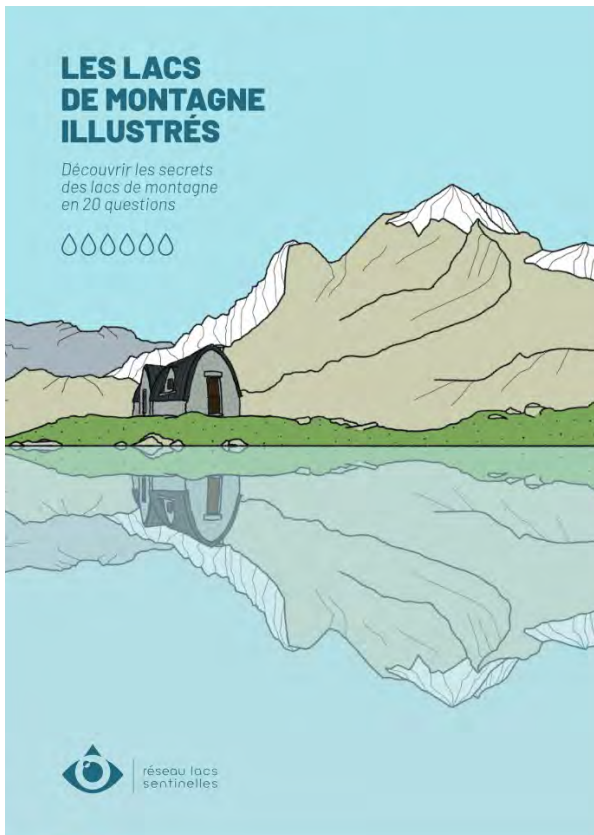
Press and medias articles →





What is the point and what do we learn ?

High mountains lakes in 20 questions : booklet and sheets





Lakes in Ecrins national park, it is also that :



What is the real impact ? And what to do ?



Lakes in Ecrins national park, it is also that :



What is the real impact ? And what to do ?

Thanks for your attention !





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To learn more, go to **<https://www.lacs-sentinelles.org/>**
and **<https://www.ecrins-parcnational.fr/>**

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