

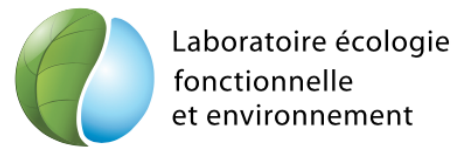


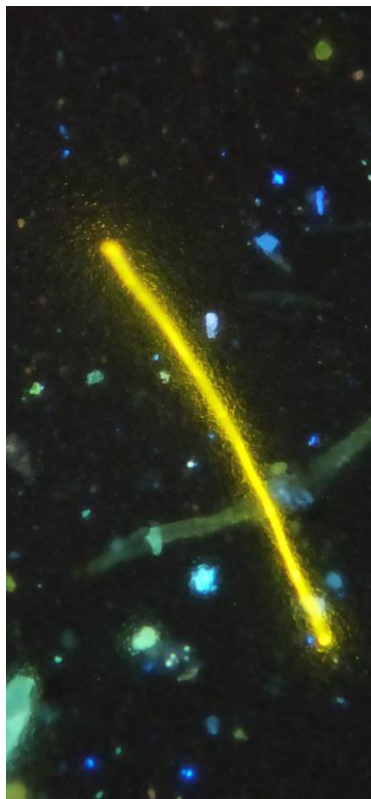
BANYULS  
11 - 12  
JANV.  
2023



# BILAN DE MASSE ET ZONE CRITIQUE DE MONTAGNE: QUANTIFICATION DANS UN BASSIN VERSANT EXPÉRIMENTAL

Gael Le Roux





Interreg  
POCTEFA  
PLASTICOPYR

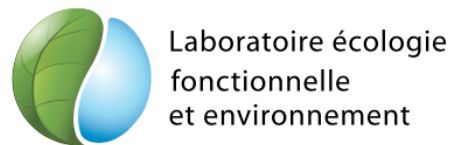


Project co-funded by the European  
Regional Development Fund  
(ERDF)

## CNRS MITI 4D $\mu$ Plast

Le Roux G., Hagelskjaer O., Margenat H., Gandois L.,  
Hansson S., Sonke J. & OHM PVC team, Plasticopyr  
team, Atmo-Plastic team

© Oskar Hagelskjaer



# Plan



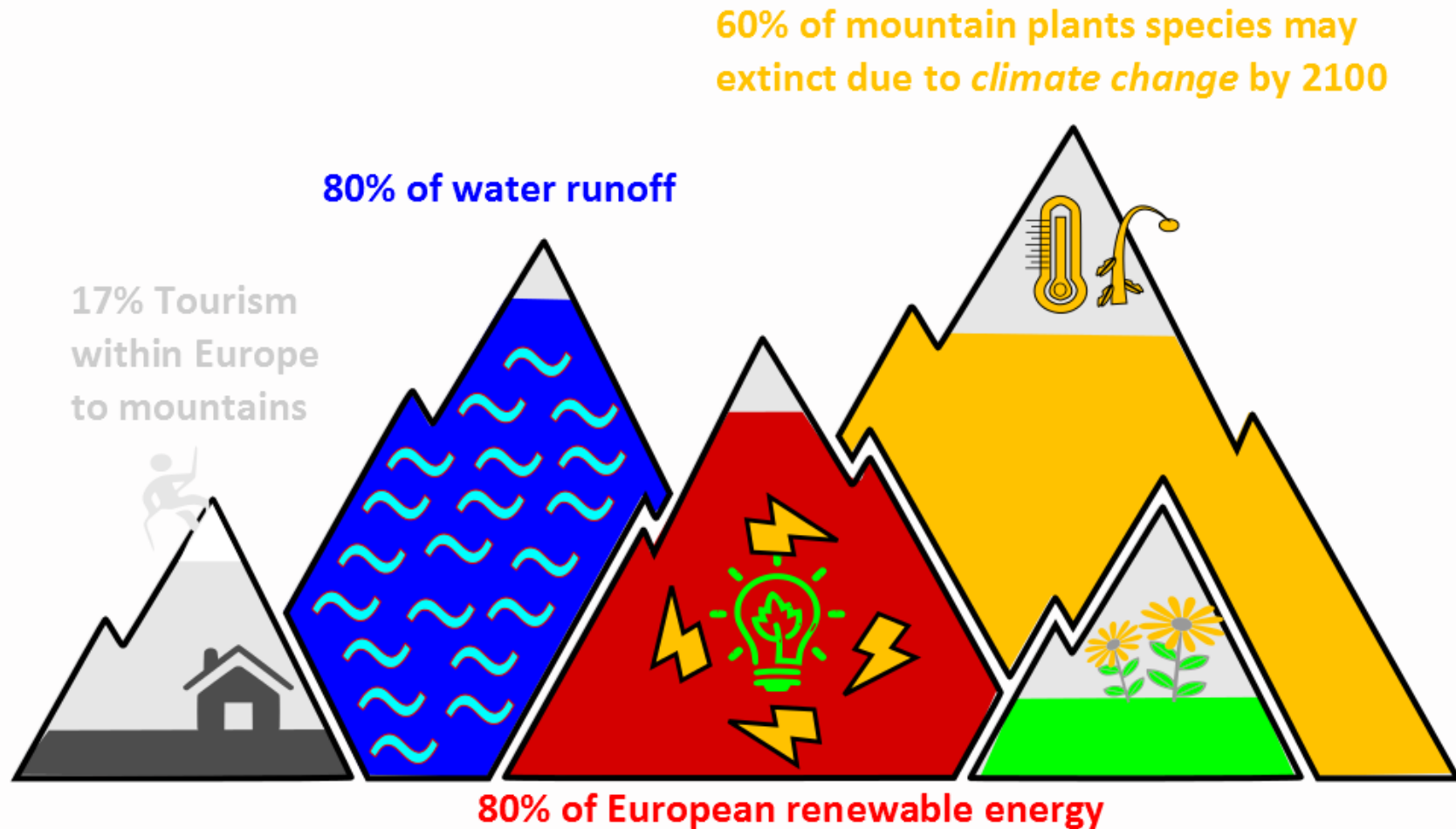
- Why mountains and plastics?
- OHM Haut-Videssos setting
- Plastic rain
- Remote transport of atmospheric plastic
- Fate of mountain microplastics in the watershed: environmental archives
  
- Fate in the biota



# Why mountains?



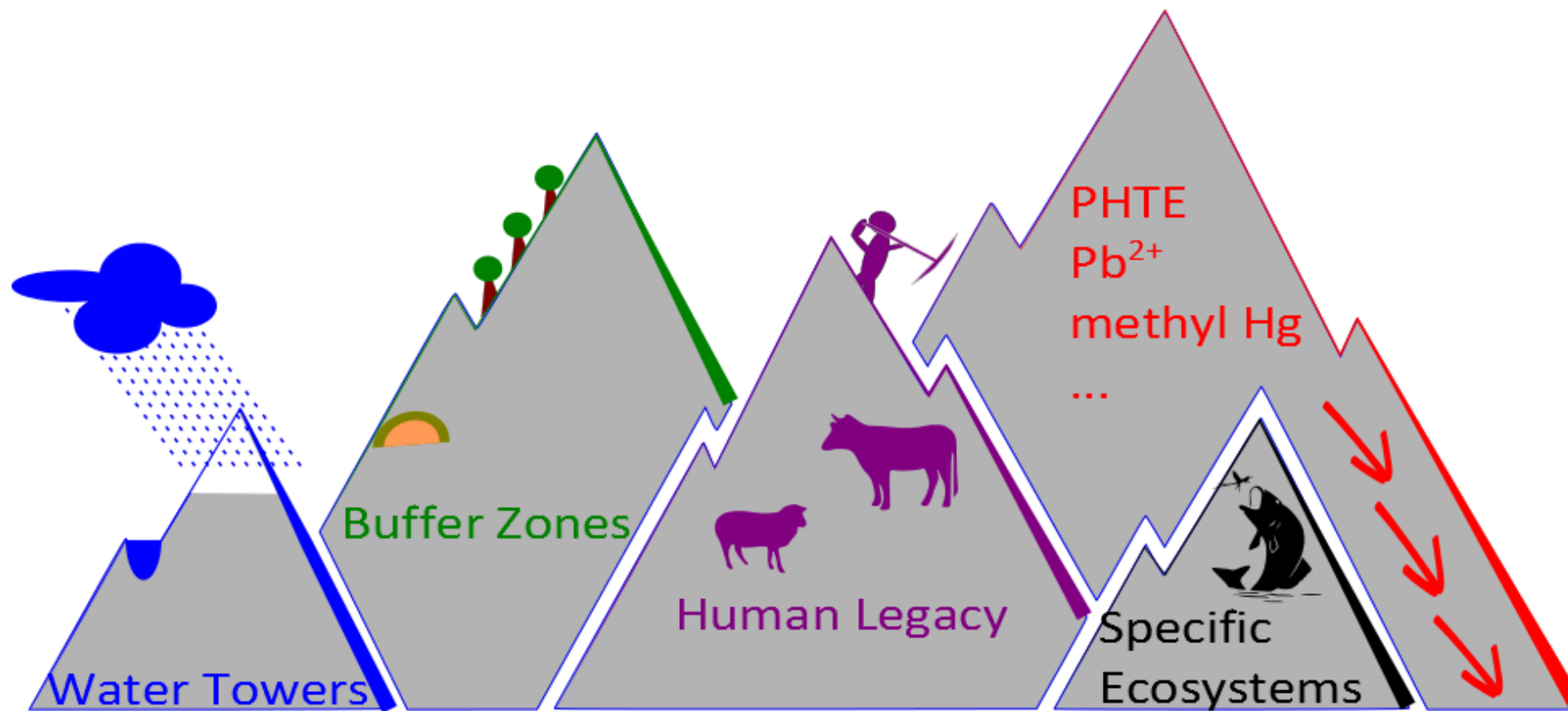
## European mountains



17% of the European population

20% of native European plant species

# The mountain critical zone is a key area





ELSEVIER












# Science of The Total Environment

Volume 853, 20 December 2022, 158611

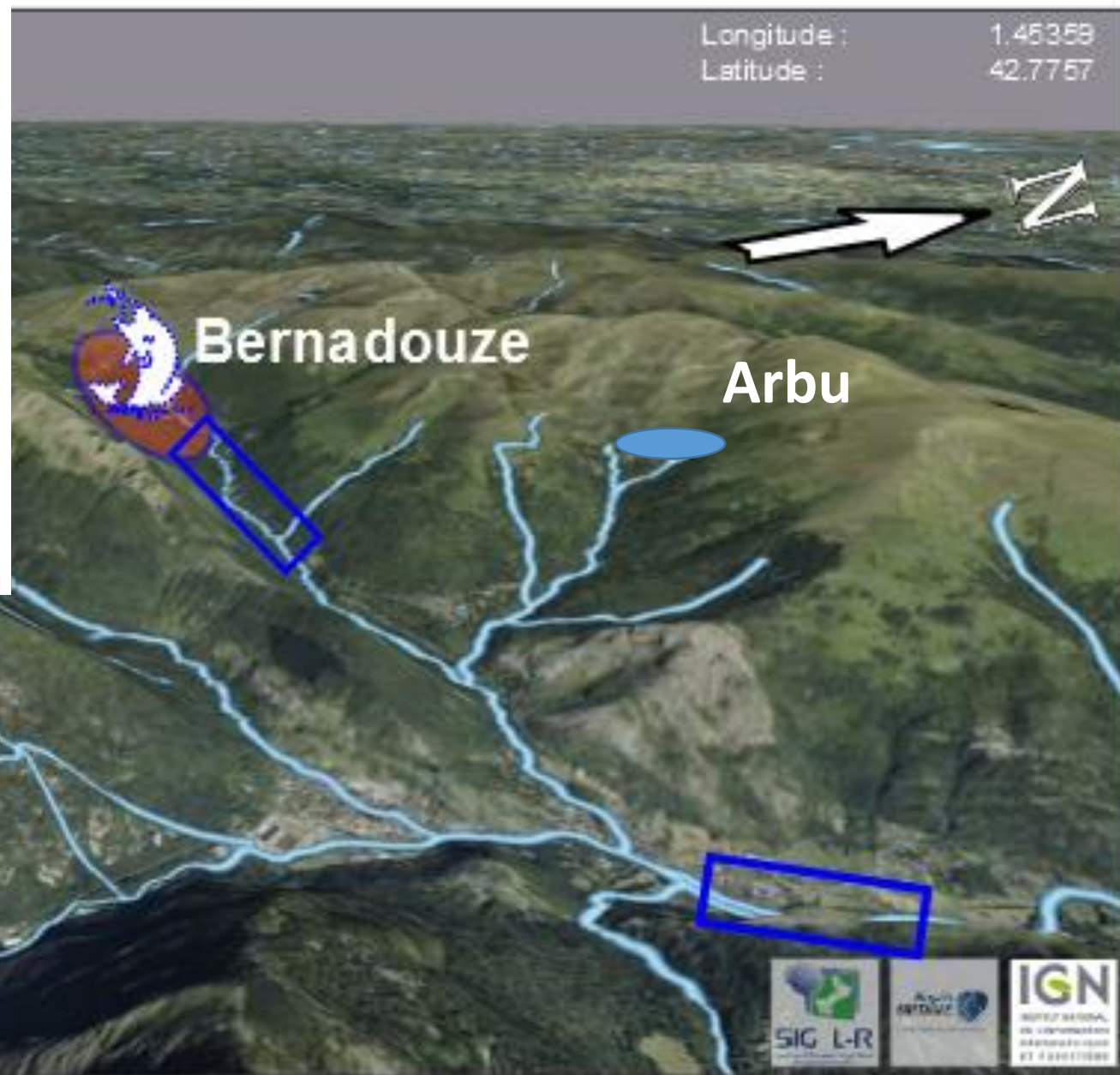
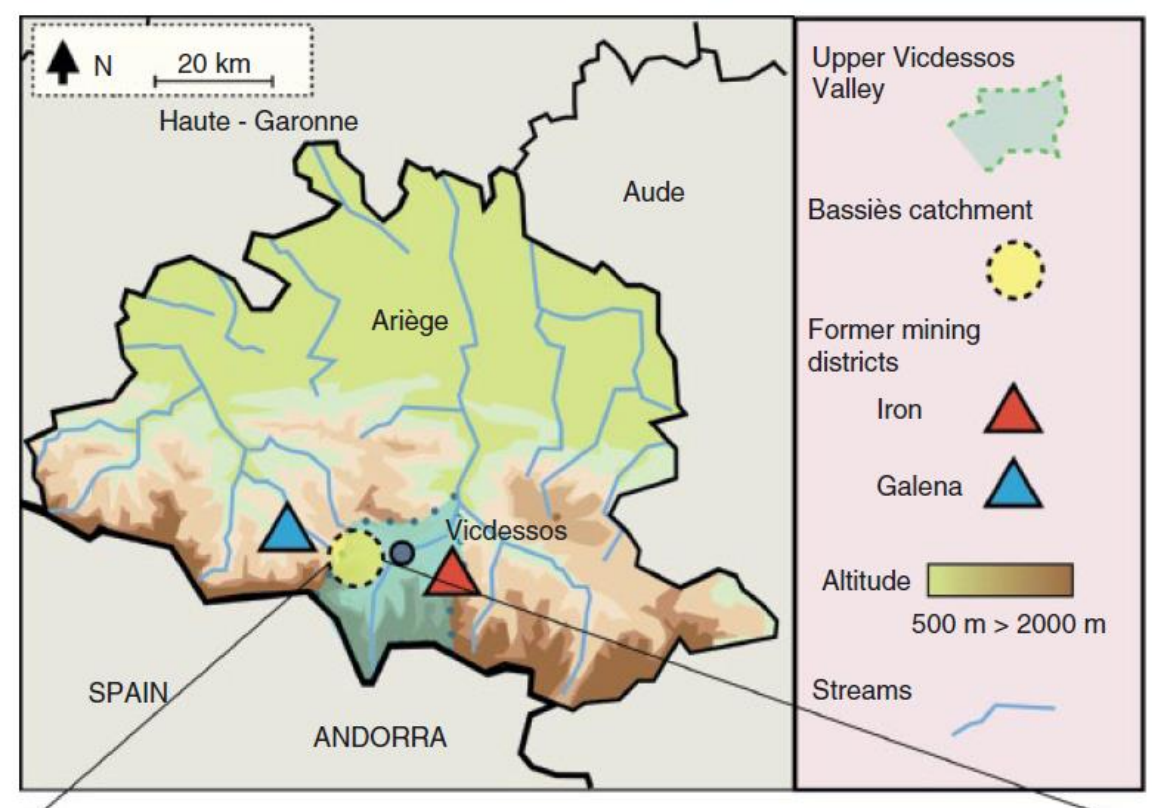


Review

## Scientists' warning of threats to mountains

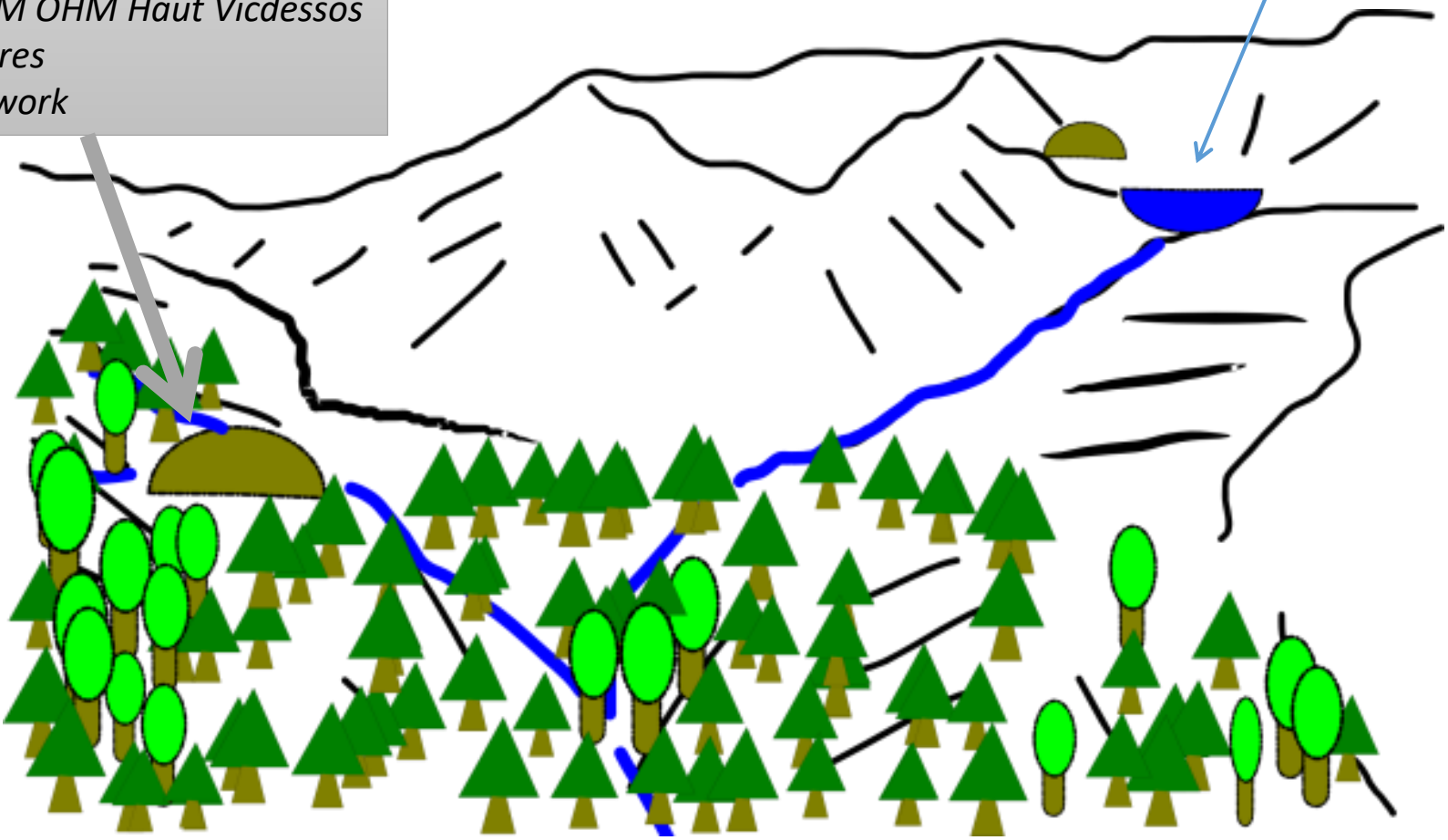
Dirk S. Schmeller <sup>a</sup>  , Davnah Urbach <sup>b</sup> , Kieran Bates <sup>c, d, e</sup> , Jordi Catalan <sup>f, g</sup>  , Dan Cogălniceanu <sup>h</sup>, Matthew C. Fisher <sup>d</sup> , Jan Friesen <sup>i</sup> , Leopold Füreder <sup>j</sup> , Veronika Gaube <sup>k</sup> , Marilen Haver <sup>a</sup> , Dean Jacobsen <sup>l</sup> , Gael Le Roux <sup>a</sup> , Yu-Pin Lin <sup>m</sup> , Adeline Loyau <sup>a</sup> , Oliver Machate <sup>i</sup>, Andreas Mayer <sup>k</sup> , Ignacio Palomo <sup>n</sup> , Christoph Plutzer <sup>k</sup>   
... William J. Ripple <sup>p</sup> 



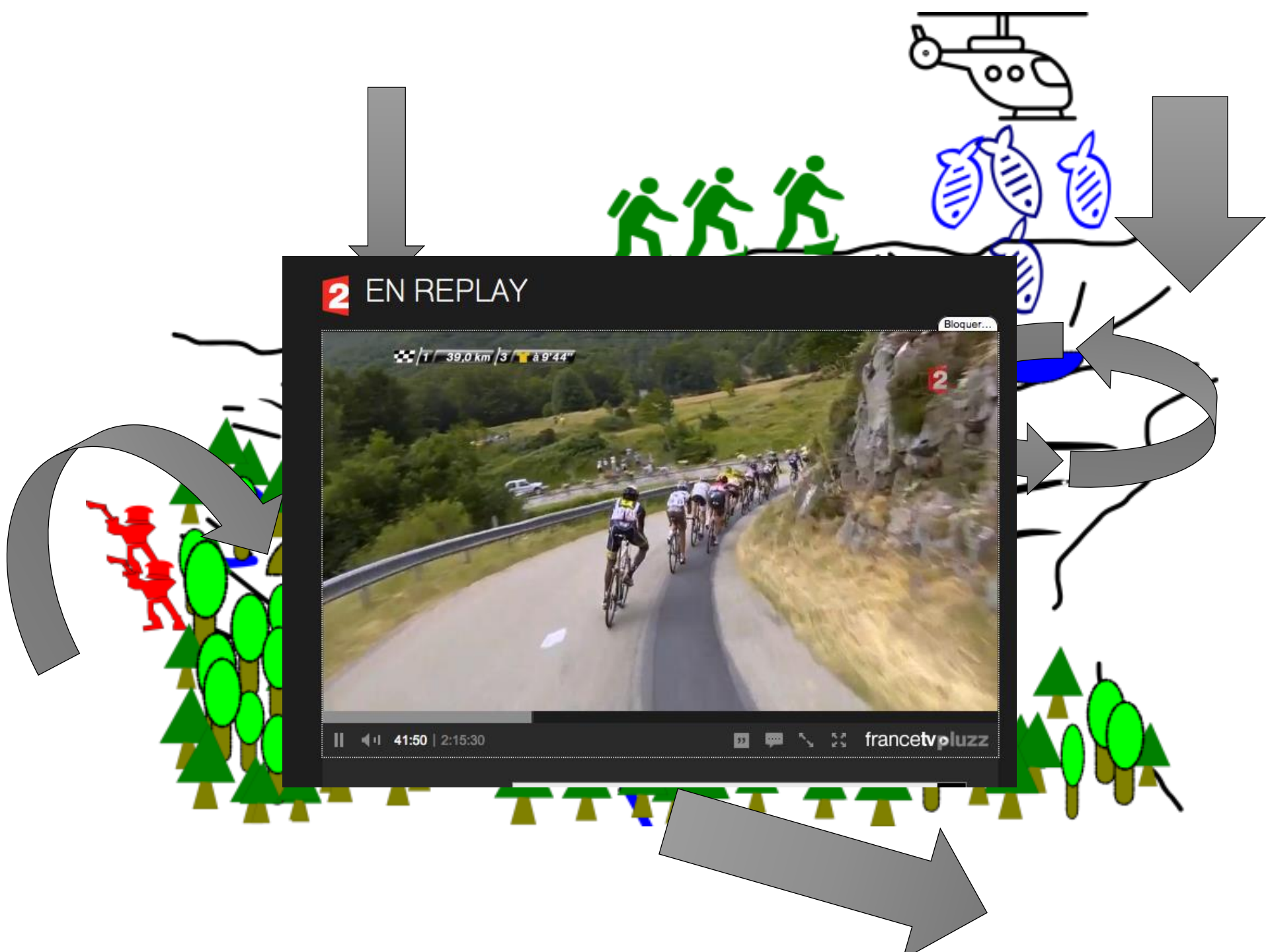


*Tourbière de Bernadouze  
Labex DRIHM OHM Haut Vicdessos  
SNO Tourbières  
REPLIM Network*

*Lac d'Arbu  
Labex DRIHM OHM Haut Vicdessos  
REPLIM Network*





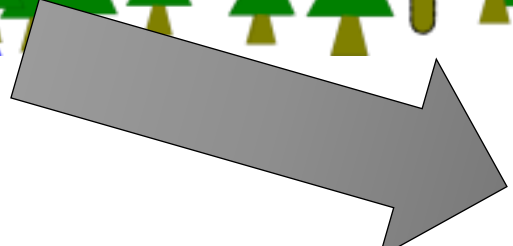
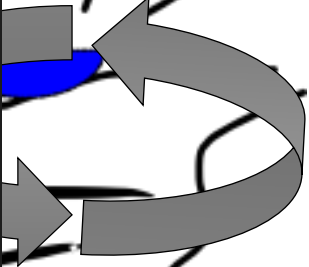
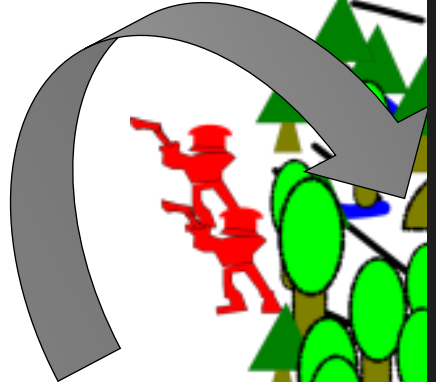
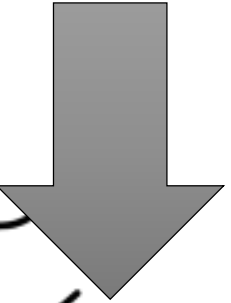
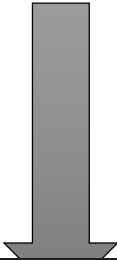
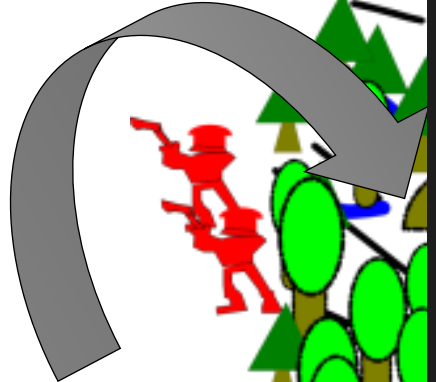


2 EN REPLAY

39,0 km / 3 à 9'44''

41:50 | 2:15:30

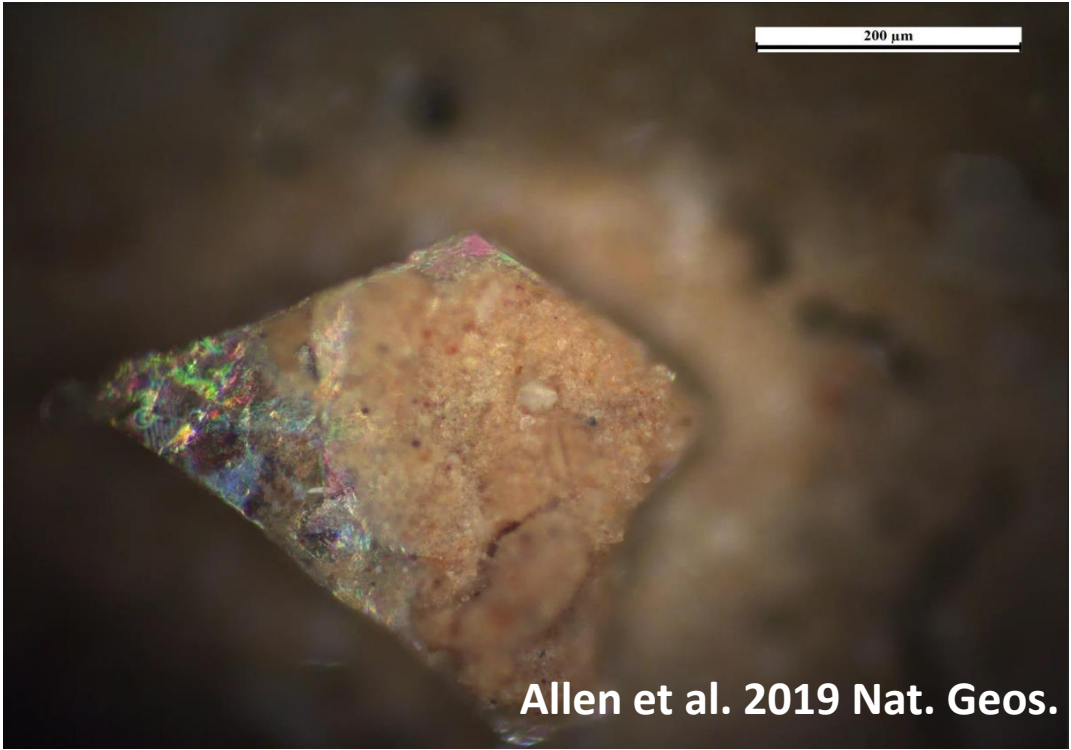
francetvpluzz



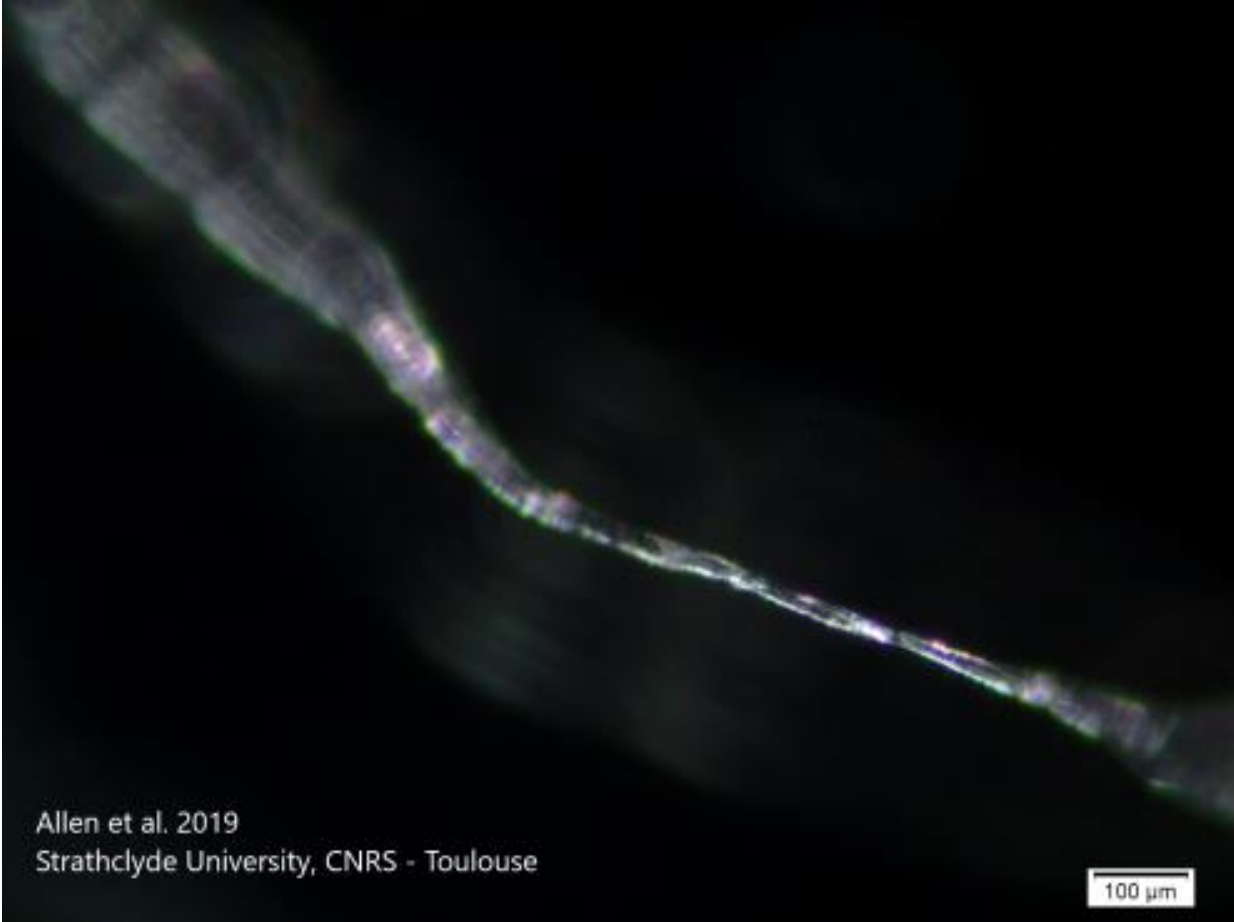
Pneu à Bernadouze, 25/05/2021 L. Gandois



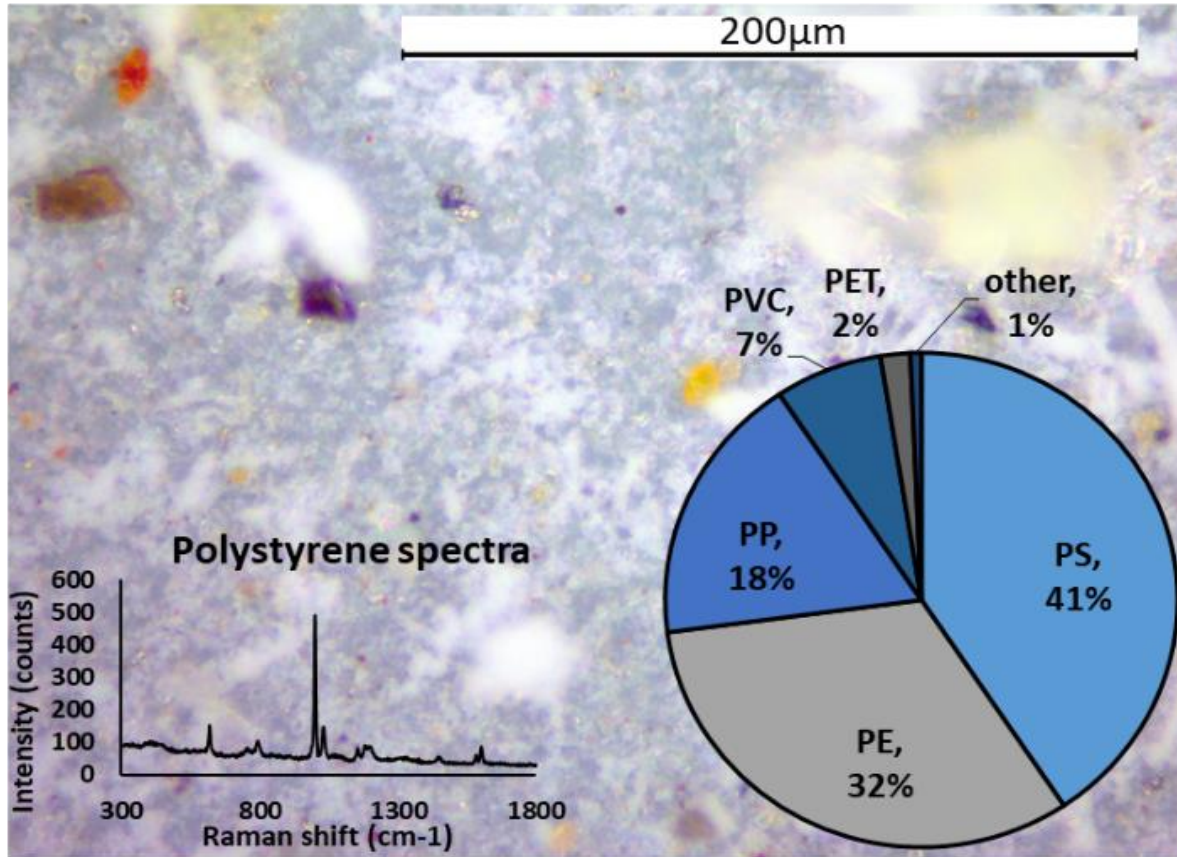




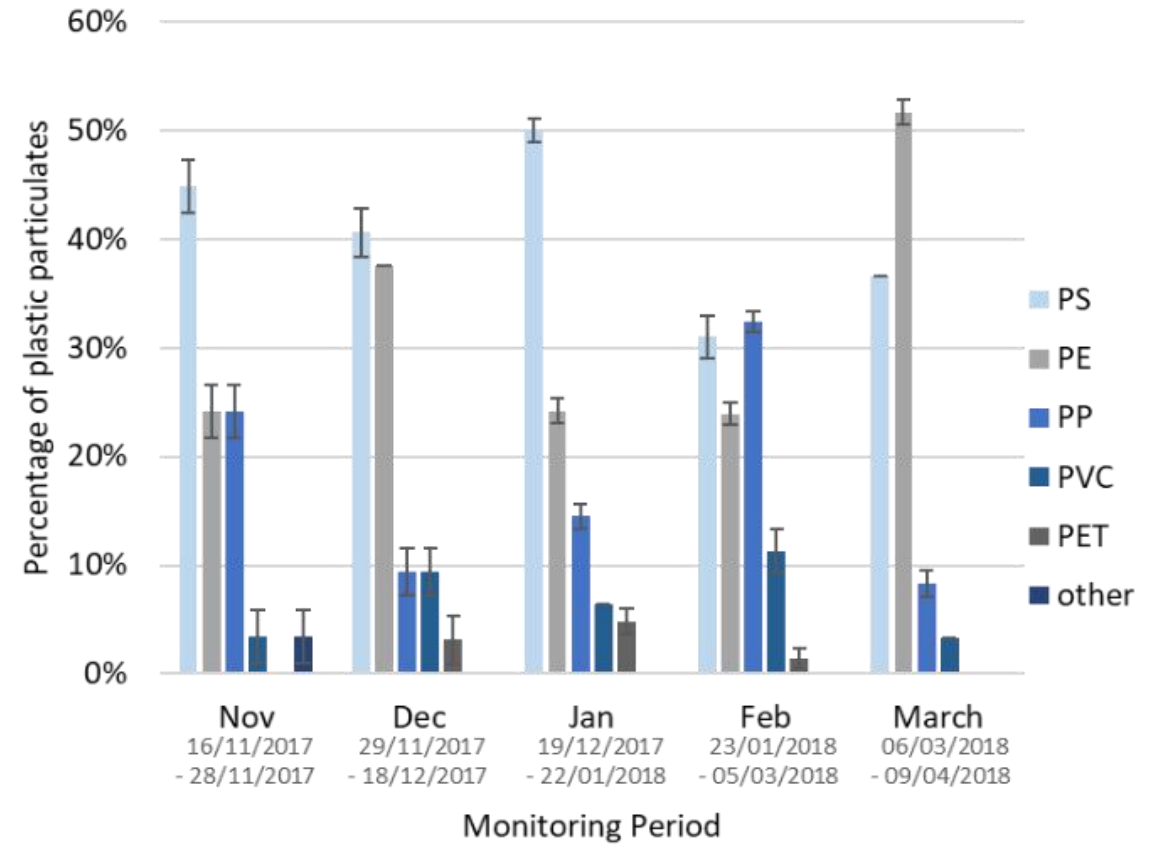




# Bernadouze, Ariège – type de plastiques

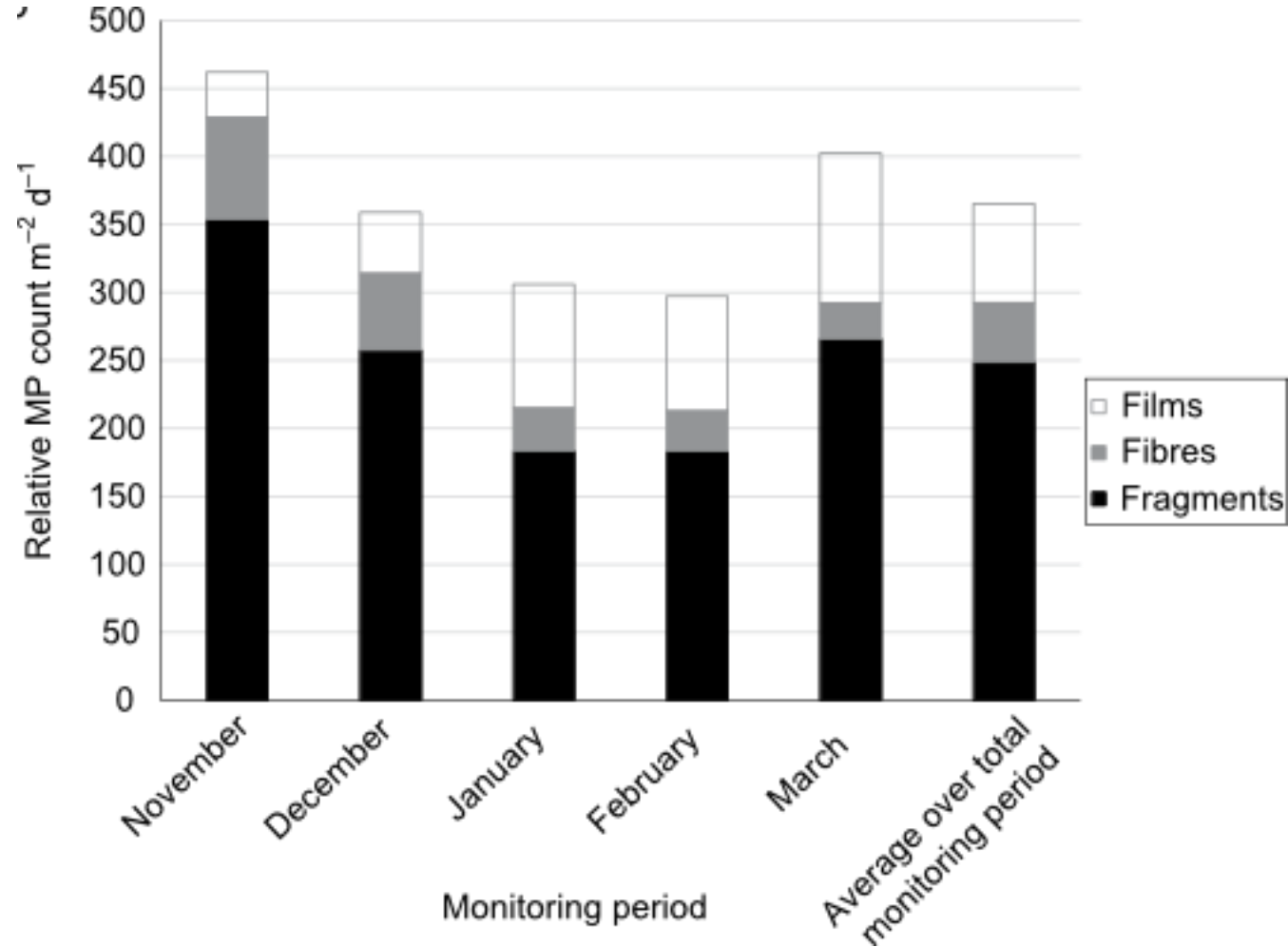


Monthly disaggregation of plastic types identified



Allen et al. 2019 Nat. Geos.

# Bernadouze, Ariège: intensité du dépôt



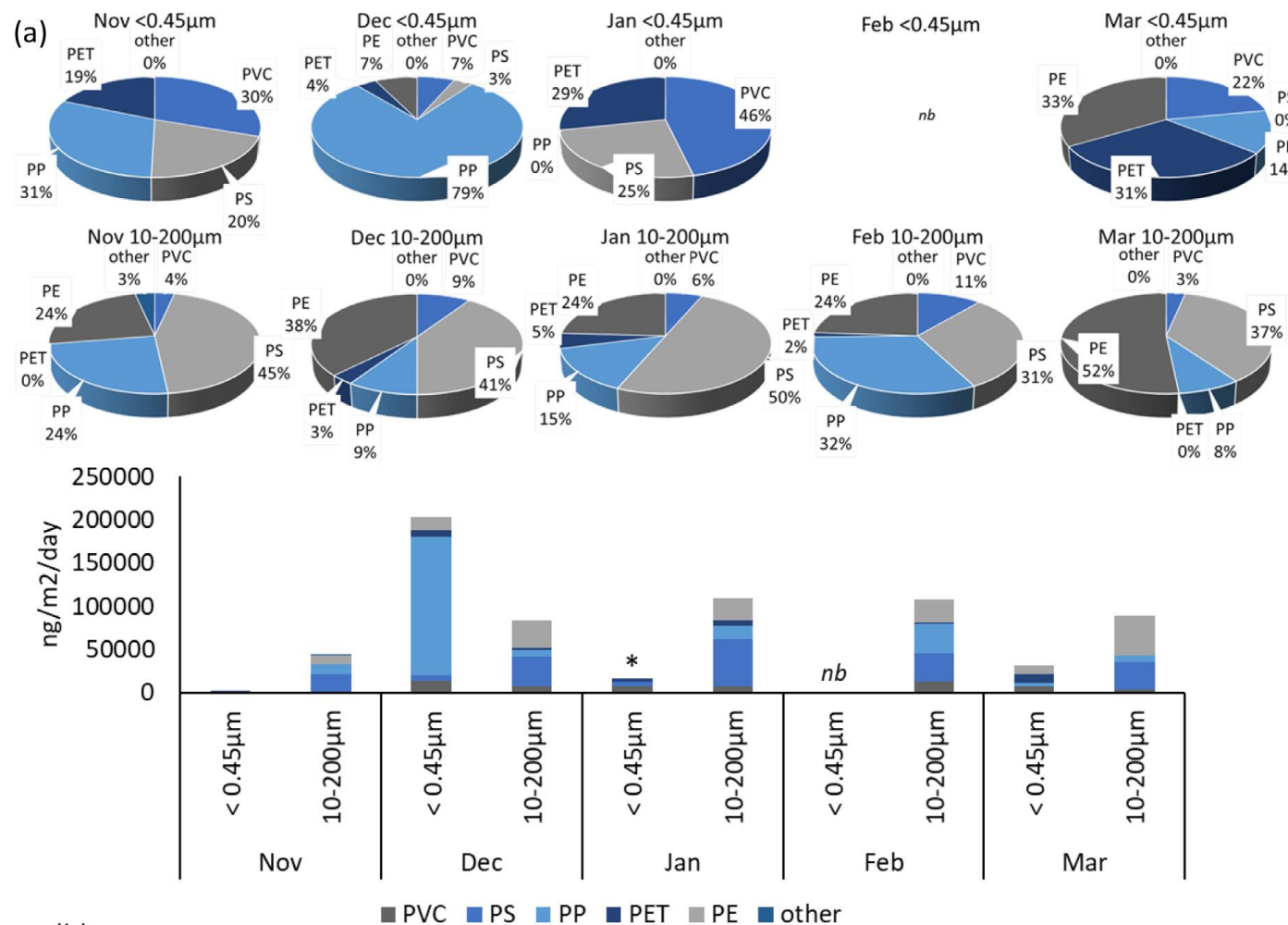
Allen et al., Nature Geoscience 2019



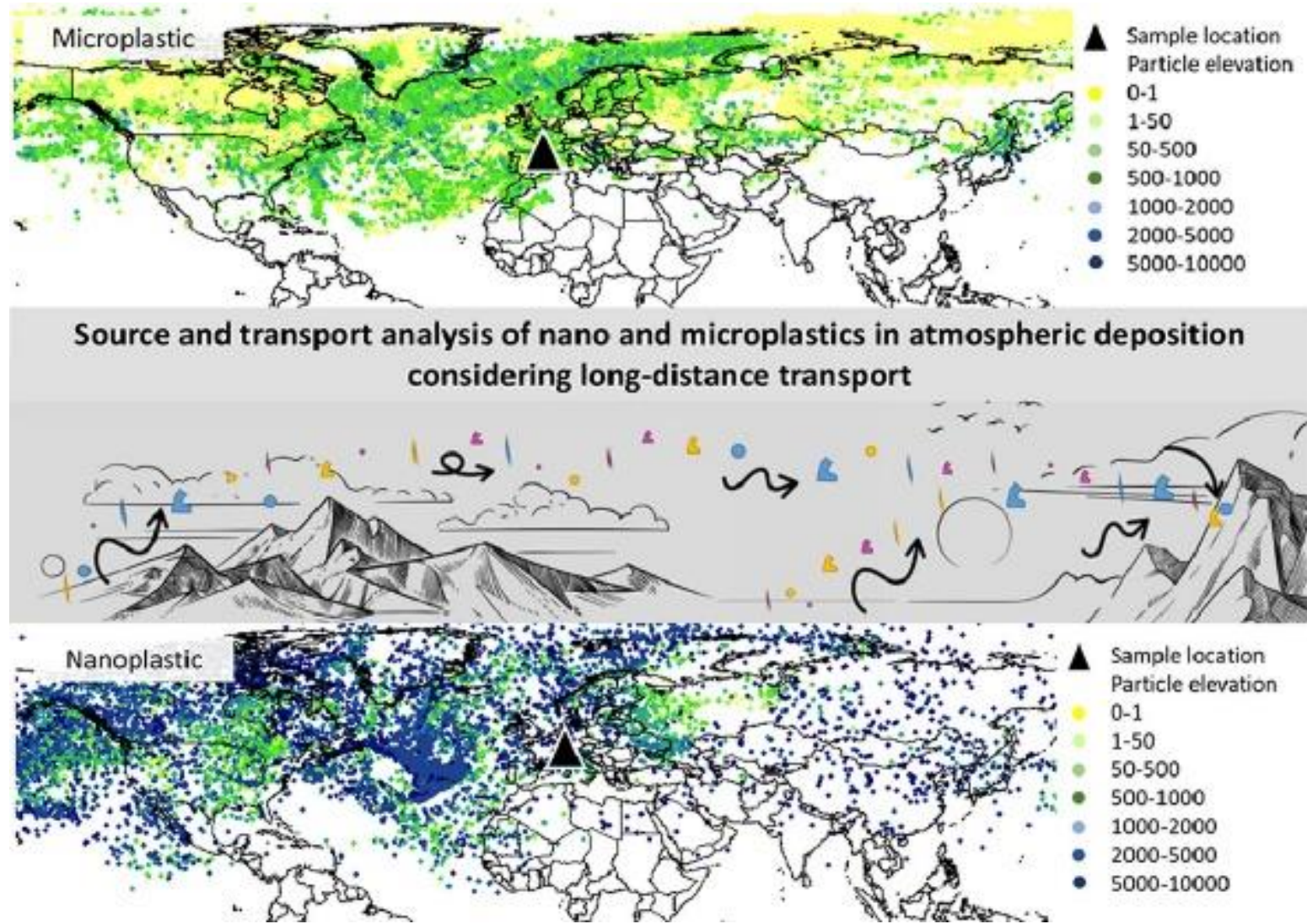
# Nanoplastics in Bernadouze rain and snow



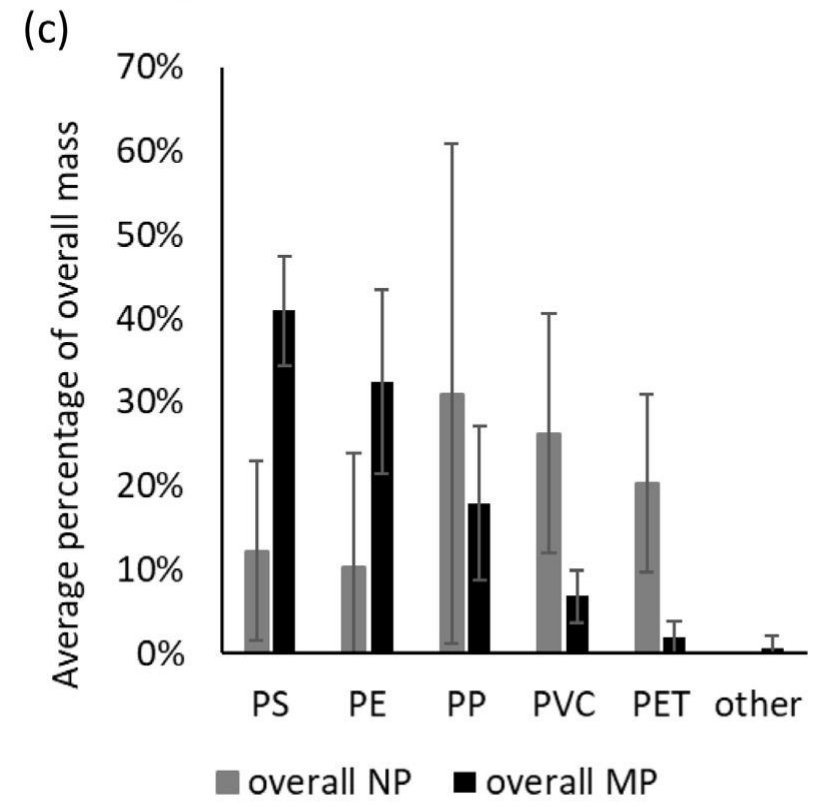
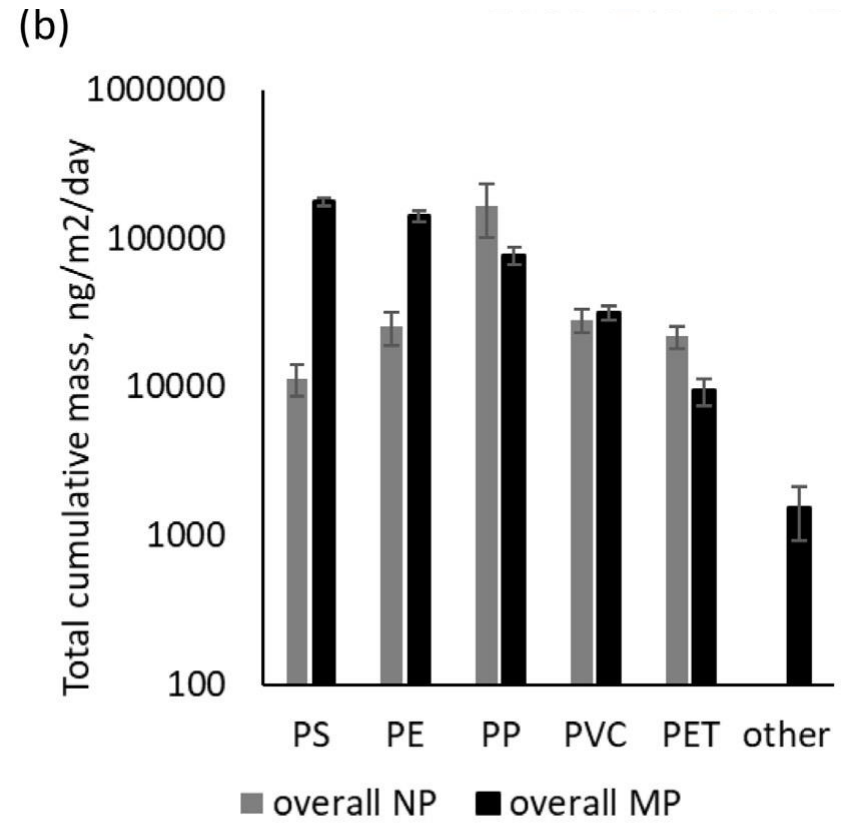
TD-PTR-MS



# Sources of NP and MP in Bernadouze rain

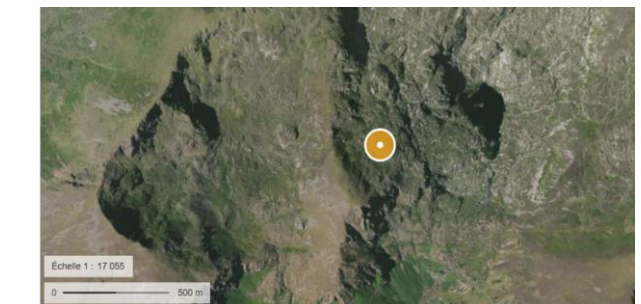


# Nanoplastics vs microplastics in rain

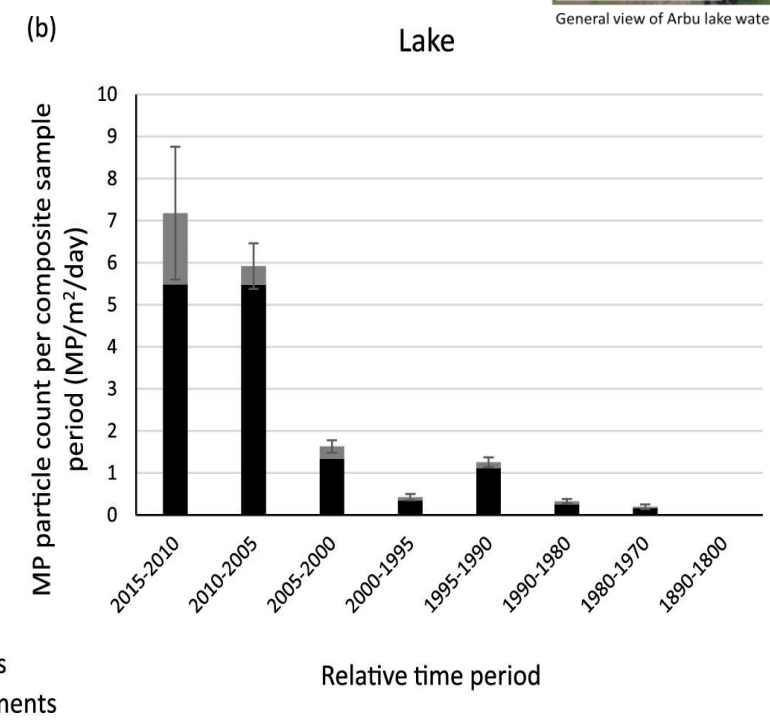
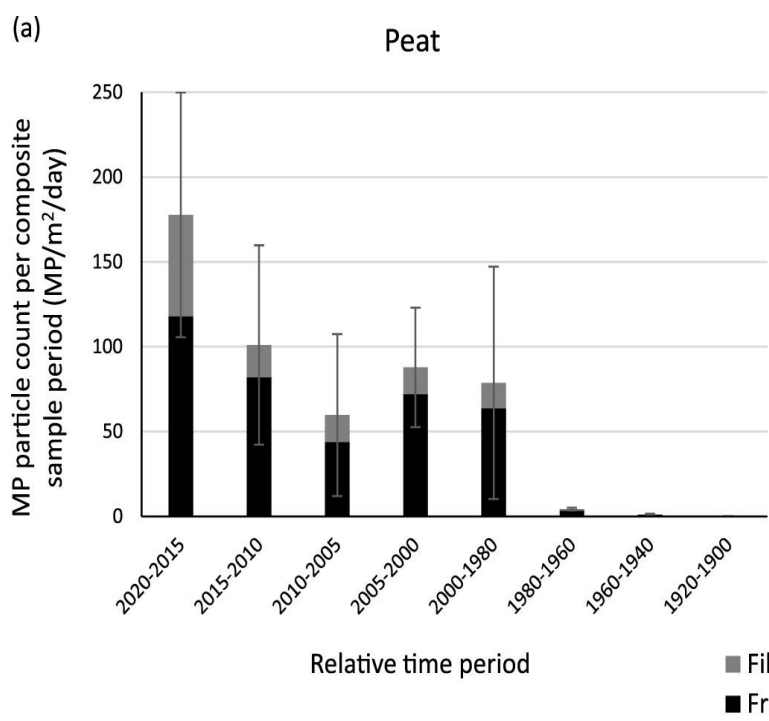


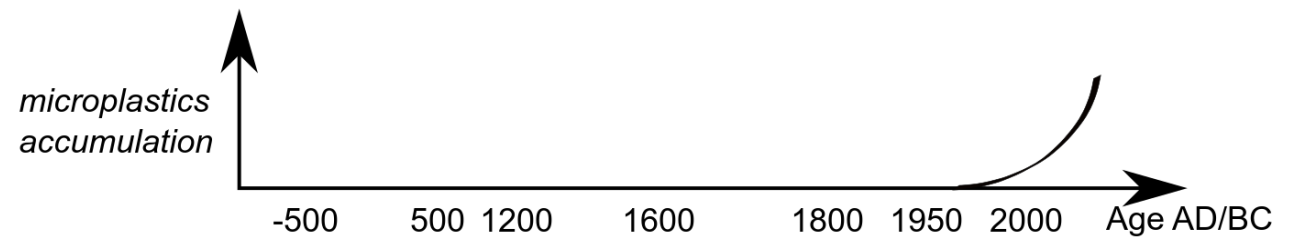
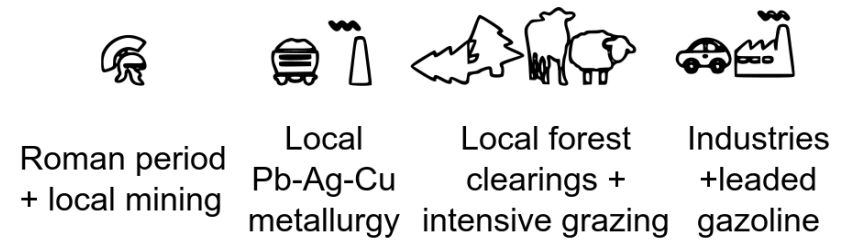
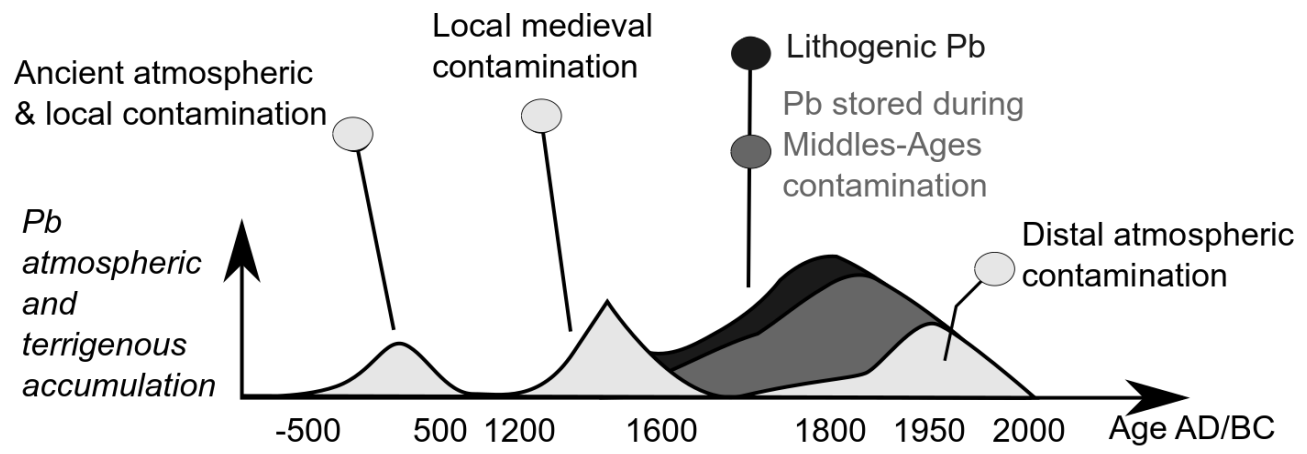


# Peat and lake records of microplastics

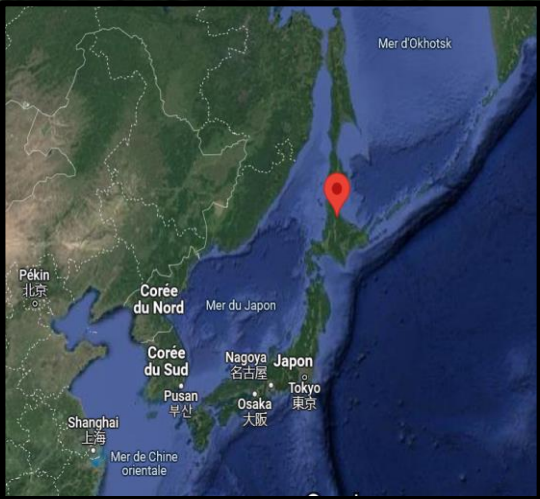


General view of Arbu lake watershed (aerial photo 2019- Geoportail IGN)









長寿の鐘

えぞ松沼

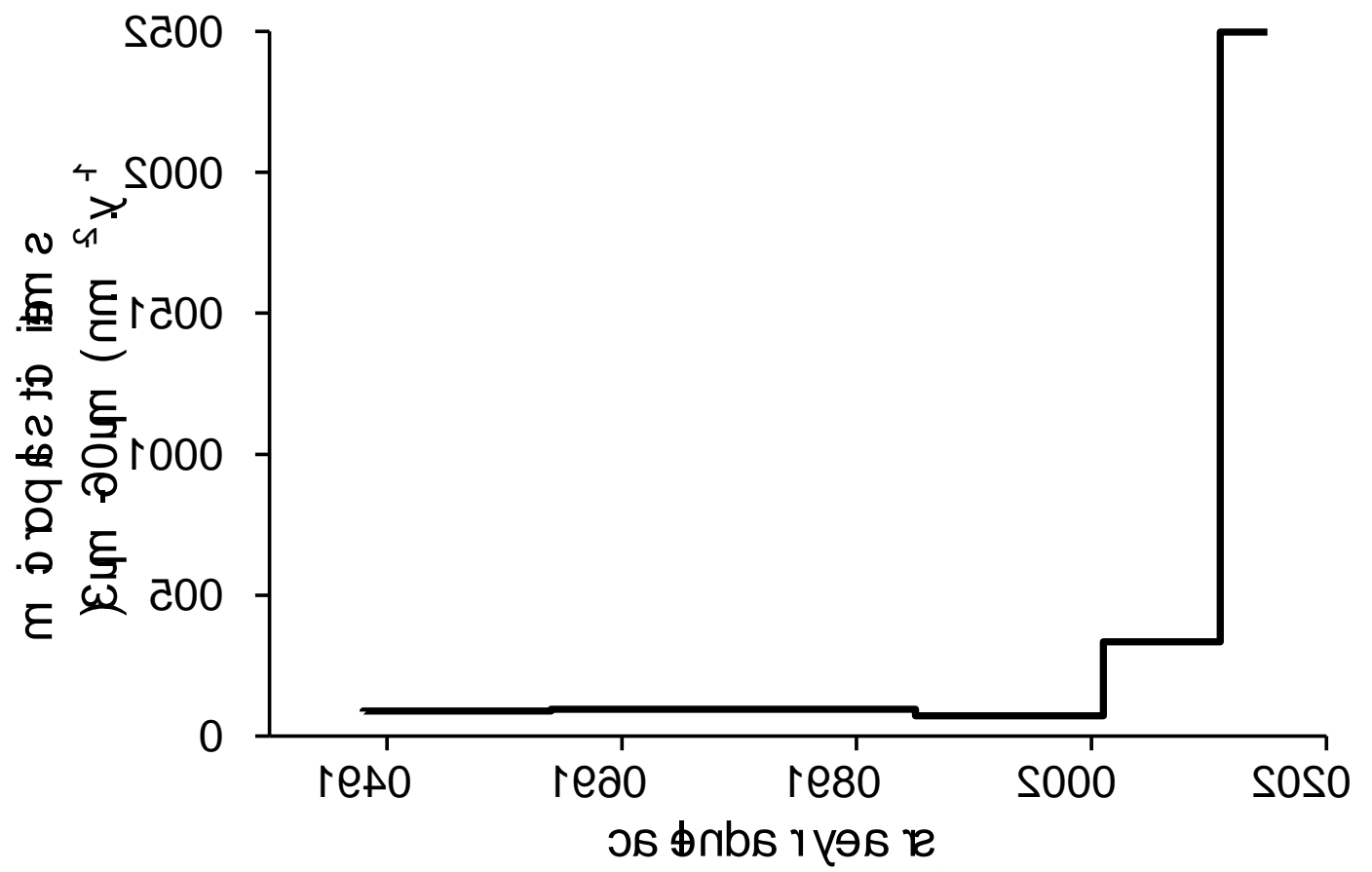
Bifuka Matsuyama  
Wetlands  
松山湿原

はいまつ沼



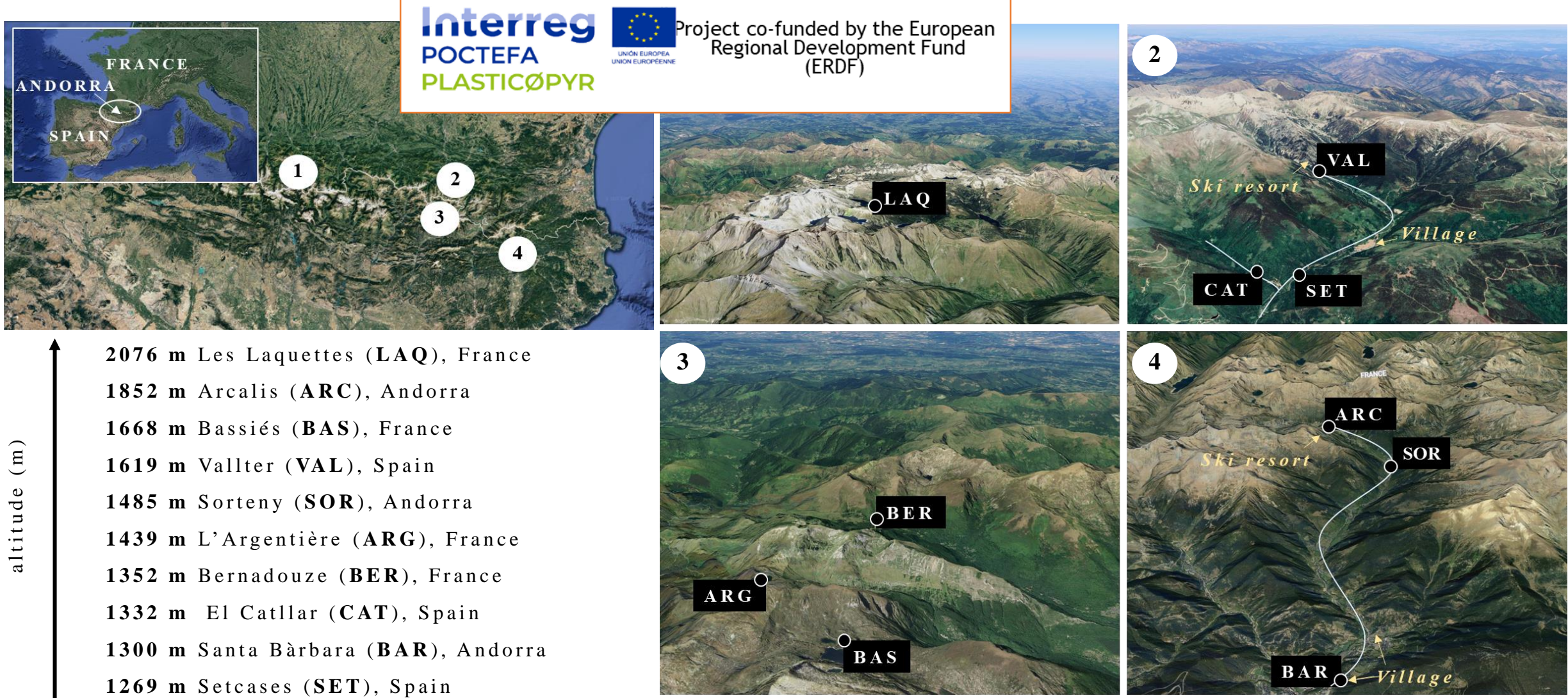


# Japan MP peat archive



O. Hagelskjaer PhD





**Figure 1.** Location of the four Pyrenees regions sampled for the present study. Sites located in (1) and (2) regions are part of France, while (3) is Andorra and (4) in Spain. We selected different sites according their altitude (m) or the presence or absence of local human impacts (i.e., ski resorts, villages).

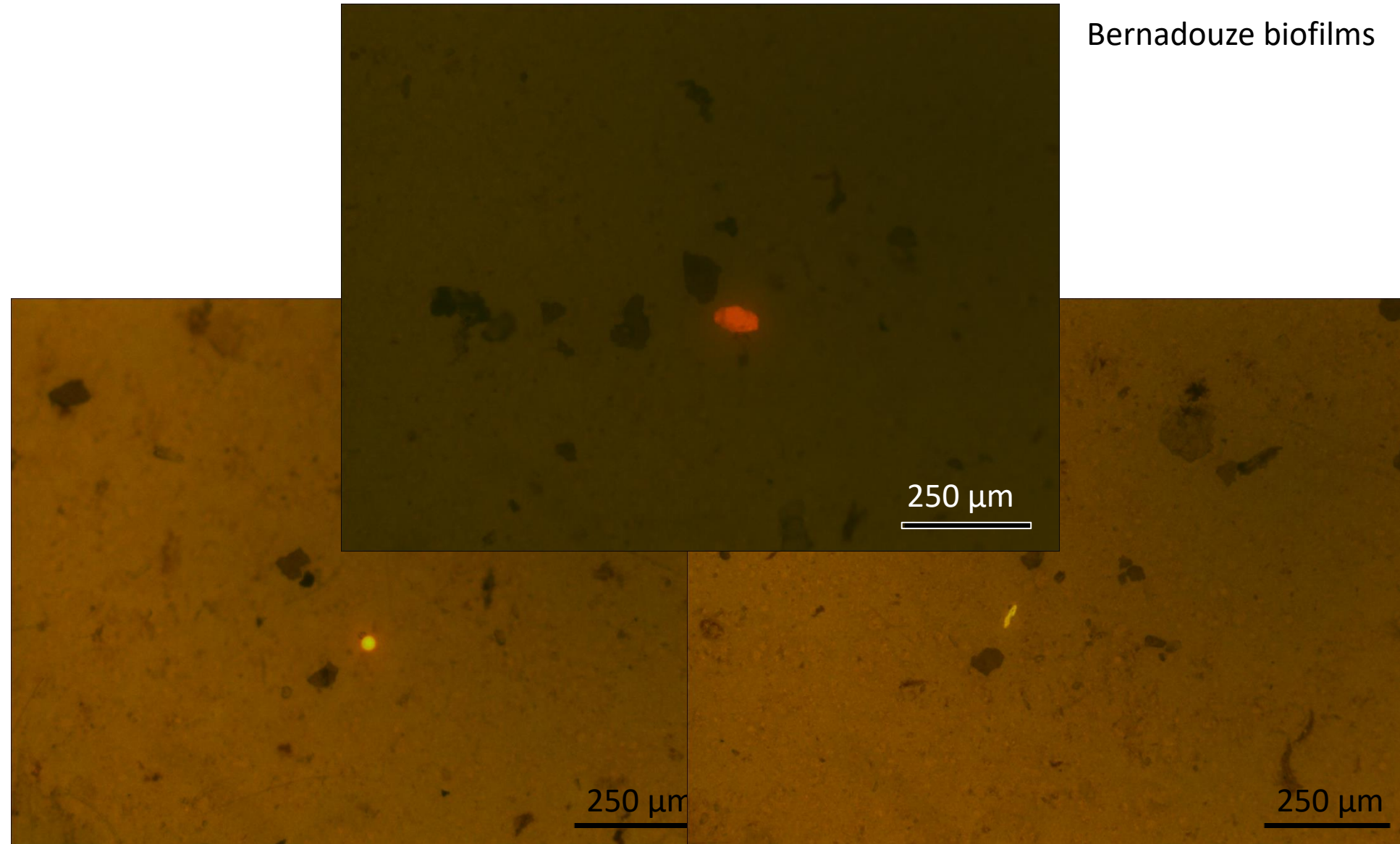


# Mountain Aquatic Bio-indicators

## H. Margenat PhD



*MP found in the digestive tract of Andorran trout.*  
*Source: M. Butler-Margalef*



Bernadouze biofilms

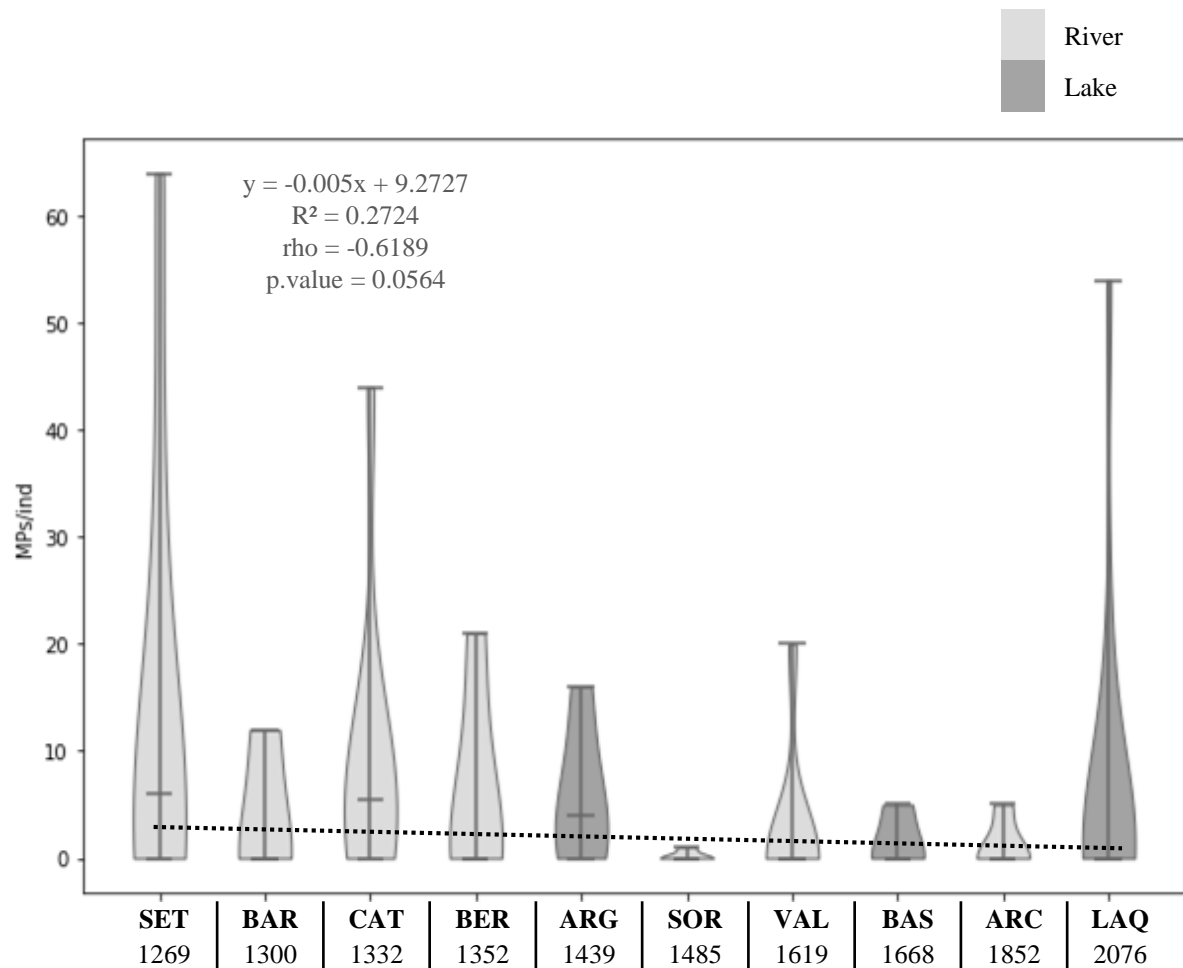


# Trouts vs. sediments

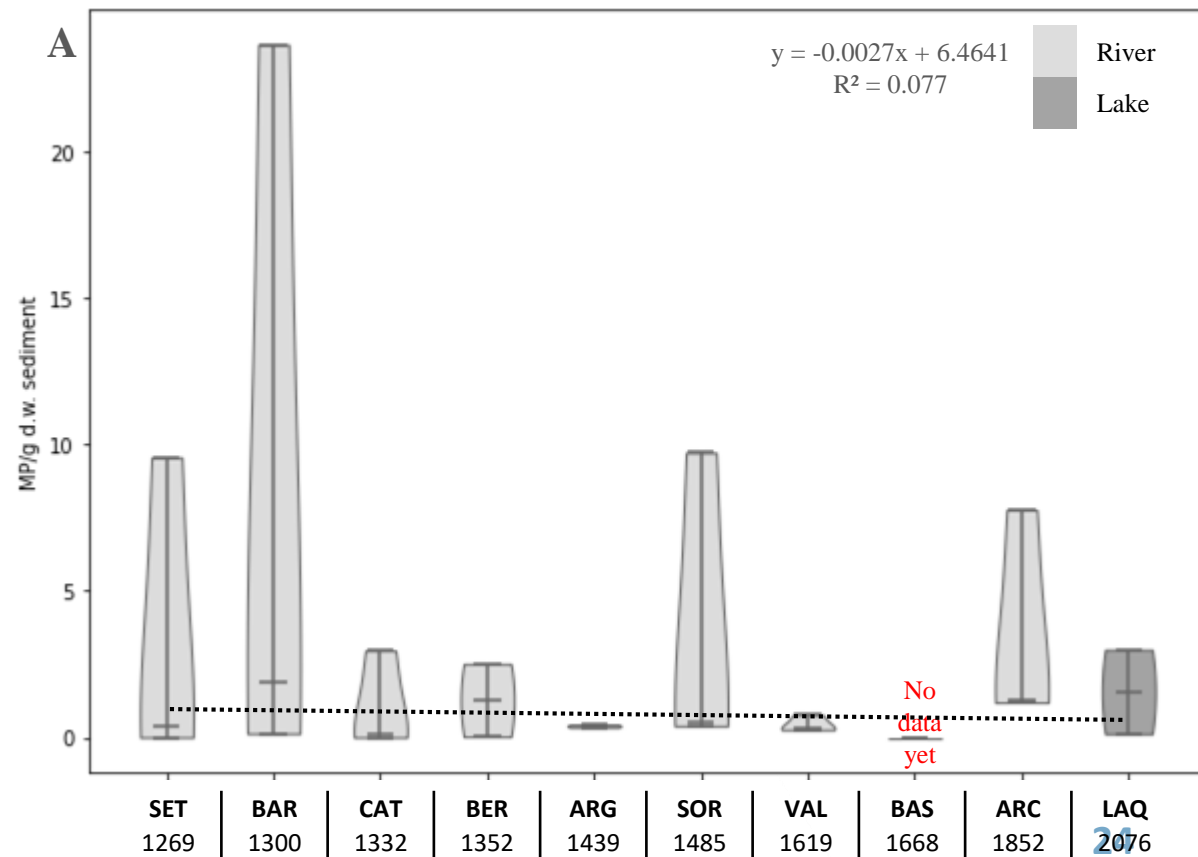
## H. Margenat PhD



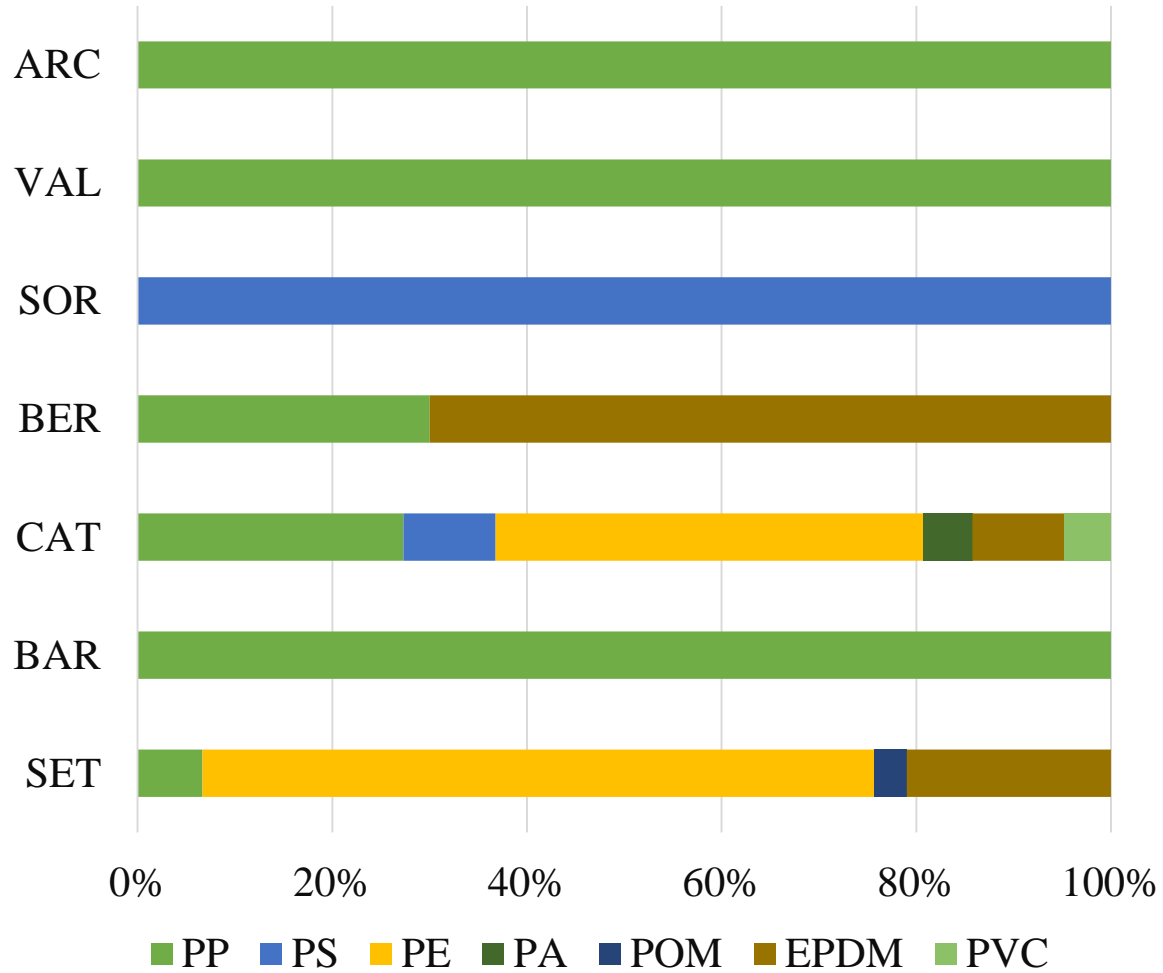
### In trouts



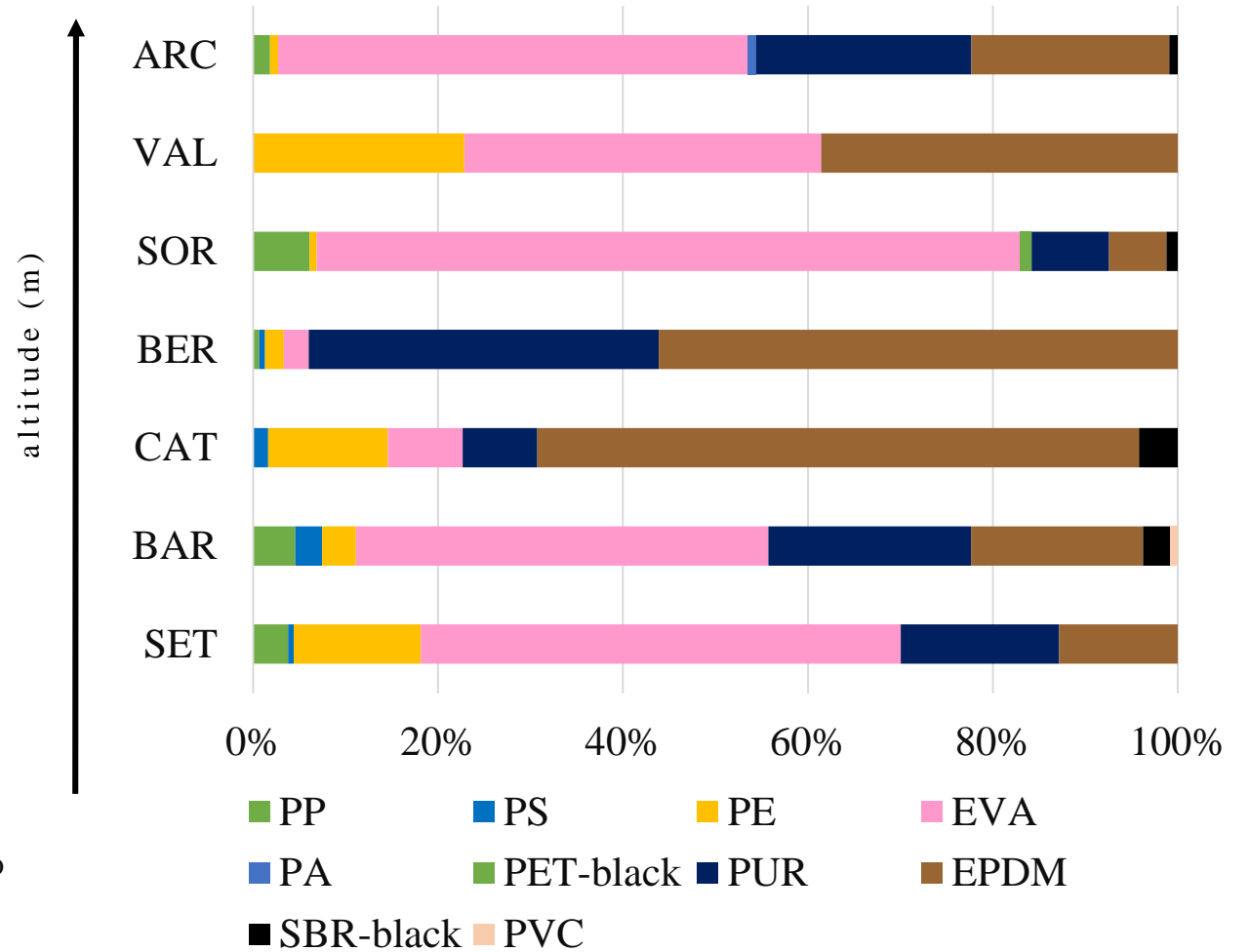
### In sediment



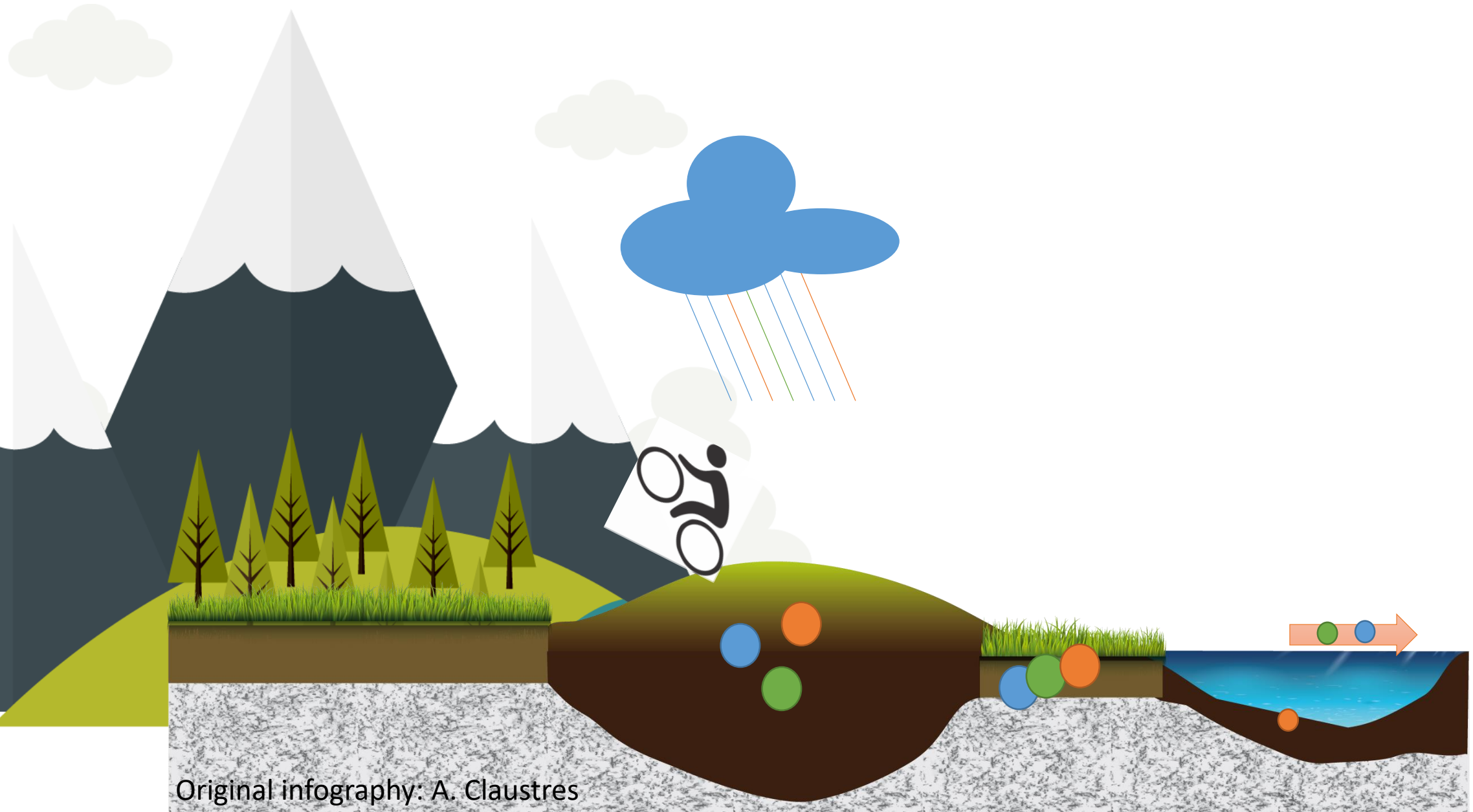
### FISH



### SEDIMENTS



altitude (m) ↑



Original infography: A. Claustres



...to be continued

