

**One Mediterranean:**  
practices, results and strategies for a common Sea

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*BlueMed CSA Final Conference*  
Feb. 22-24, 2021

# **SNAPSHOT**

## **Synoptic Assessment of Human Pressures on key Mediterranean Hot Spots**

*Pandemic and post-pandemic marine environment  
at a glance*

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**blue****med**

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Research and Innovation  
for blue jobs and growth  
in the Mediterranean Area

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# MAIN GOALS OF SNAPSHOT

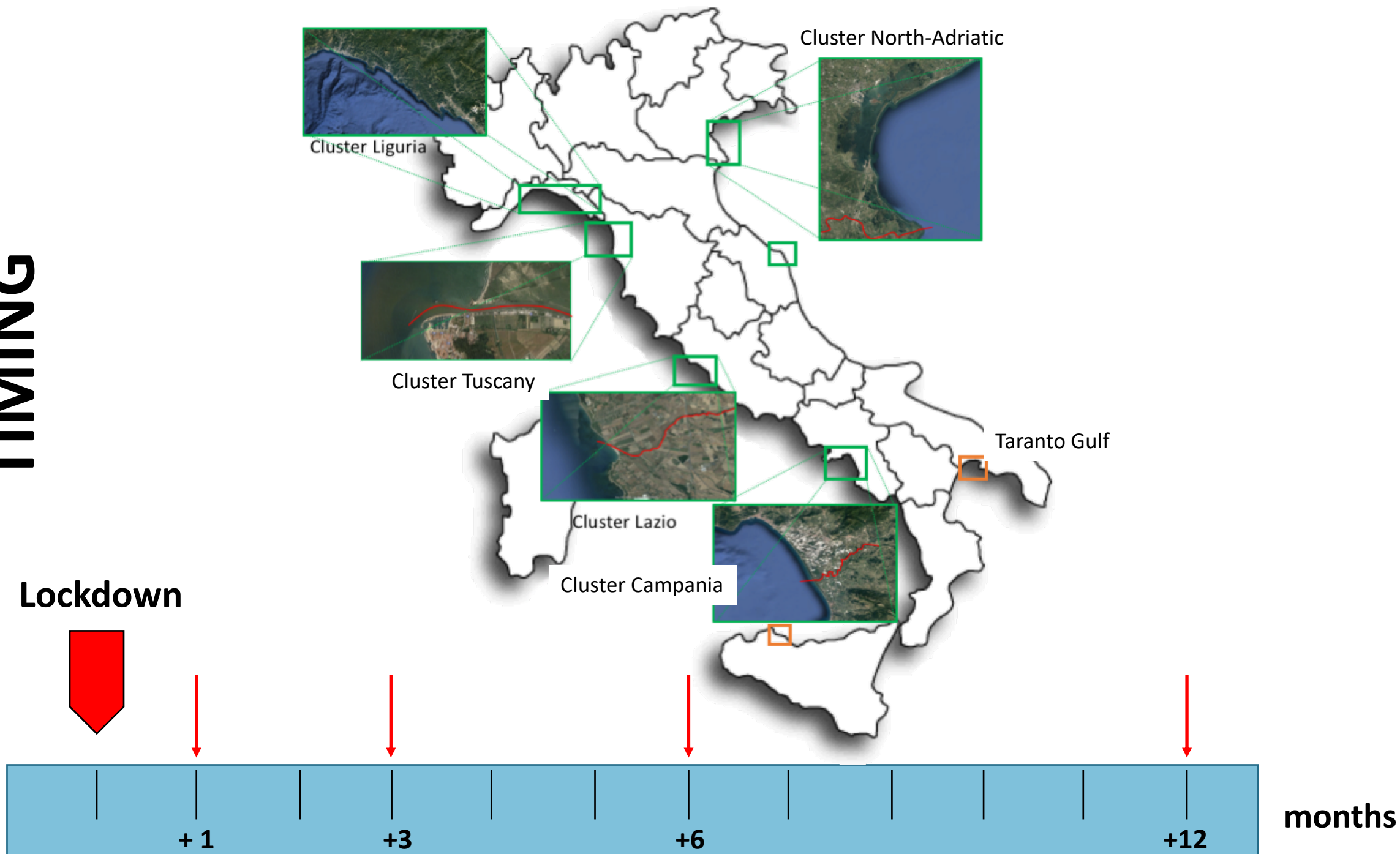


- To test the evolution of the anthropic impact on the marine-coastal system following the lockdown in Mediterranean areas with high urban and/or industrial density
- To quantify in a synoptic way, the good environmental status of the sea at the end of the lockdown phase, by directly applying open data approach followed by further elaborations
- To integrate measures from scientific networks' observation sites, adding (i) *ad hoc* measures in coastal hotspots subject to maximum change, (ii) qualitative evidence from observations of citizens according to the Local Ecological Knowledge approach
- To build a shared vision among different actors by engaging citizens of the mapped areas and relevant stakeholders, e.g. fishermen, in data acquisition, interpretation and validation, as well as in the discussion on the project results and its perspectives



# SAMPLING SITES AND

## TIMING



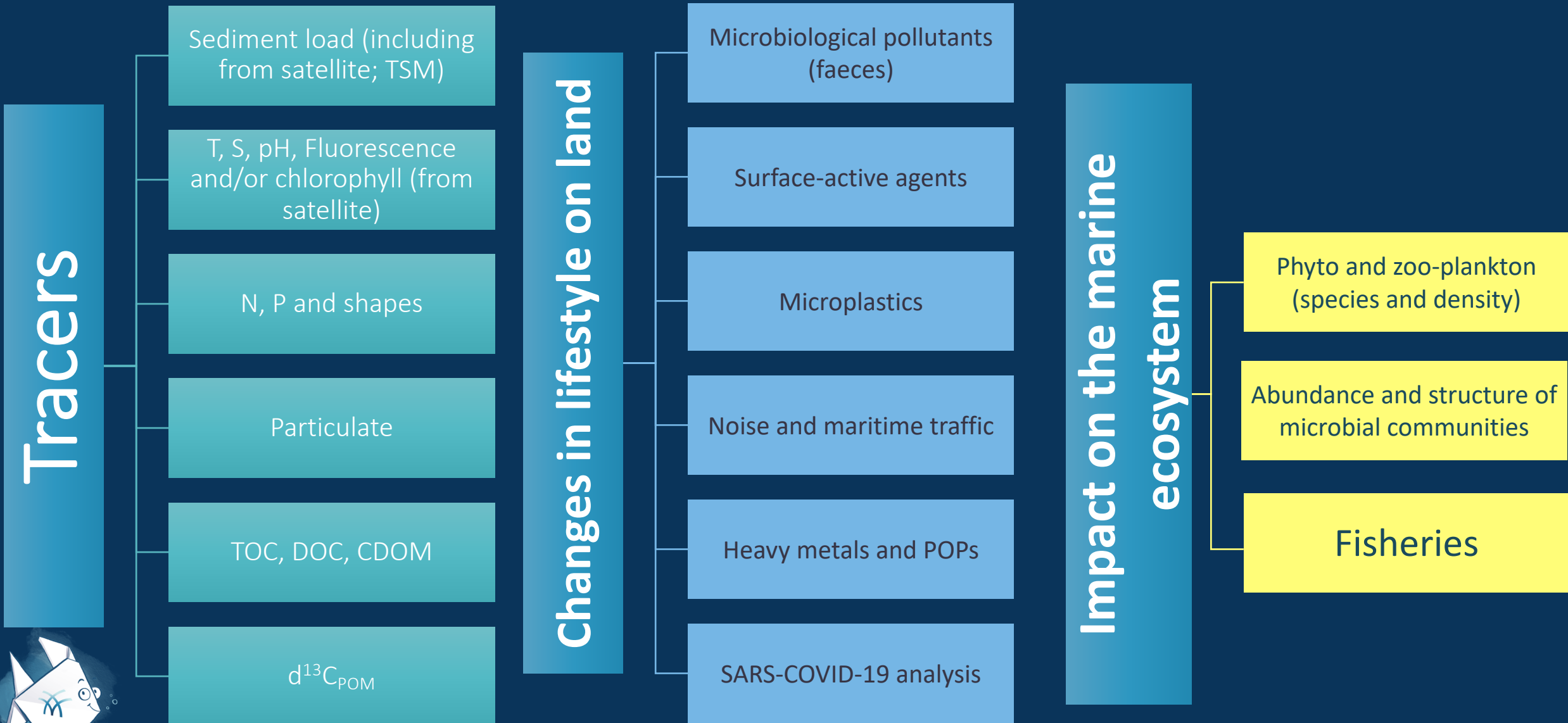
# THE 'BACKGROUND' OF SAMPLING

- ❑ Numerical circulation modelling for identification of sampling areas
- ❑ Observations and models for atmospheric transport
- ❑ Satellite observations for identification of fronts, coastal plumes and site-specific dynamics, for quantification and analysis of bio-geochemical parameters; synoptic view and temporal continuity of available variables.
- ❑ Ocean Colour satellite data (Sentinel-3 OLCI) on chlorophyll concentration and Total Suspended Matter (TSM) at the sea surface, in order to analyse the optical response in coastal environments with different bio-geochemical components.
- ❑ Socio-economic changes and analysis





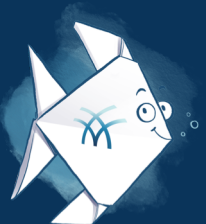
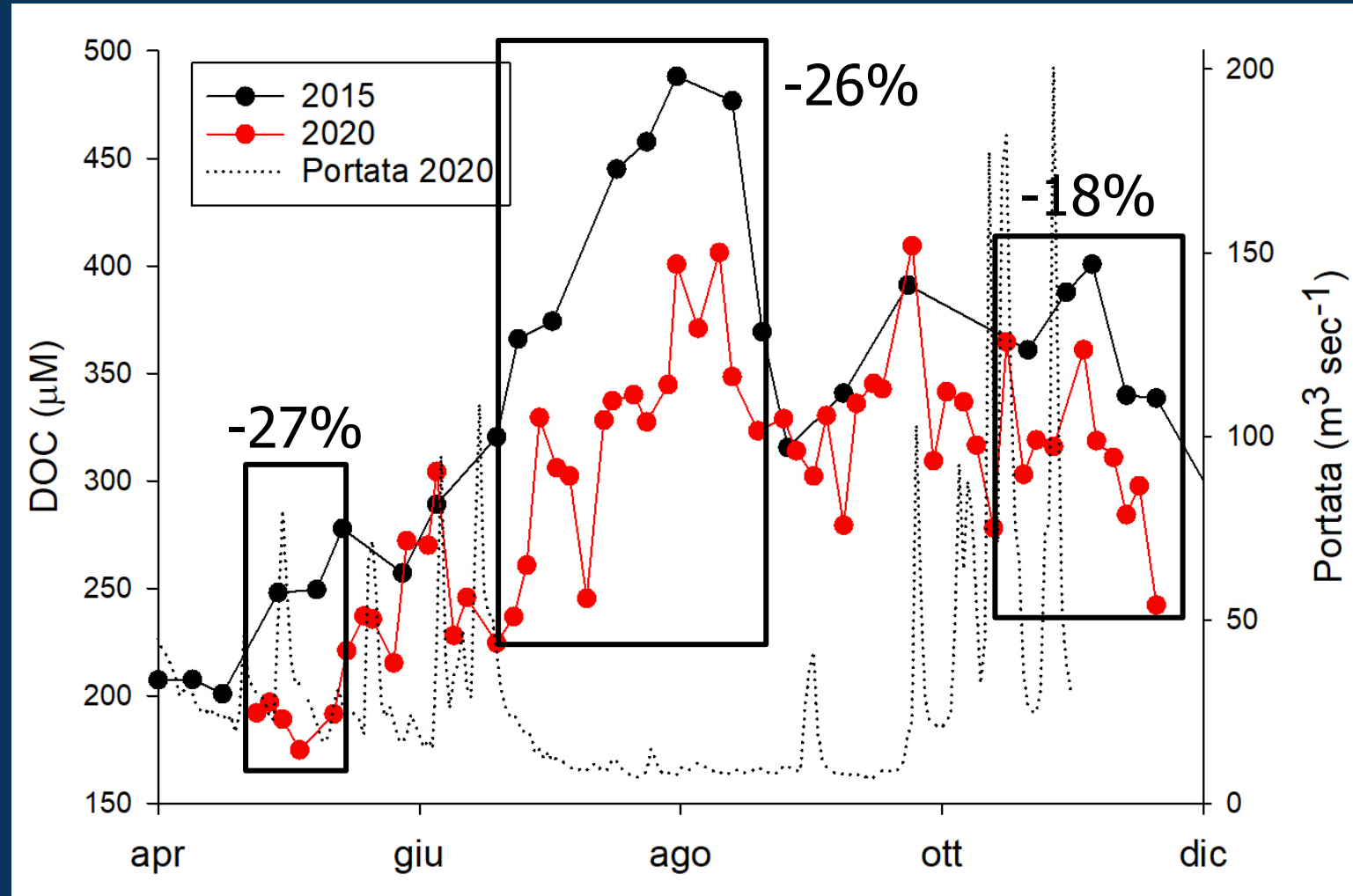
# DATA COLLECTION



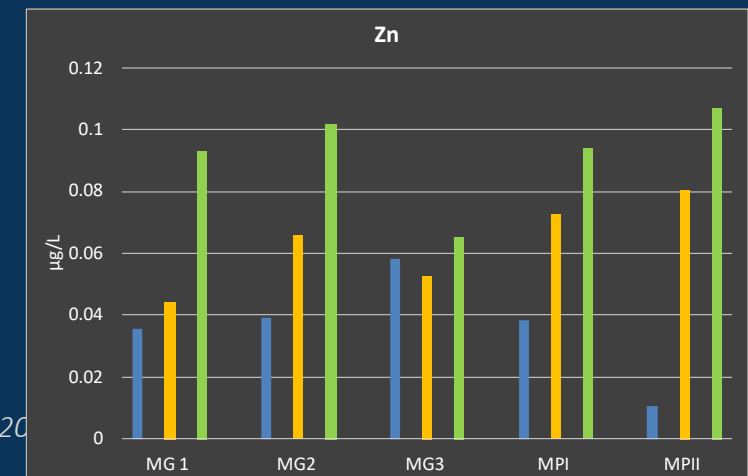
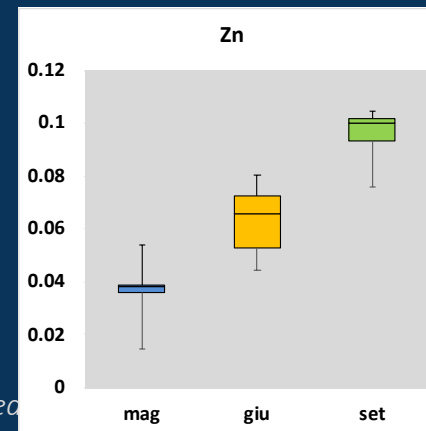
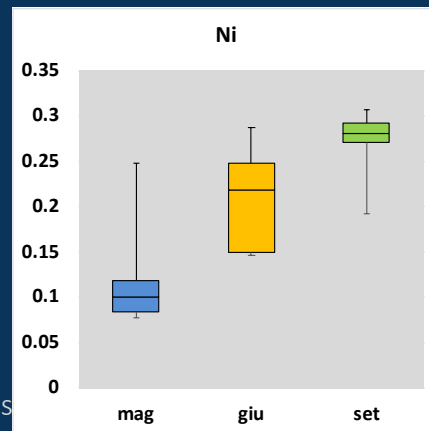
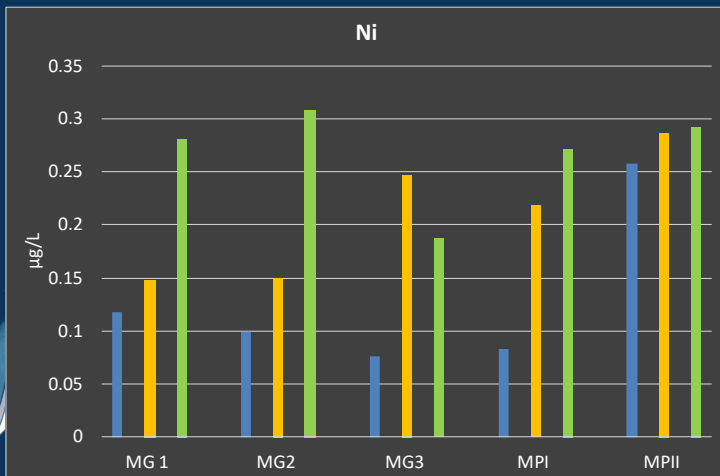
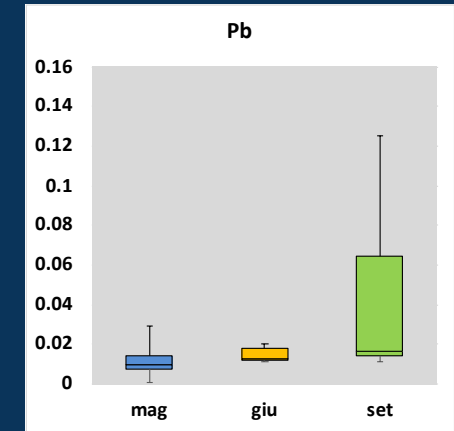
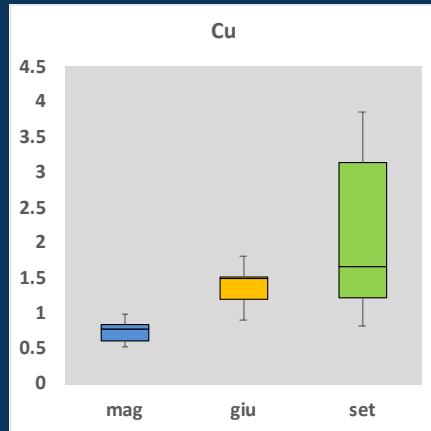
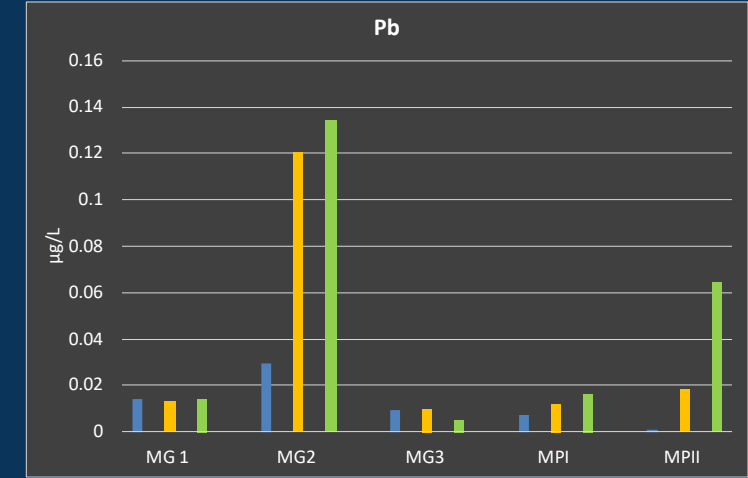
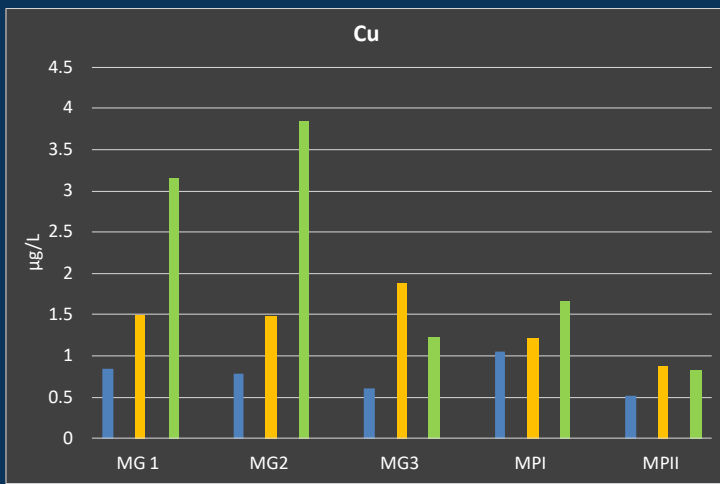
# ARNO RIVER: DOC ( $\mu\text{M}$ )

YEAR	DOC ( $\mu\text{M}$ )		
	24 Apr 12 May	10 Jul 25 Aug	20 Oct 24 Nov
<b>2014</b>	261 $\pm$ 17	414 $\pm$ 25	387 $\pm$ 17
<b>2015</b>	258 $\pm$ 17	447 $\pm$ 47	365 $\pm$ 28
<b>2020</b>	189 $\pm$ 8	329 $\pm$ 32	299 $\pm$ 25

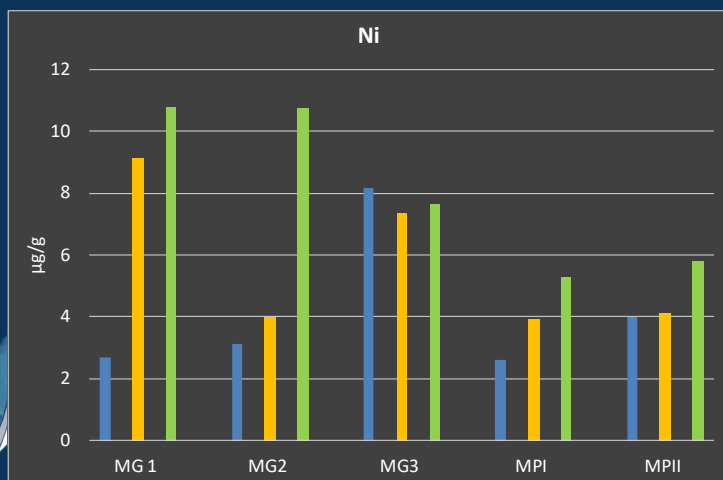
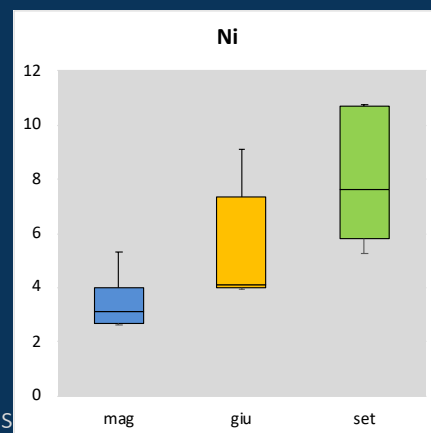
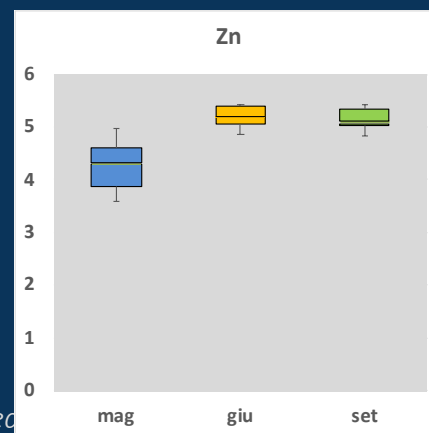
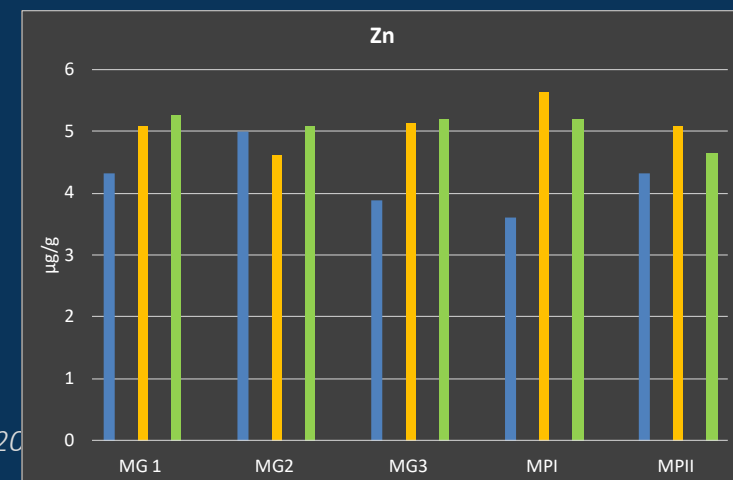
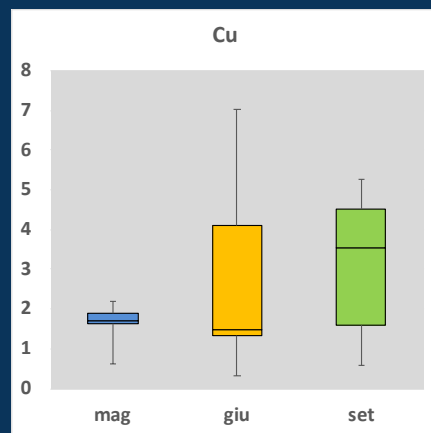
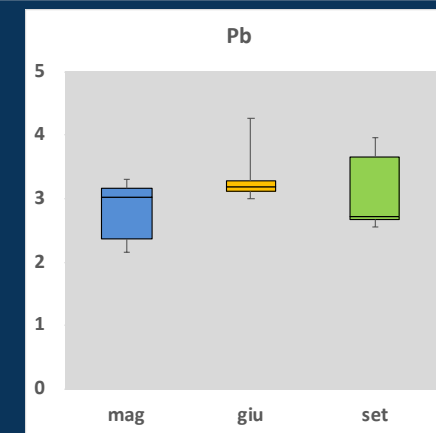
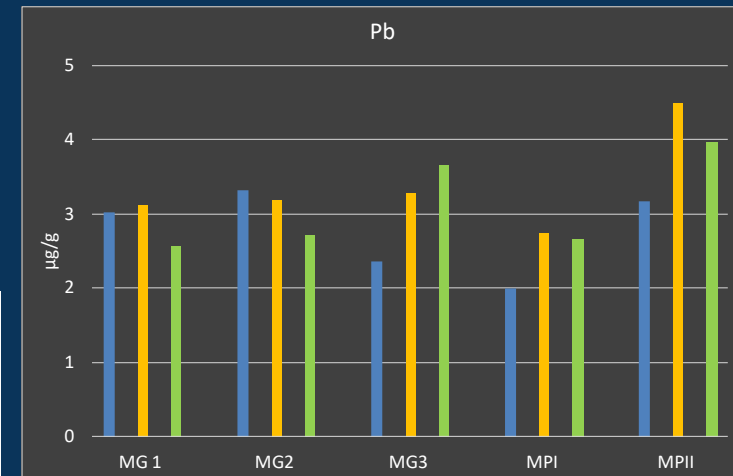
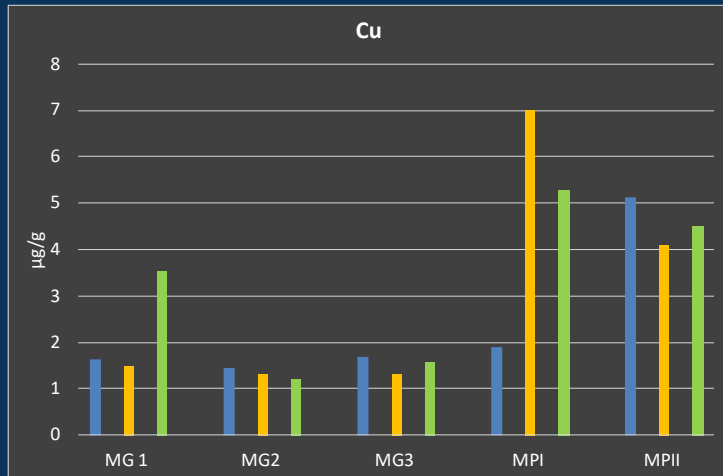
- 2014-2015 Not significant differences
- Relevant differences with 2020 (t-test  $p < 0.001$ )



# Metals in dissolved phase

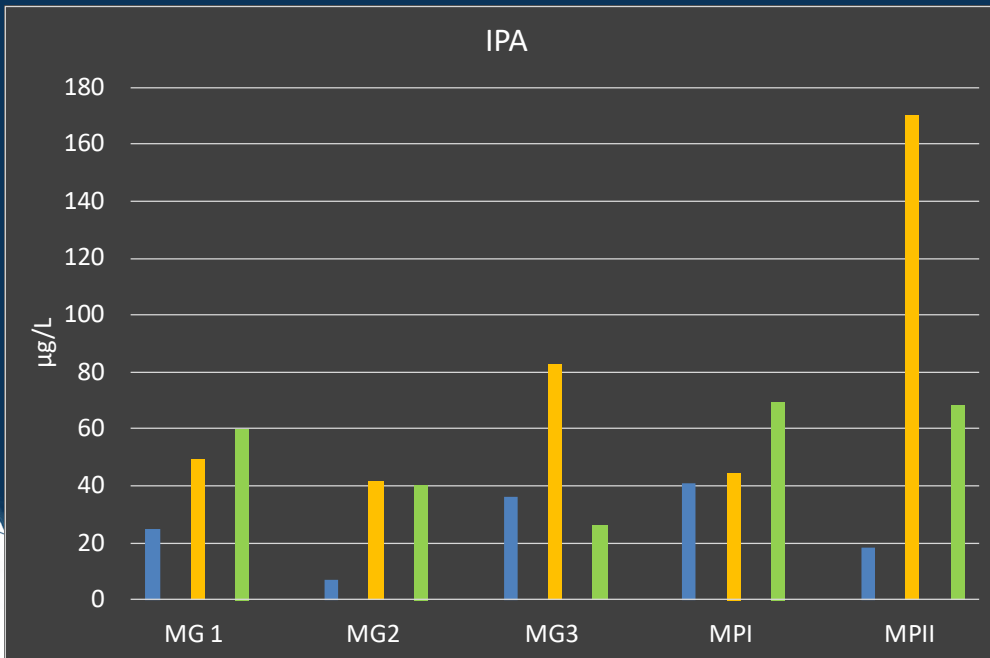


# Metals in particulate phase

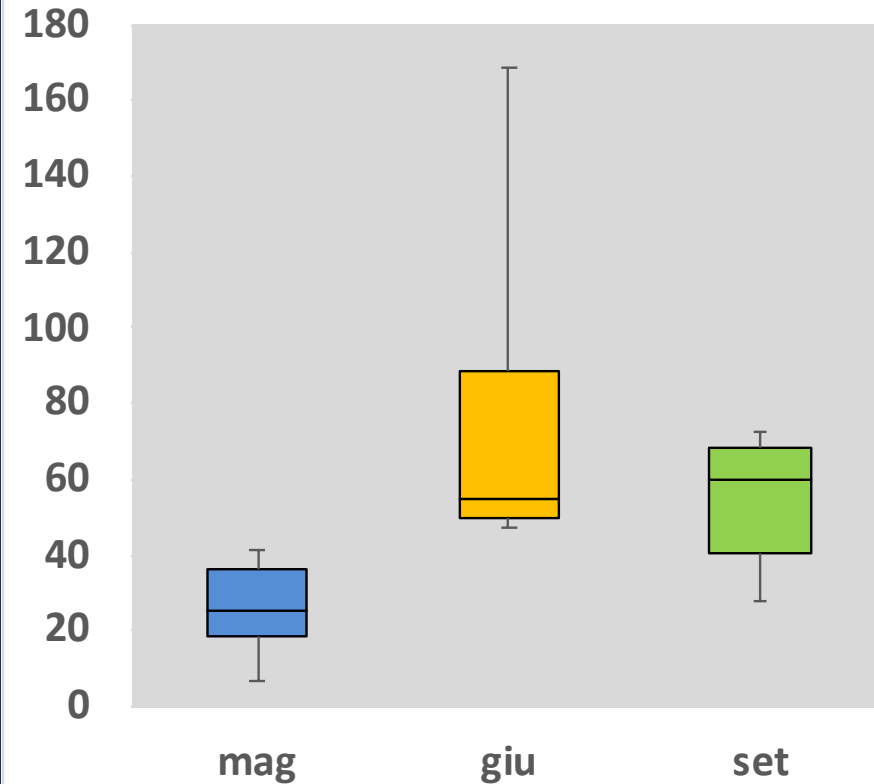




# POPs in seawater

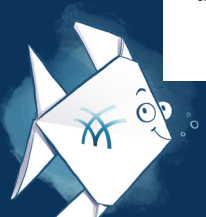
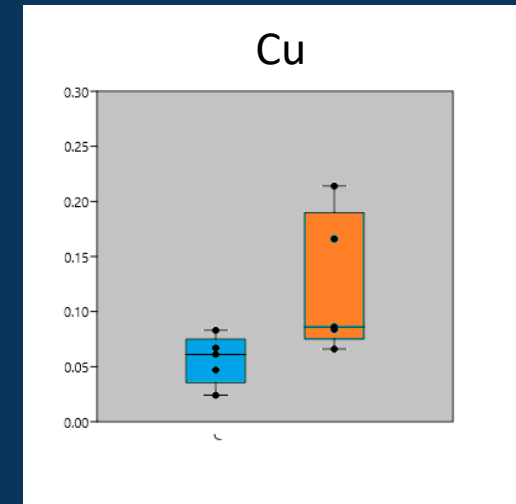
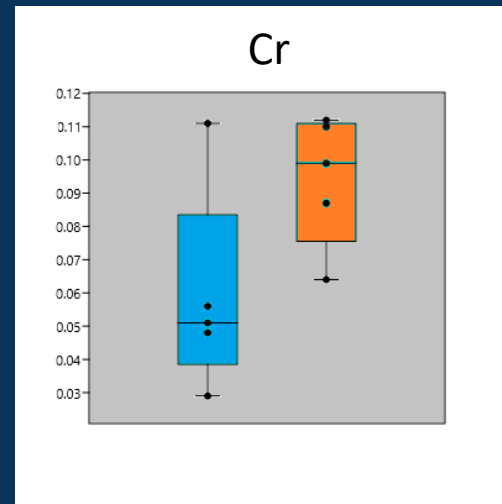
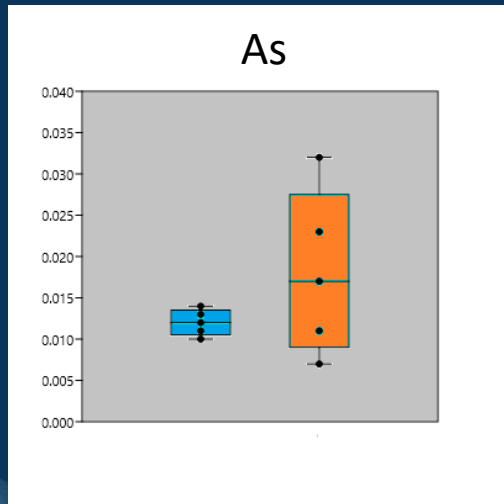
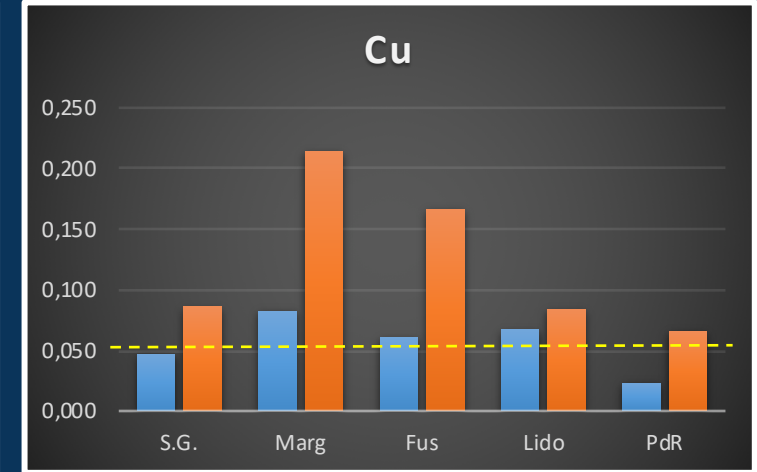
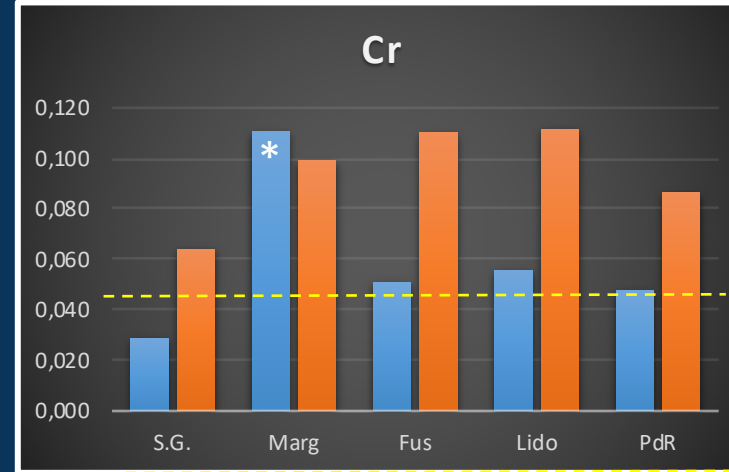
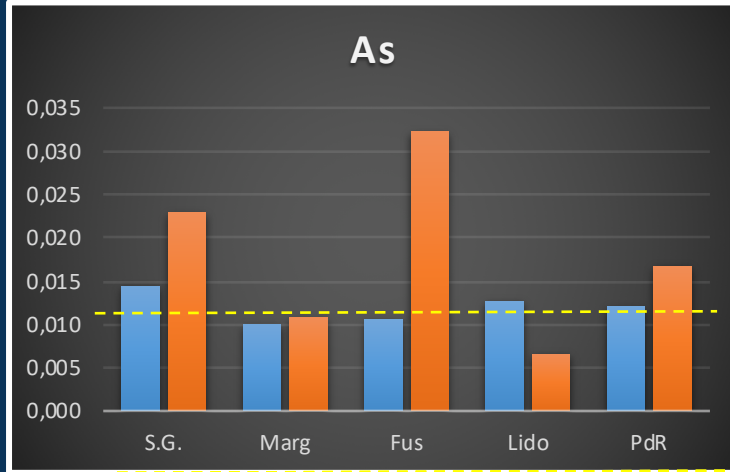


## PAHs



# VENICE LAGOON

Concentrations in particulate ( $\mu\text{g/g}$ )





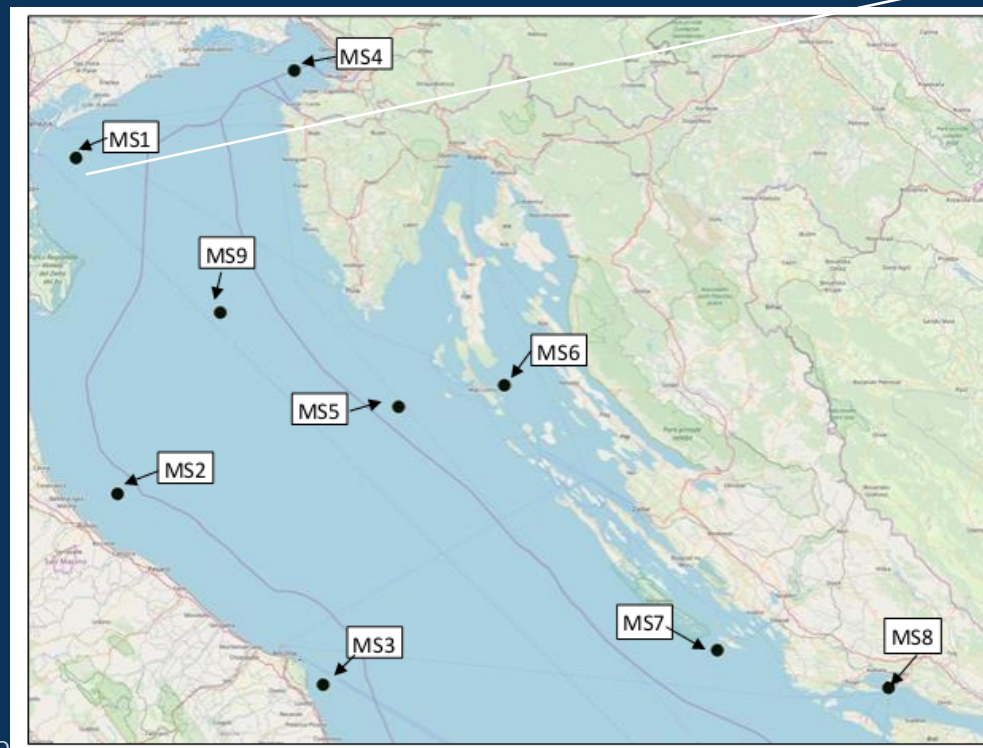
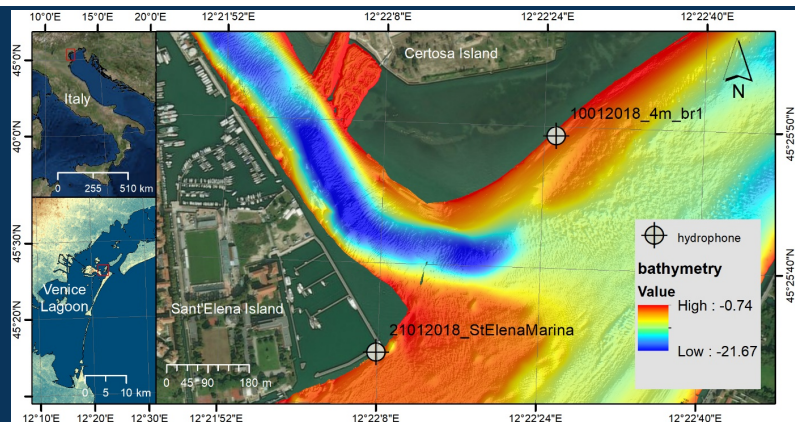
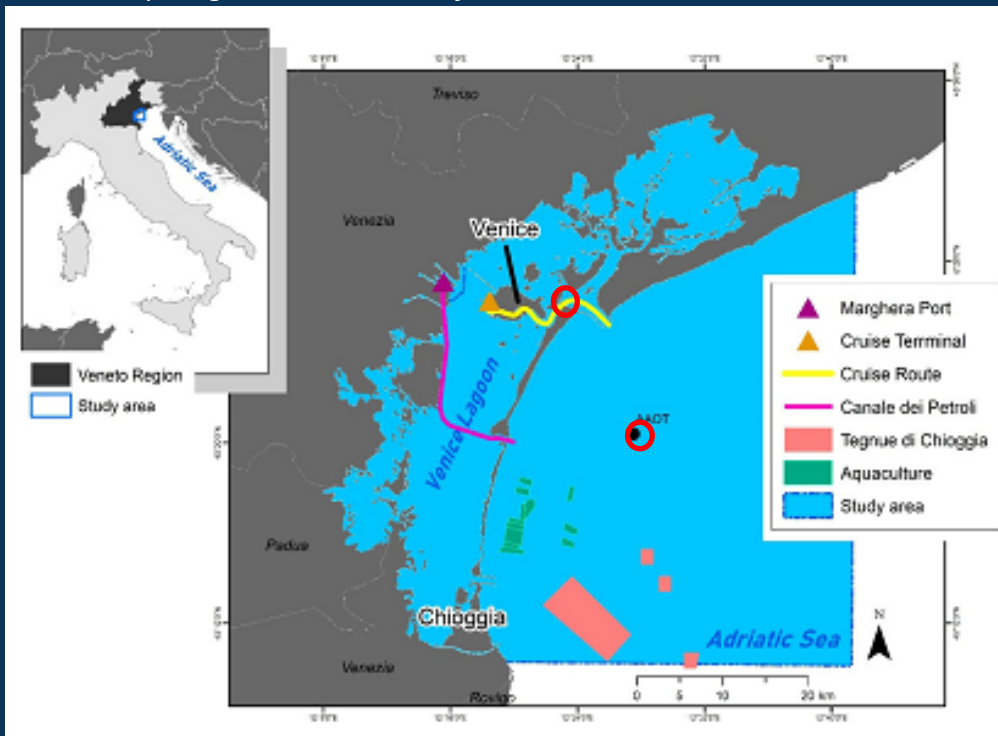
# SURVEY of ACTIVE STATIONS MEASURING UNDERWATER NOISE

- 5+1 autonomous stations of the Interreg Ita-Cro SOUNDSCAPE in the North Adriatic Sea area (CNR-ISMAR and IRBIM, FONDAZIONE CETACEA, ARPAFVG, Regione Marche)
- 4 autonomous stations of the Interreg Ita-Cro SOUNDSCAPE (BWI, IOF)
- 1 cabled station in the Gulf of Catania (INFN)
- 1 autonomous station in Capo Granitola (CNR-IAS)
- 1 autonomous station in Secca Formica (CNR-IAS)
- 1 autonomous station in Capo Caccia, Alghero (Capo Caccia MPA)

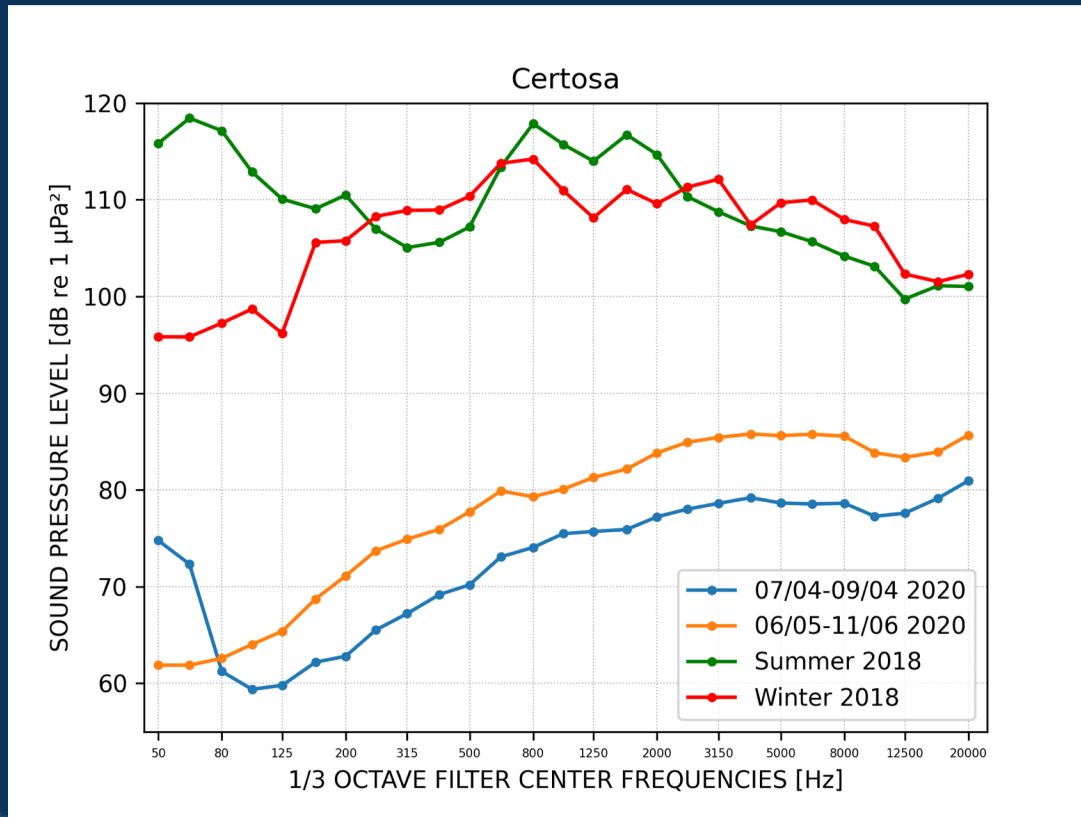




# Venice Lagoon and PTF Acqua Alta



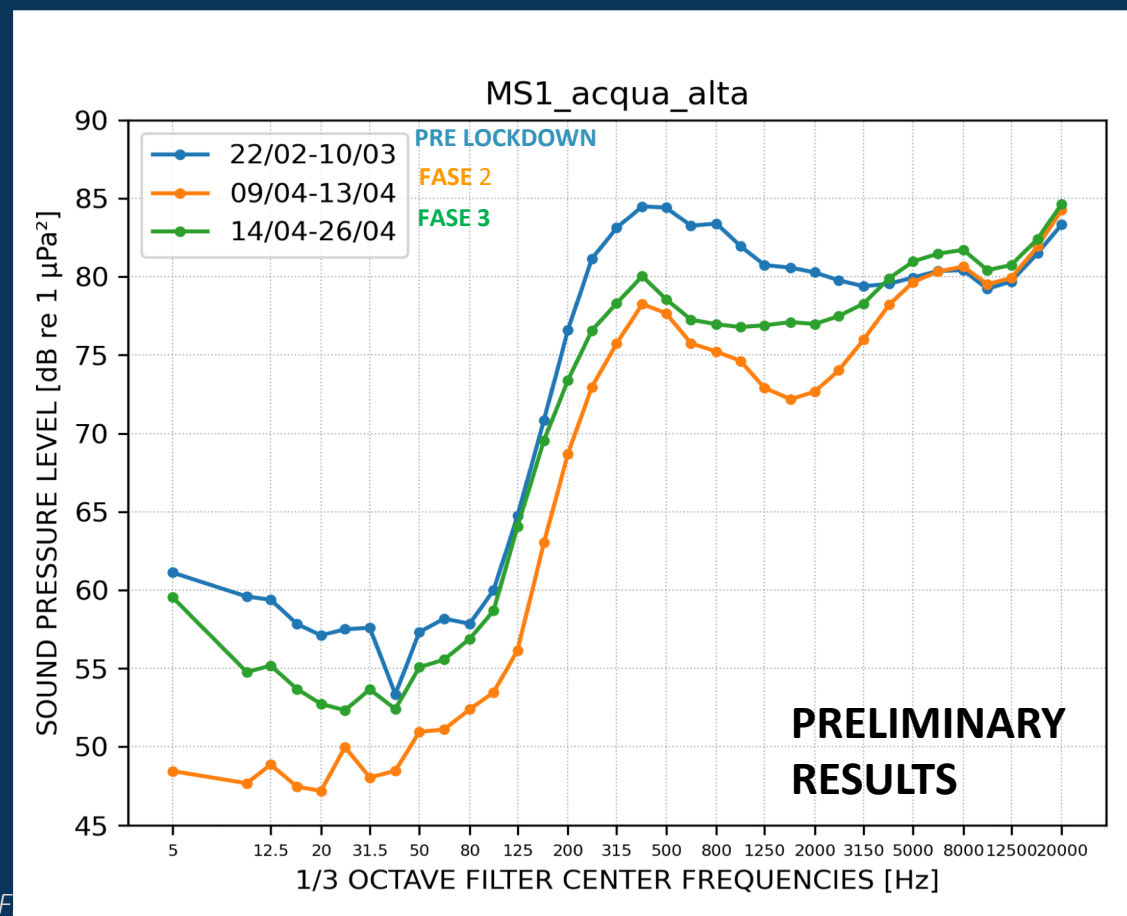
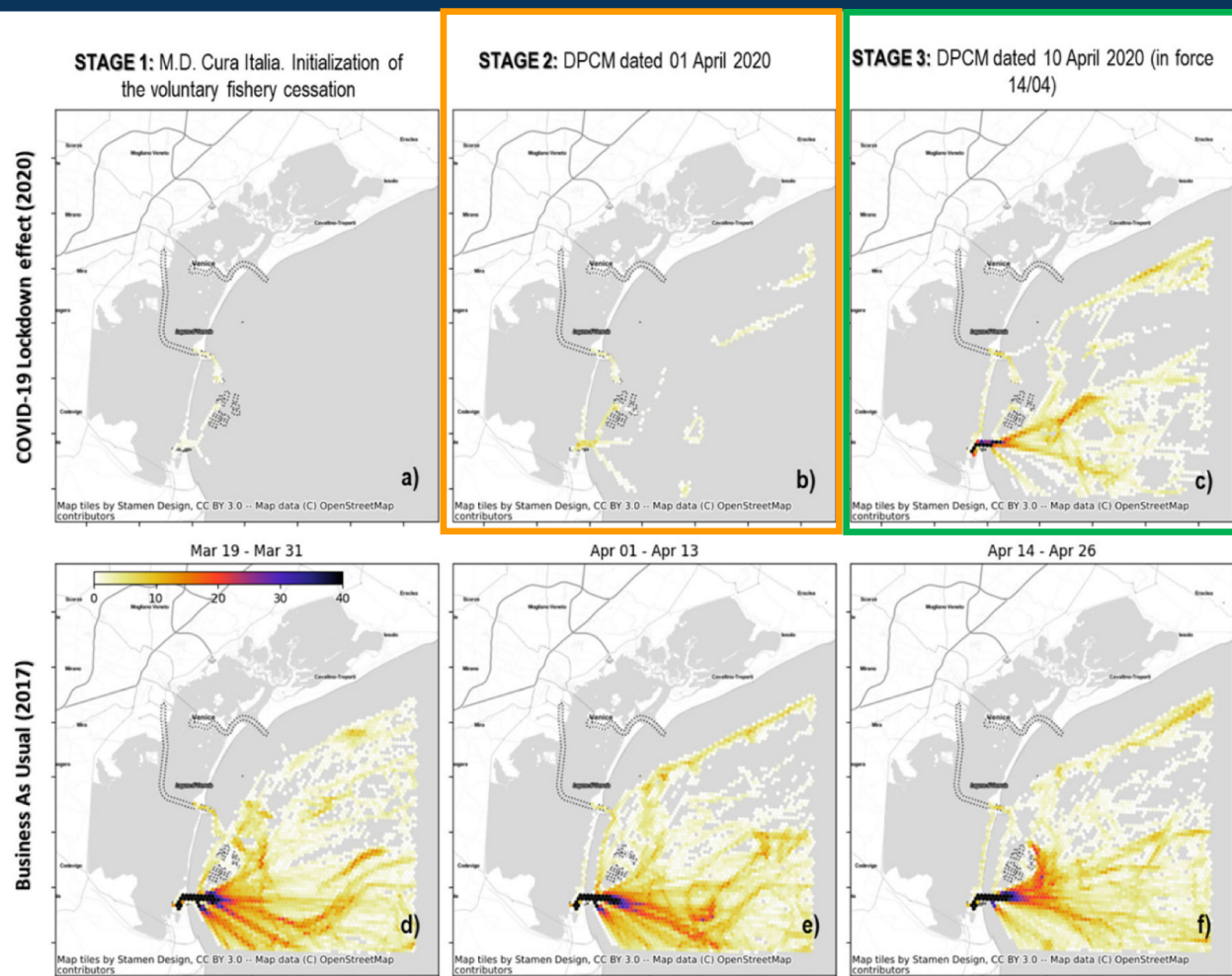
# PRELIMINARY RESULTS (MS10-CERTOSA)



- Sound Pressure Levels recorded in winter and summer 2018 in the 1/3 octave bands and in April and May-June 2020
- Situation without anthropogenic pressure
- Preliminary results show that underwater noise decreases dramatically!



# Comparison of noise levels and the variation of fishing vessel density through three lockdown stages of the 39 days assessment period

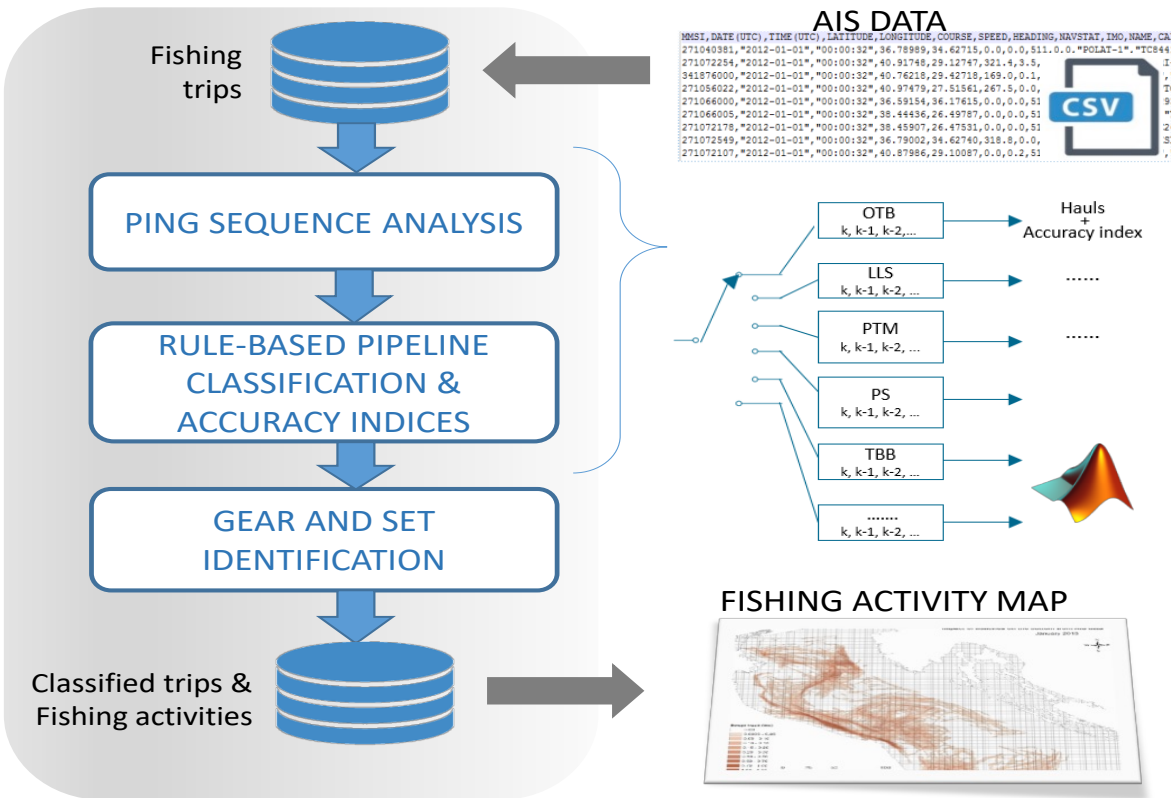
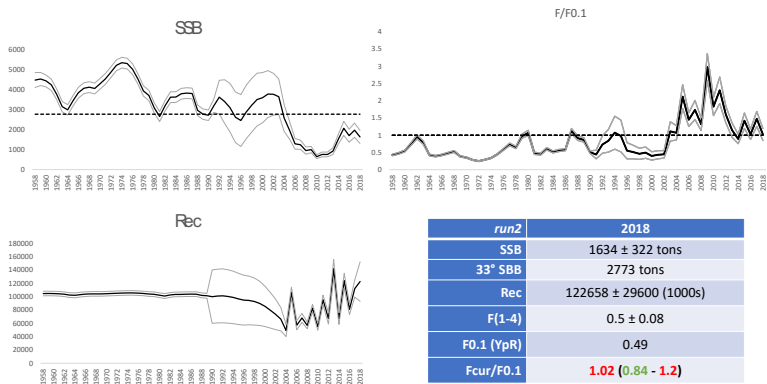




# Lockdown impact on fishing activities with short and medium term effects on dynamics of target and non target stocks at different spatial scale

## Regional scale

Use of AIS data in integrate methods for Vessel Data Enrichment (ISTI) with Gear Identification Systems to quantify the change in fishing pressure in the Adriatic Sea in 2020

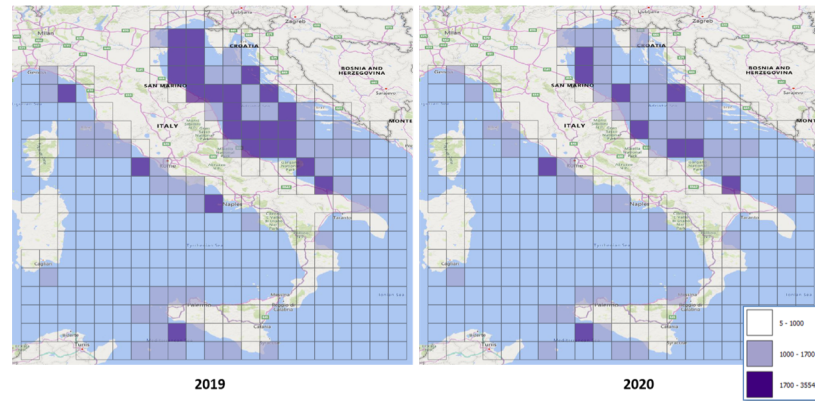


Assessment of the status of the main target species following the potential reduction in fishing effort observed in 2020

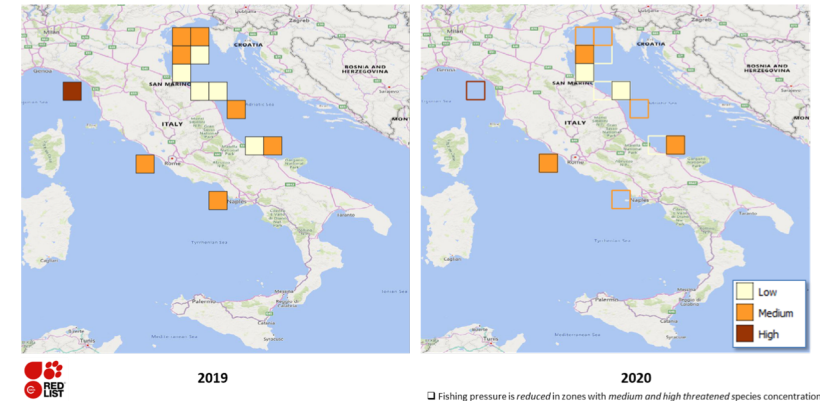
# Lockdown impact on fishing activities with short and medium term effects on dynamics of target and non target stocks at different spatial scale

Preliminary results (first lockdown 1<sup>st</sup> March – 30<sup>th</sup> April)

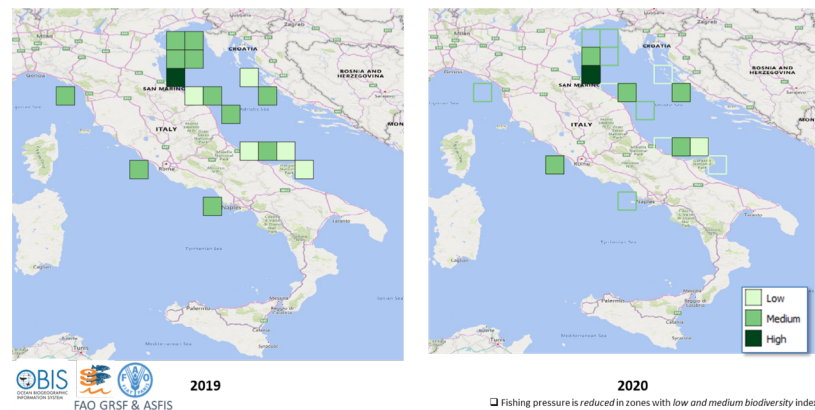
## Change in fishing pressure



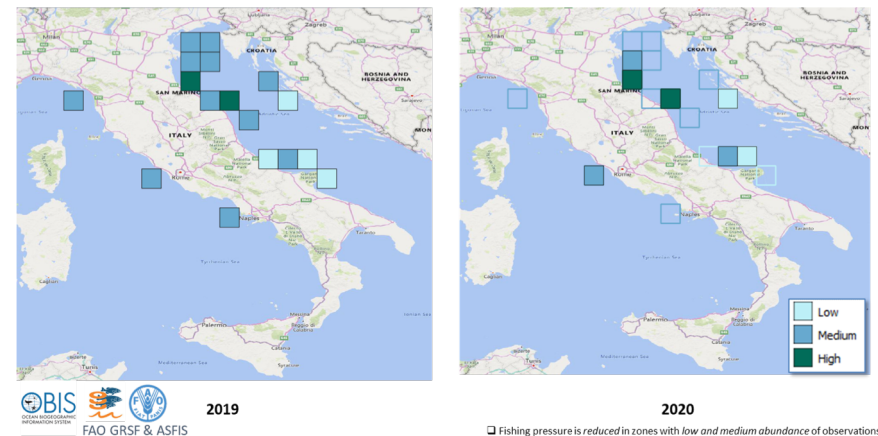
## Change of impact on IUCN species



## Change of impact on Biodiversity

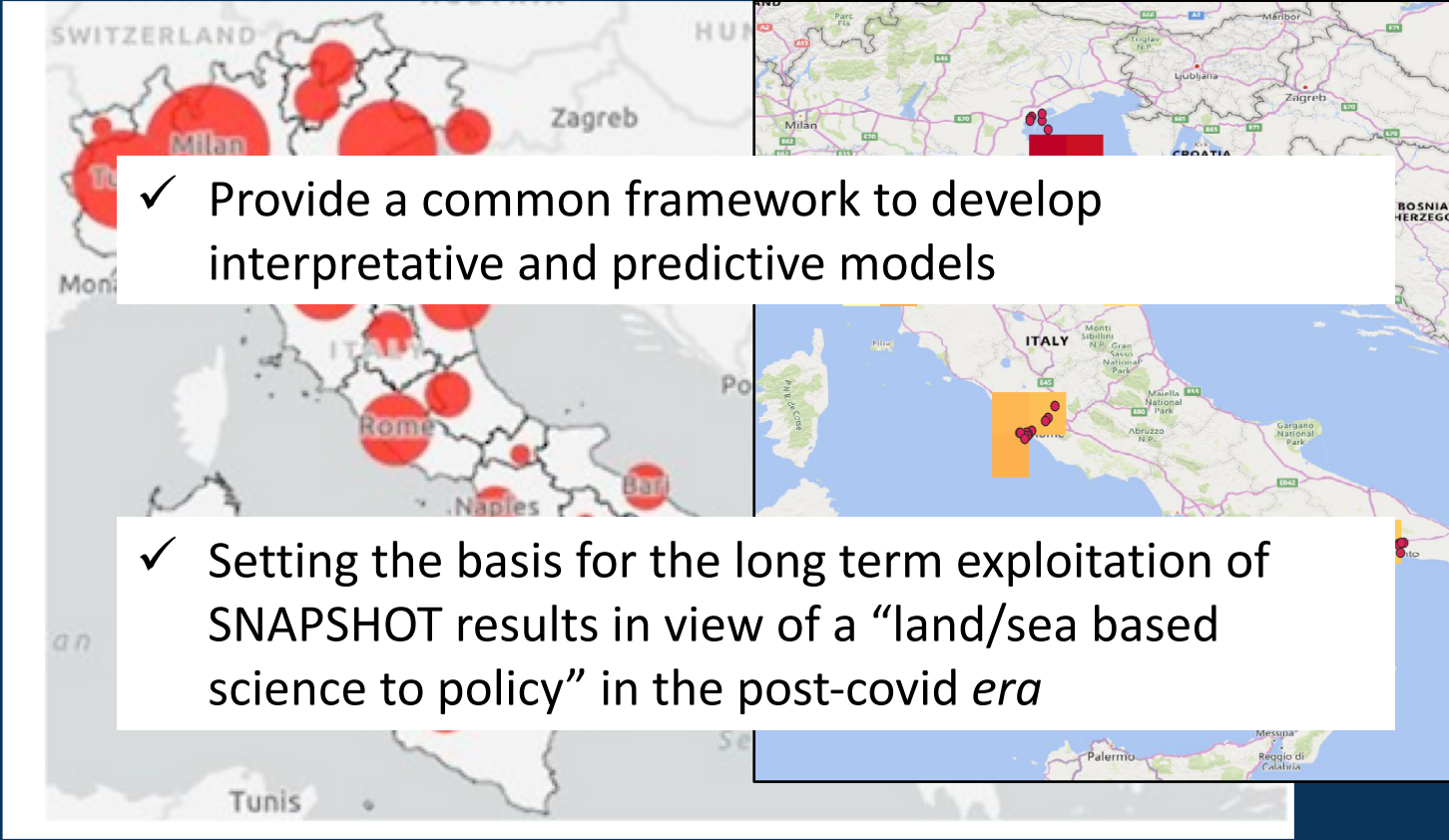


## Change of impact on Sp. Abundance



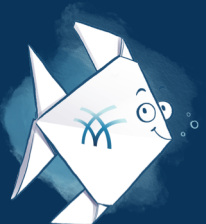


# Integrating socio-economics with clusters environmental data \_ SNAPSHOT



- ✓ Provide a common framework to develop interpretative and predictive models

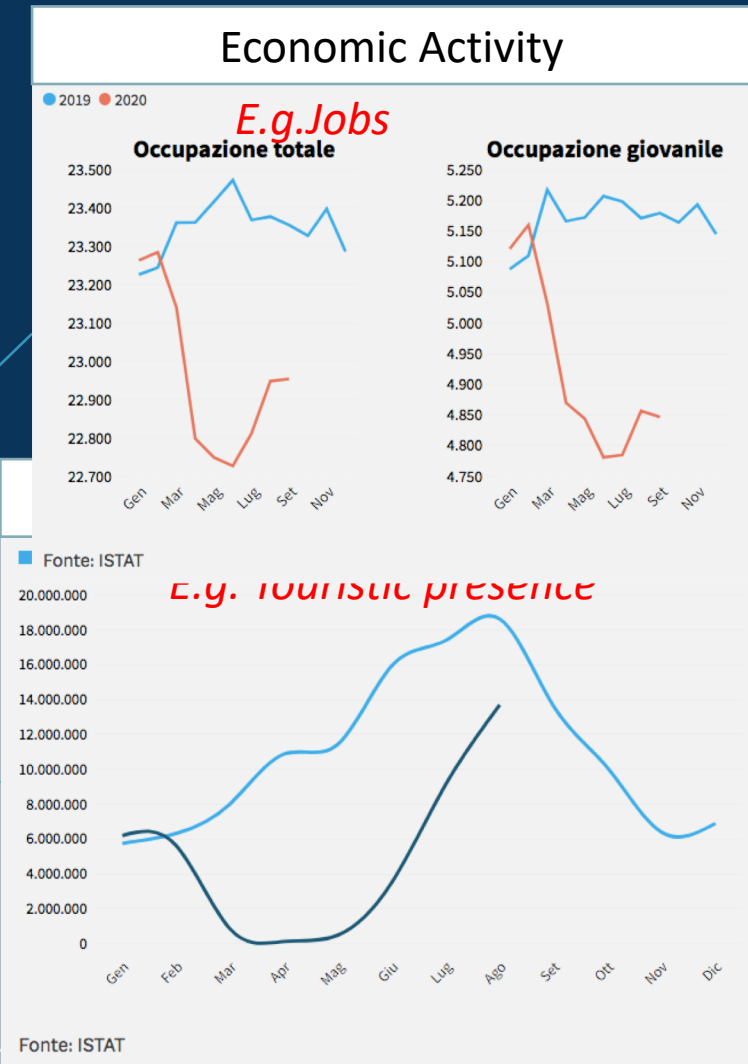
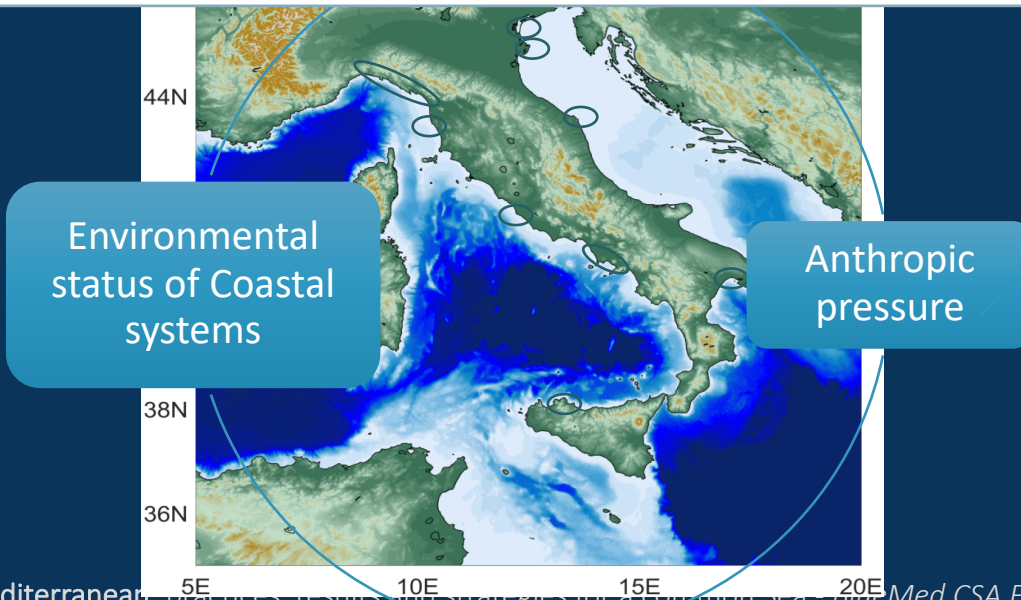
- ✓ Setting the basis for the long term exploitation of SNAPSHOT results in view of a “land/sea based science to policy” in the post-covid *era*



# Conceptualization and definition of the socioeconomic data-set for an integrated environmental, social and economic analysis

develop a common strategy to define

- main forcing conditions
- cause-effect relationships

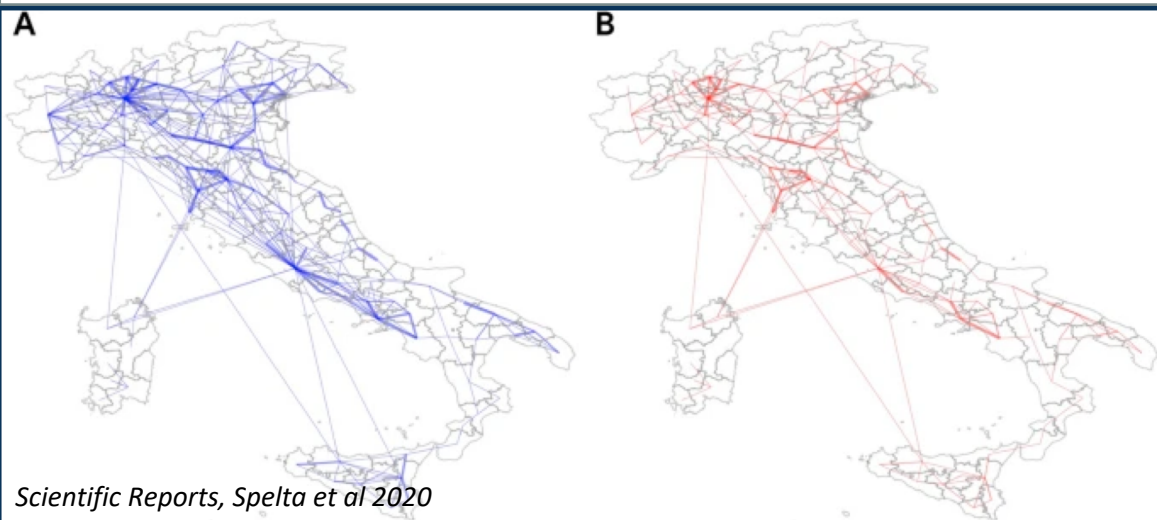




# The (multi)dimension of lockdown induced effects – from National to Local scale (and Mediterranean?)

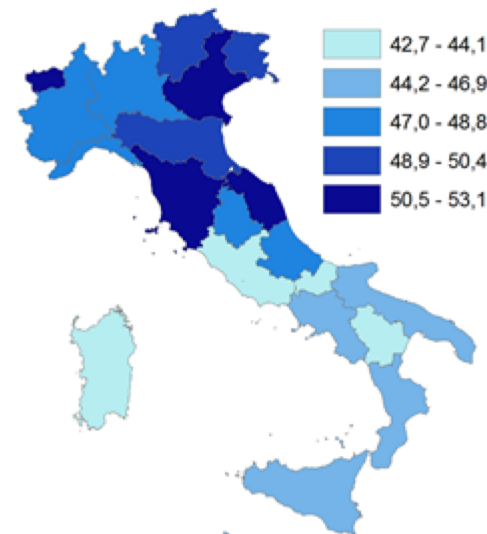
*“COVID-19 had asymmetrical impacts across territories ..., highlighting the need for place-based and people-centred approaches” (OECD)*

Mobility patterns in Italy before (A) and during (B) the lockdown.

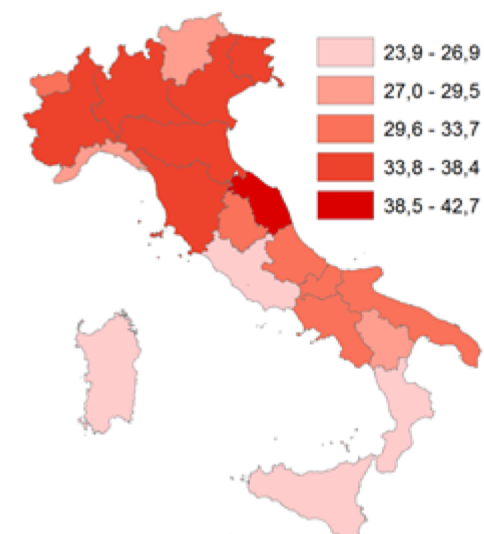


Important change in both volumes and distances traveled by individuals moving

Unità locali Industria e servizi (settore privato)



Occupati settore pubblico e privato



2.3 million local units of Industry and Services

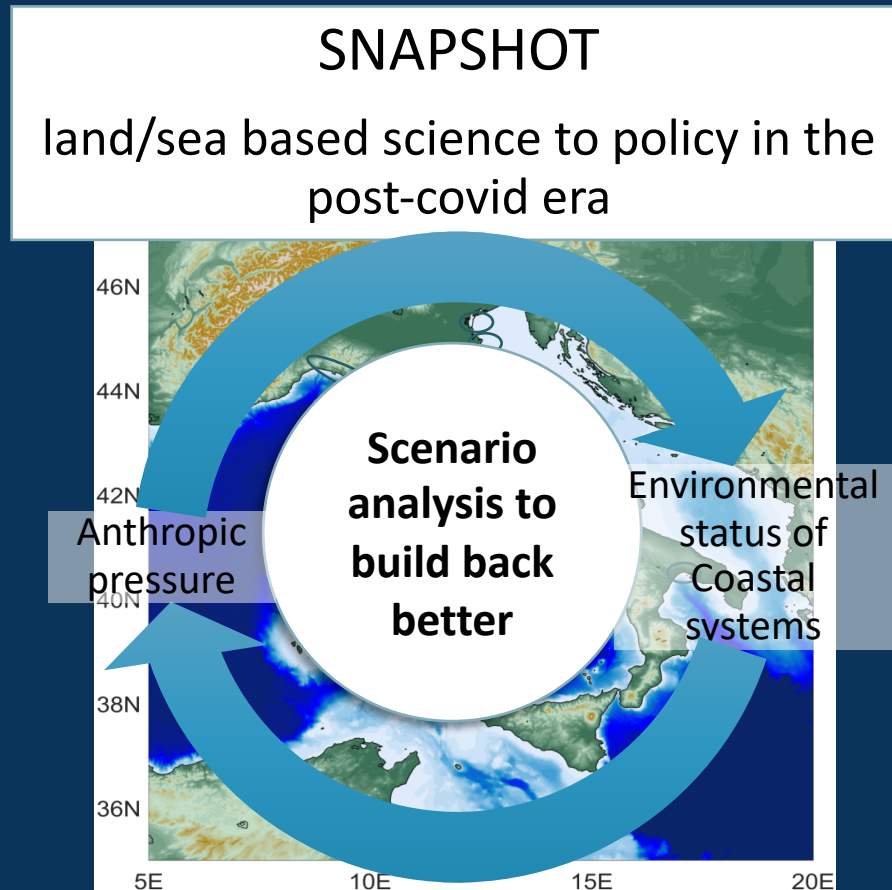
Fonte: elaborazione su dati ISTAT

Source, Art-er, on ISTAT

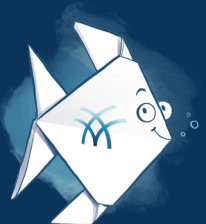
ESTIMATE OF COMPANIES AND EMPLOYEES WORKING IN SECTORS OF ECONOMIC ACTIVITY SUSPENDED BY THE MEASURES OF THE ITALIAN GOVERNMENT ADOPTED IN MARCH 2020



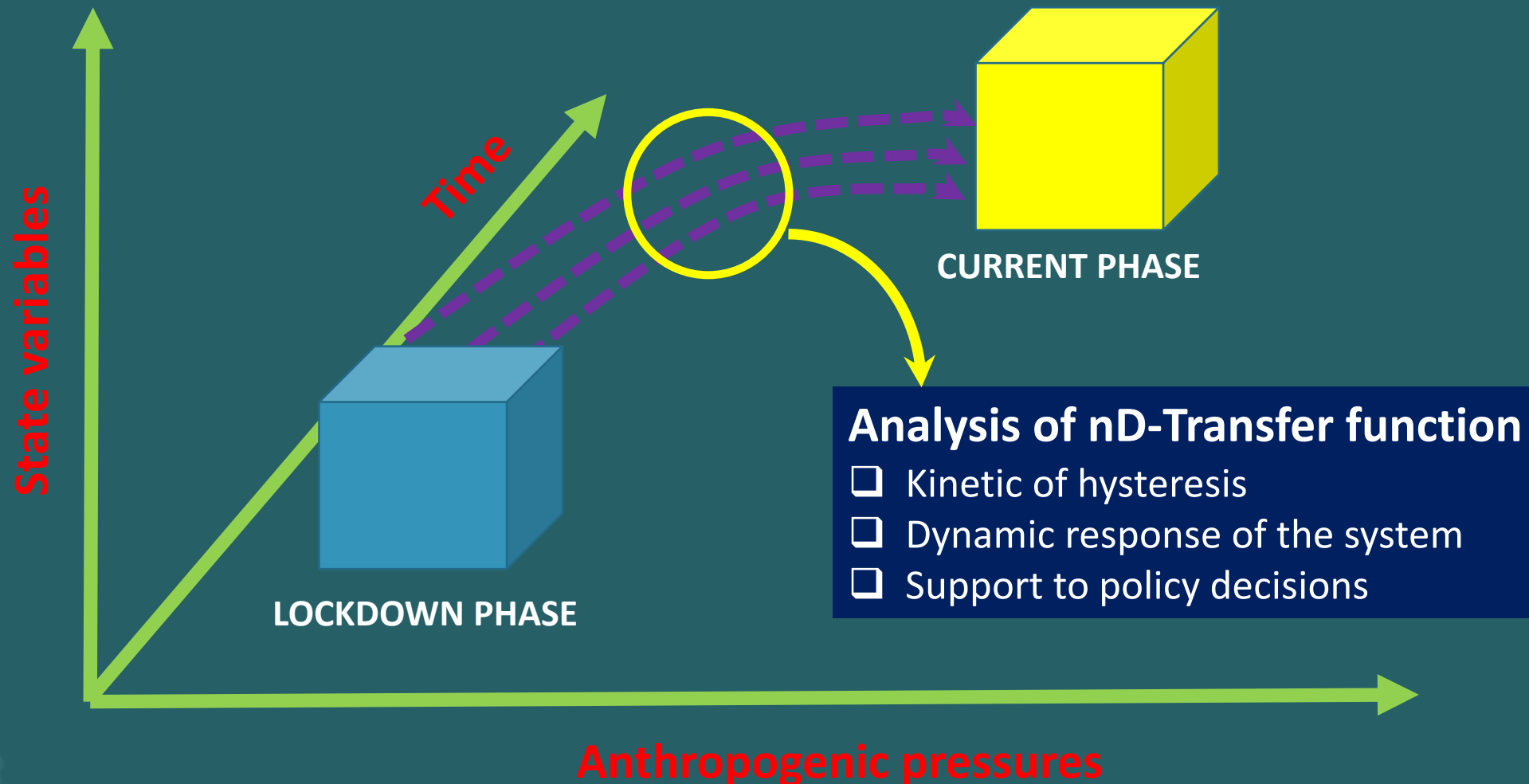
# Policy recommendations for building back better



Recovery from the crisis should be a shared responsibility across all levels of government; which should leverage financial resources and good governance to deliver opportunities for all, to transition to a low-carbon and climate resilient economy; and to improve resident's well-being and foster inclusive growth now and in the future (OECD policy note)



# The hyper-space anthropopause dynamic

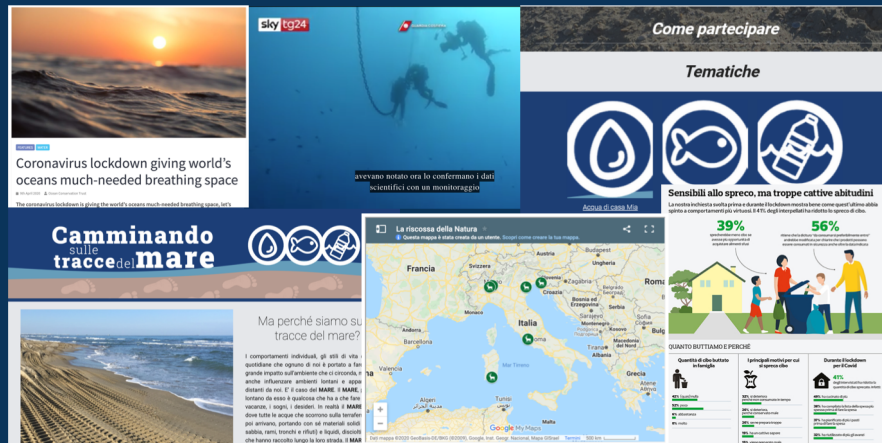




# Local knowledge observatory during the emergency

## first indications from web and social analysis

Archive of initiatives and web contributions on the issue of the effects of the lockdown on the environment and society



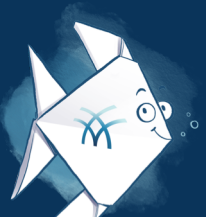
Analysis of Twitter contributions on the issue of the effects of the lockdown in the marine and river environment



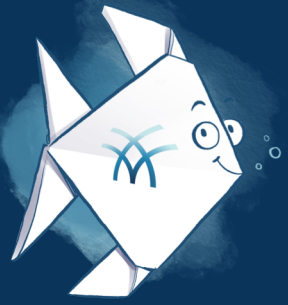
1900 tweets

analyzed  
09th March – 18th May 2020

3413 words  
1402 hashtag  
150 pictures







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**THANK YOU FOR YOUR ATTENTION!**

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