



# EMBLAS

Environmental Monitoring  
in the Black Sea



*This project is funded  
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*Empowered lives.  
Resilient nations.*

*Improving Environmental Monitoring  
in the Black Sea*

# Implementation of the EU marine and water policy in the Black Sea region

Jaroslav Slobodnik  
EMBLAS-II and EMBLAS+ EU/UNDP projects

*Regional Stakeholders Conference*  
***Black Sea Synergy: the way forward***  
*Athens, Thursday, 7 November 2019*



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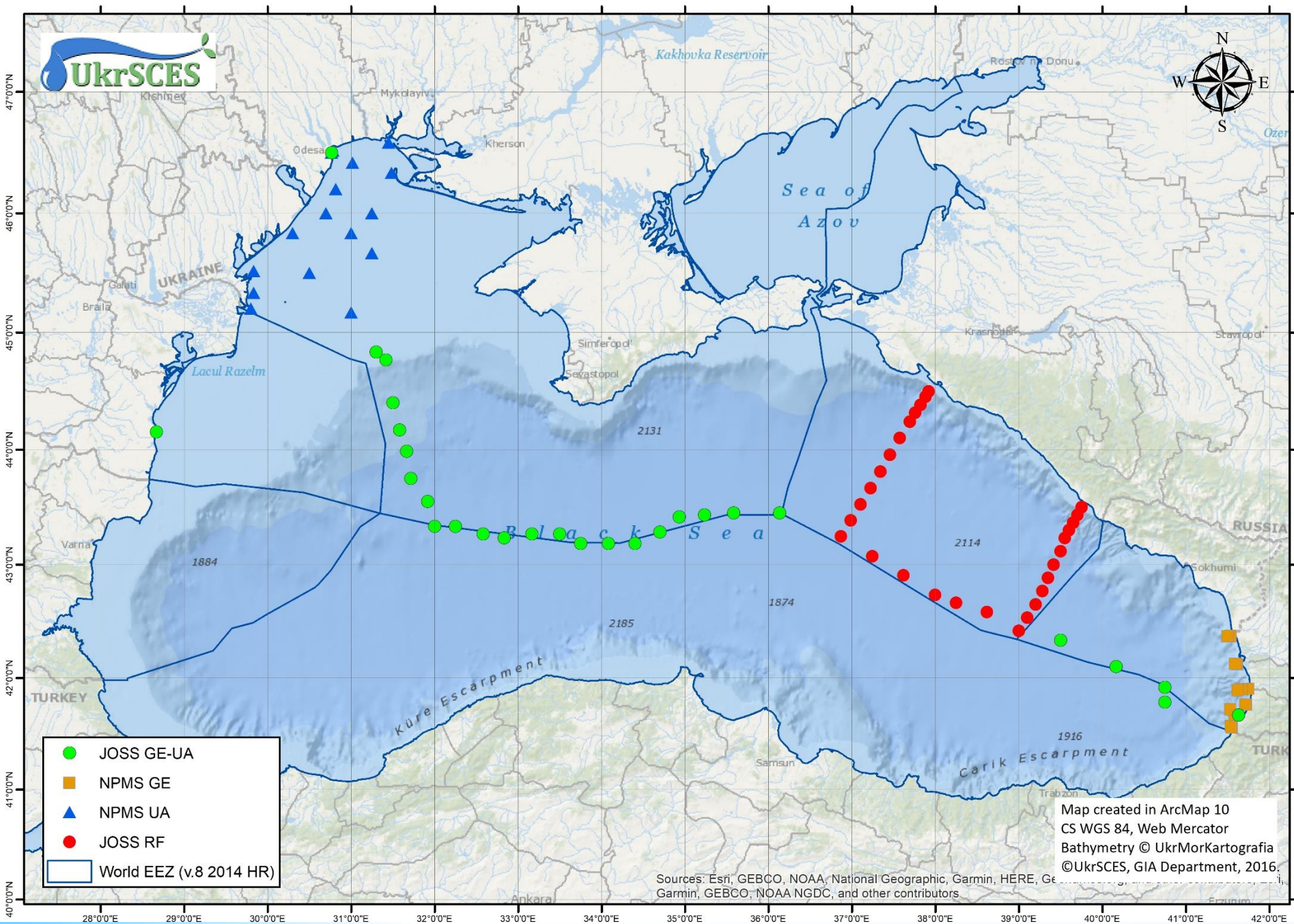
## EMBLAS Project Activities

# EU Marine Strategy Framework Directive

8 out of 11 descriptors

Initial Assessment

International cooperation  
(BSC, JRC, EEA, DG ENV...)







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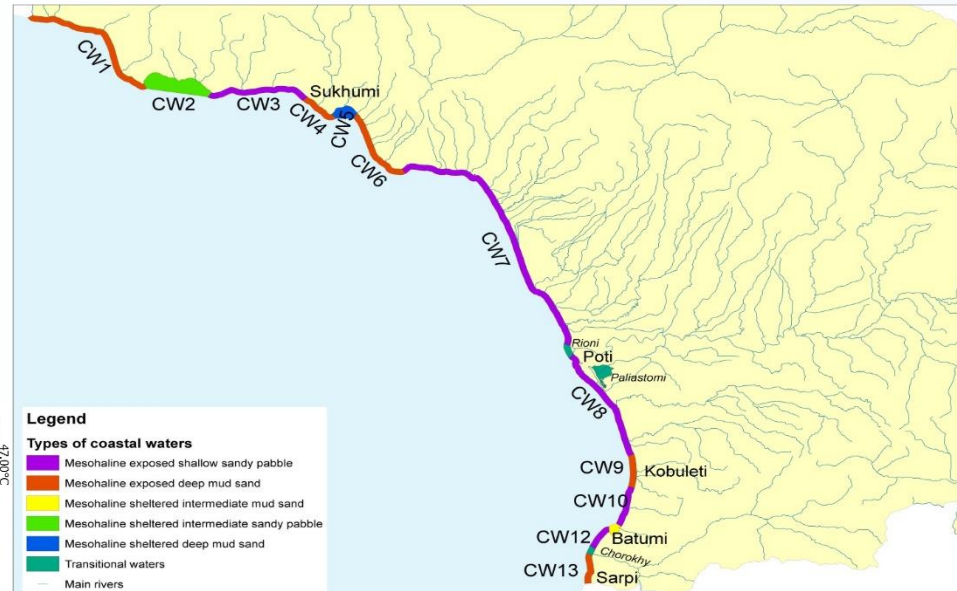
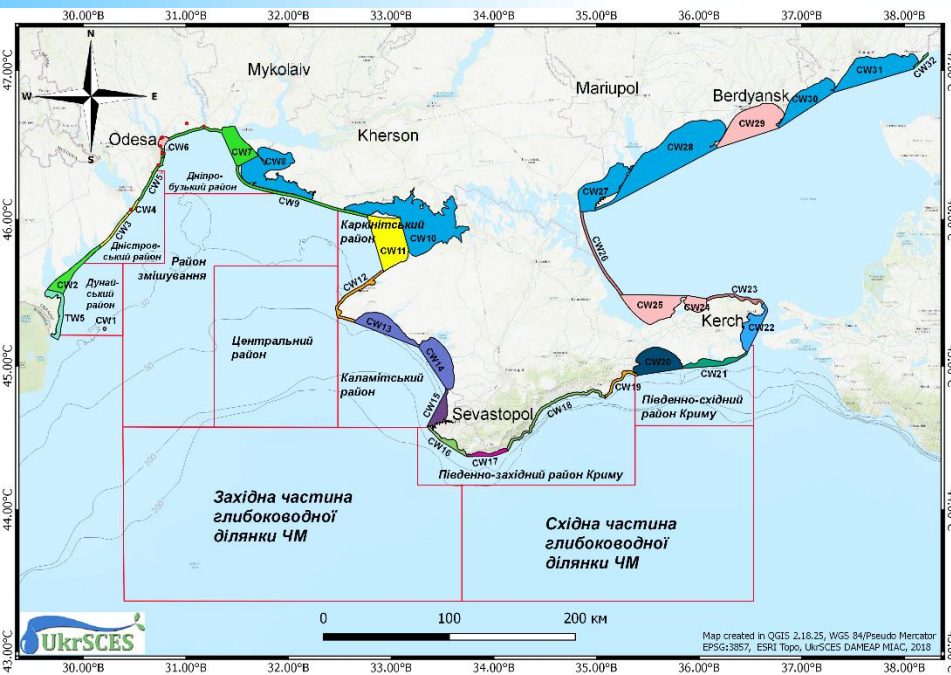
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## EU WFD - delineation of coastal water bodies

### Ukraine



### Georgia



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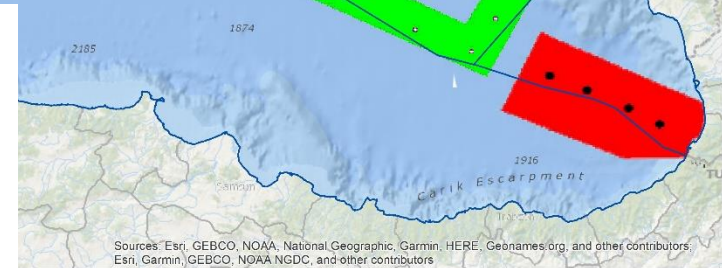
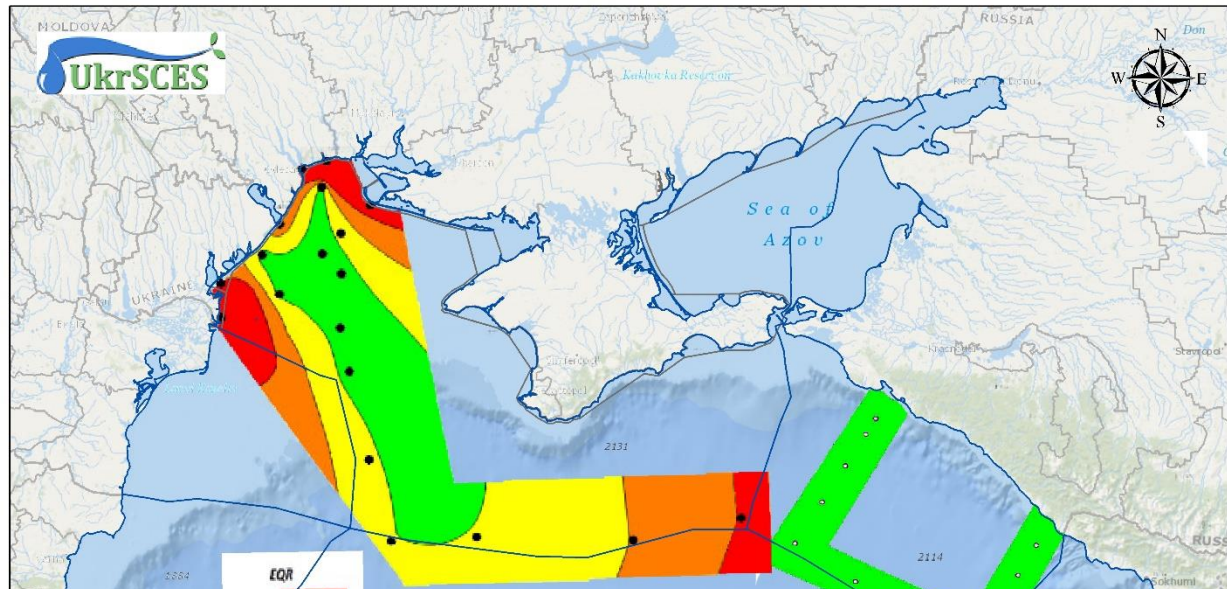
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## Status classification schemes

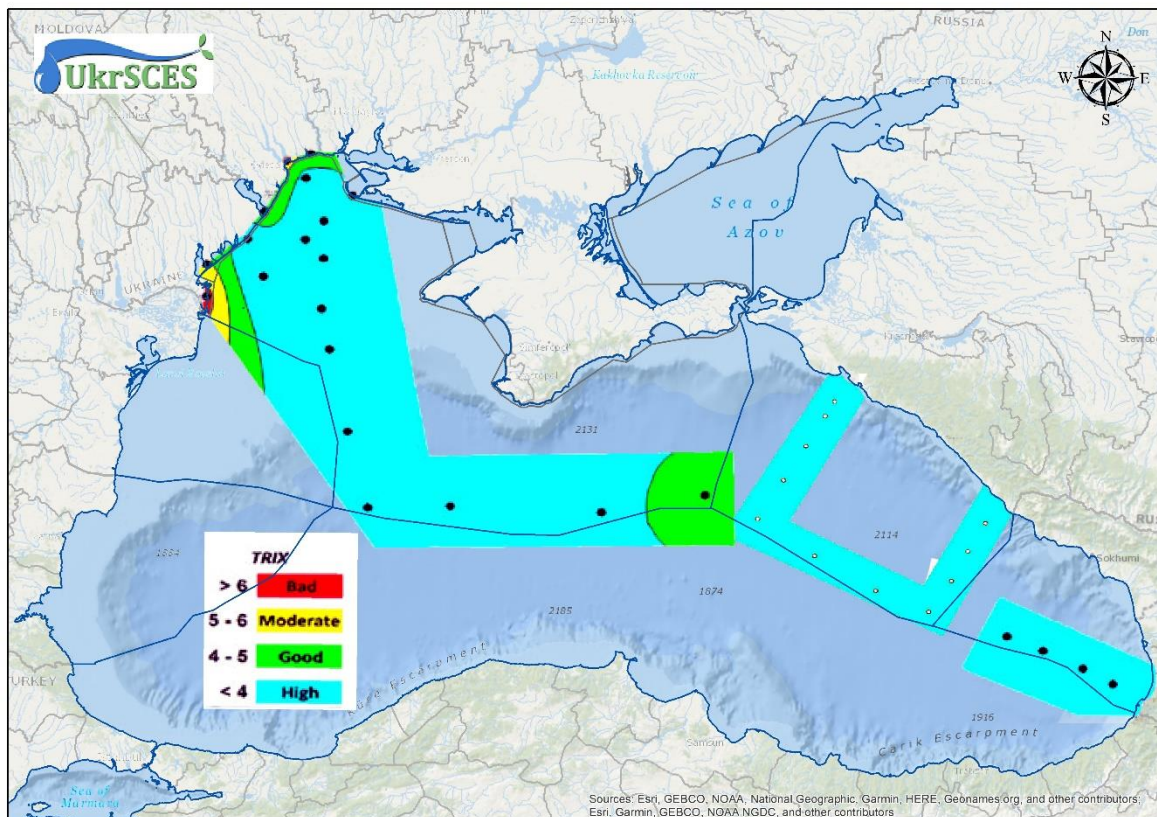
<b>WFD - ecological status (coastal waters)</b>	<b>High</b>	<b>Good</b>	<b>Moderate</b>	<b>Poor</b>	<b>Bad</b>
<b>MSFD - environmental status (territorial waters)</b>	<b>GES</b>		<b>Not GES</b>		



## Status assessment BEAST



## TRIX







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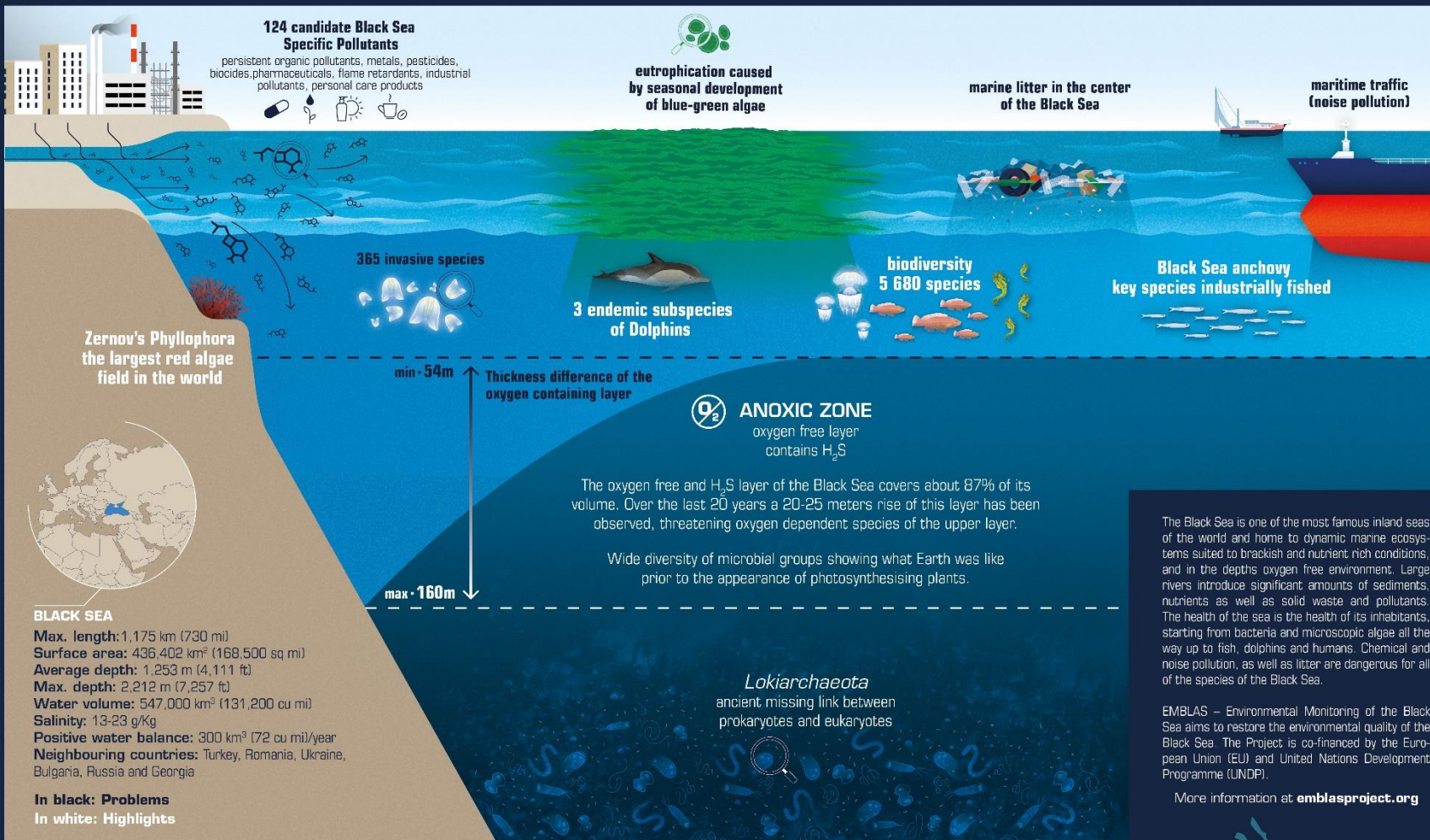
COUSTEAU

WWW.COUSTEAU.ORG  
CUSTODIAN OF THE SEA  
SINCE 1949

# THE BLACK SEA AT A GLANCE

HIGHLY VULNERABLE

EMBLAS-Plus  
Environmental Monitoring in the Black Sea





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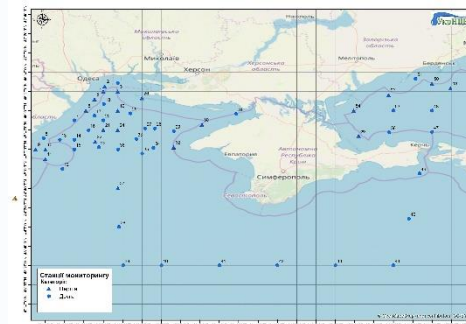
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## Joint Black Sea Surveys and National (Pilot) Monitoring Studies

- **Data collected for 8 out of 11 MSFD descriptors**
  - Initial Assessment in UA – format to be adopted by GE
  - Indicative ecological & environmental status assessment of the Black Sea
  - Basis for the Regional WQ/GES Assessment methodology
- Data collected in harmonised formats (DCTs) – **Black Sea Water Quality Database**
- **Economic assessment of monitoring programmes** in GE, RF, UA
- A new “Procedure for the state water monitoring” adopted by Ukraine = new monitoring programme aligned with WFD/MSFD, operational as of 1 January 2019







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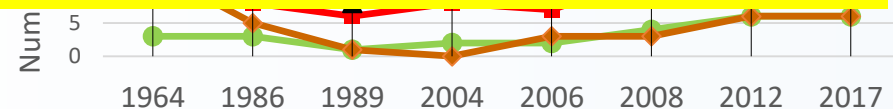
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Macrophytobenthos in Zhernov's Phyllophora Field

**Black Sea is  
coming back to  
life!**





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Chemical contaminants

From universe of  
chemical pollutants to  
(a few) Black Sea  
Specific Pollutants



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## Environmental Monitoring in the Black Sea

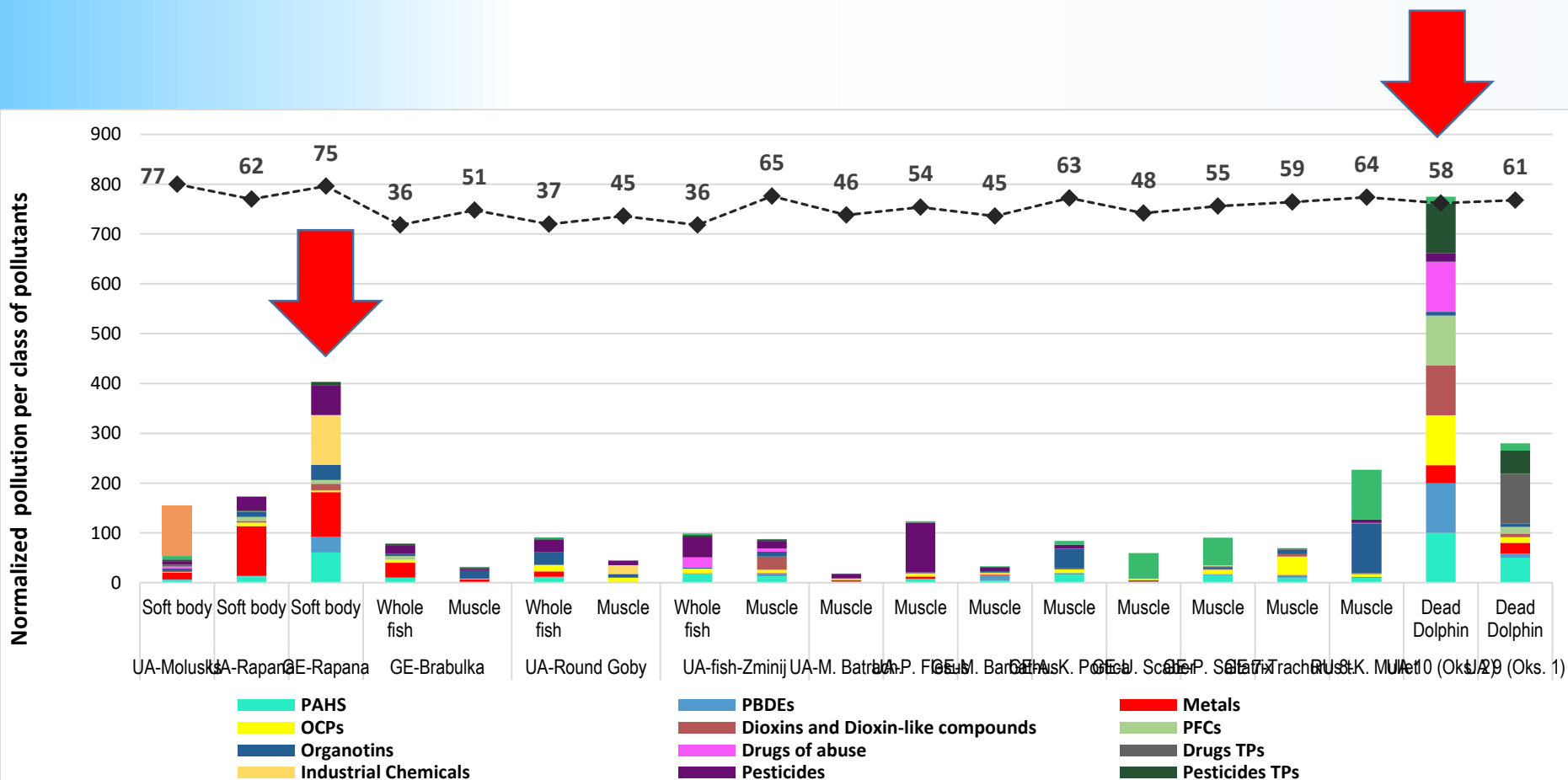


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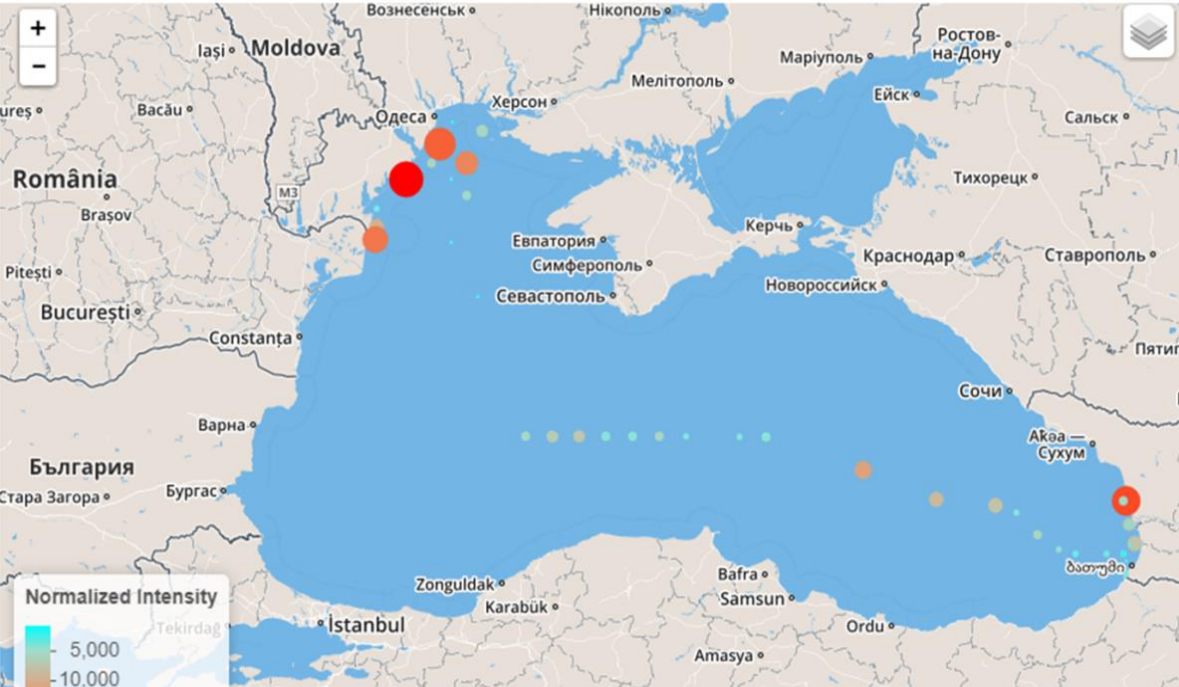


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# Pollution in biota – molluscs/fish







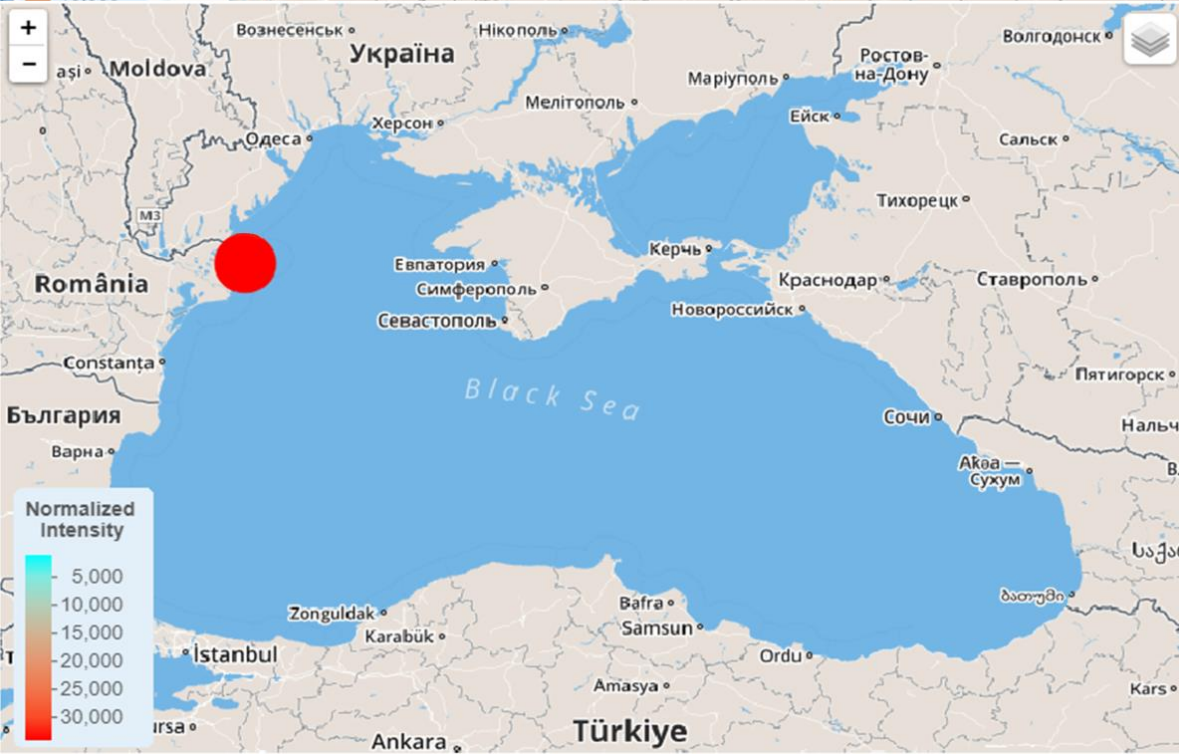
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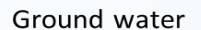
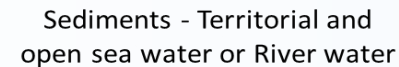
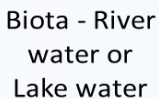
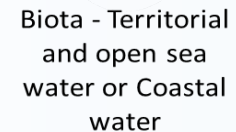
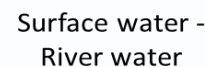
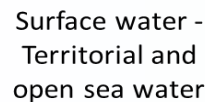
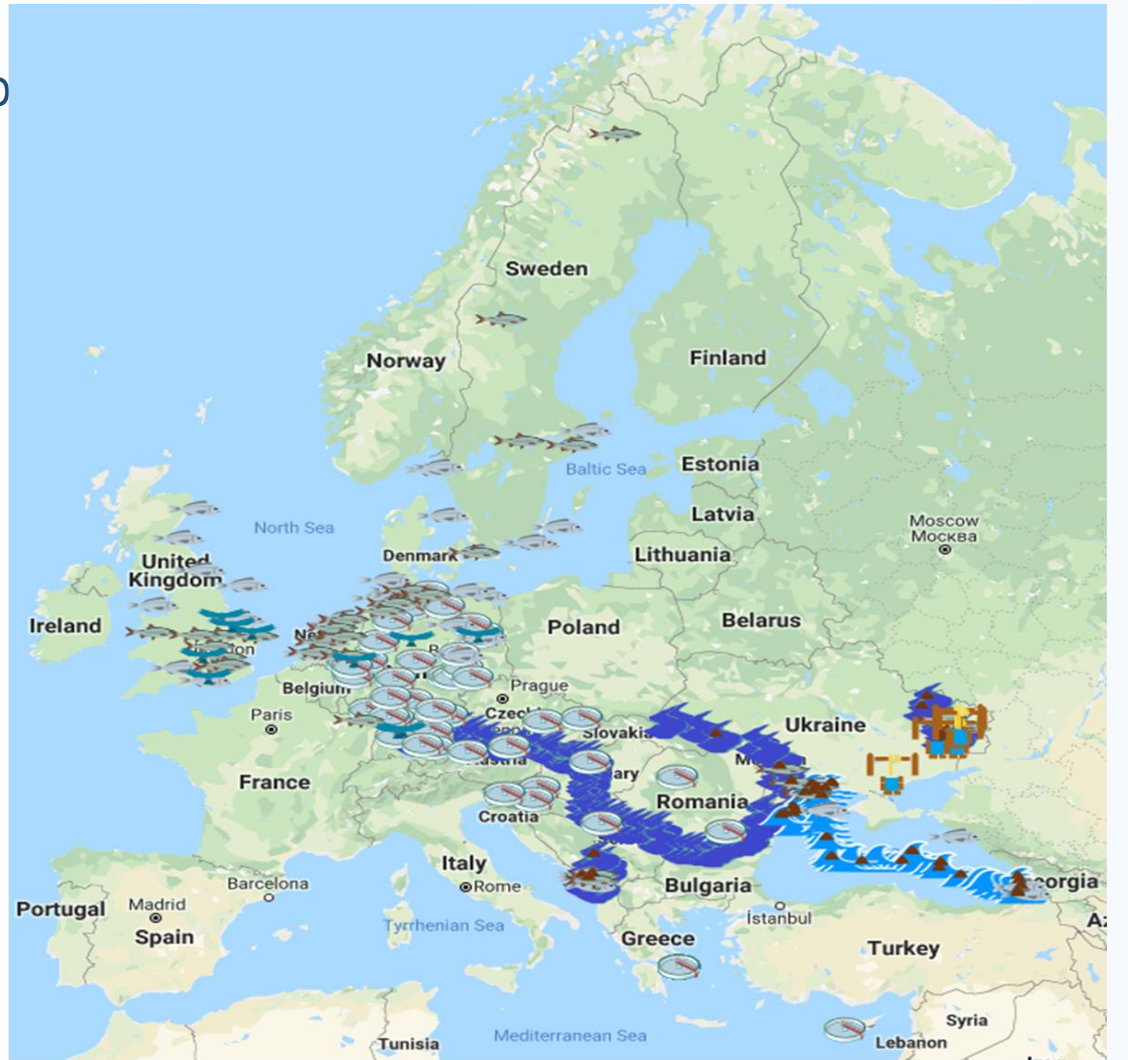
DEET detected in many  
seawater samples from the  
Black Sea

## Identification of hot spots of pollution



Monensine detected only at 1  
sampling station

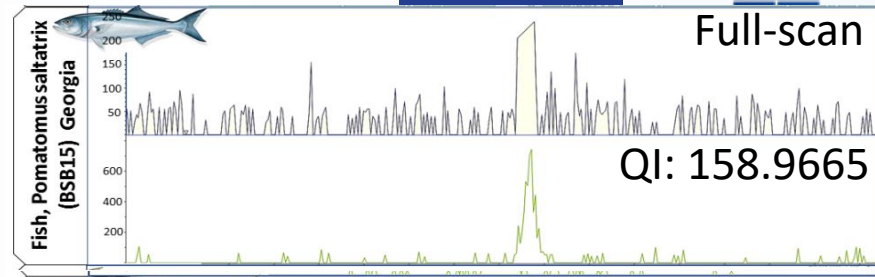
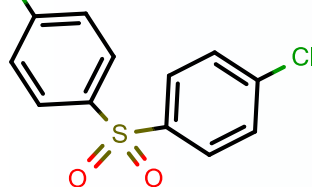
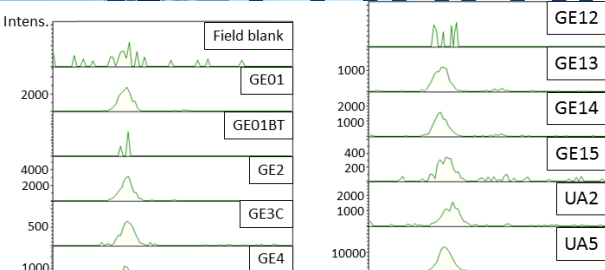
Black Sea dataset  
of 'digitally  
frozen' samples  
in NORMAN DSFP  
used by ECHA,  
LIFE APEX;  
example for other  
Sea  
Conventions??



2016

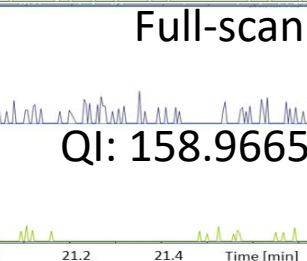
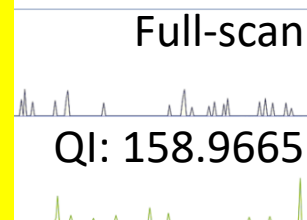
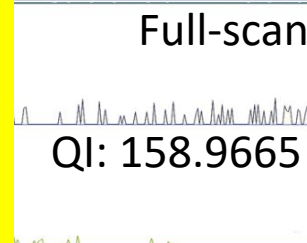
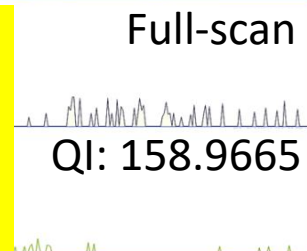
FMRIAS

# Retrospective screening GC-HR-APCI-MS Environmental Monitoring in the Black Sea

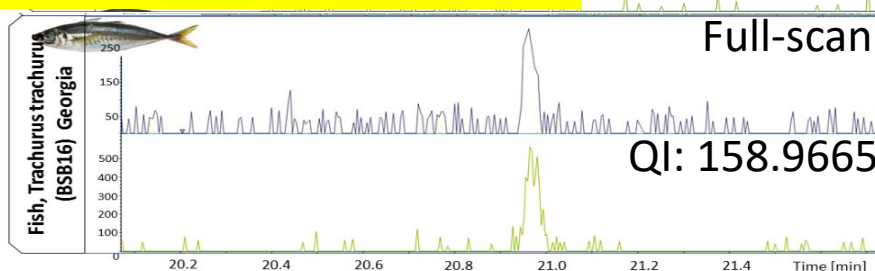
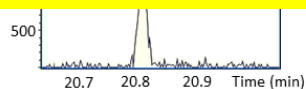
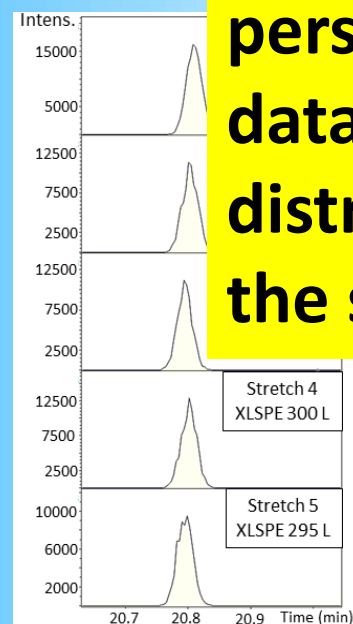


**Bis(4-chlorophenyl) sulphone in Black Sea samples - REACH**

**ECHA PBT EG meeting - substance seems to be an emerging contaminant, which is very persistent and very bioaccumulative. All data on biota to get a better picture on the distribution and accumulation potential of the substance WELCOME!**



2017







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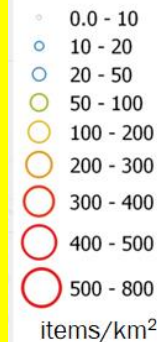


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Black Sea twice as  
polluted by marine  
litter as  
Mediterranean Sea

Legend

BS2017



Cans 0.23%

Other textiles 0.23%



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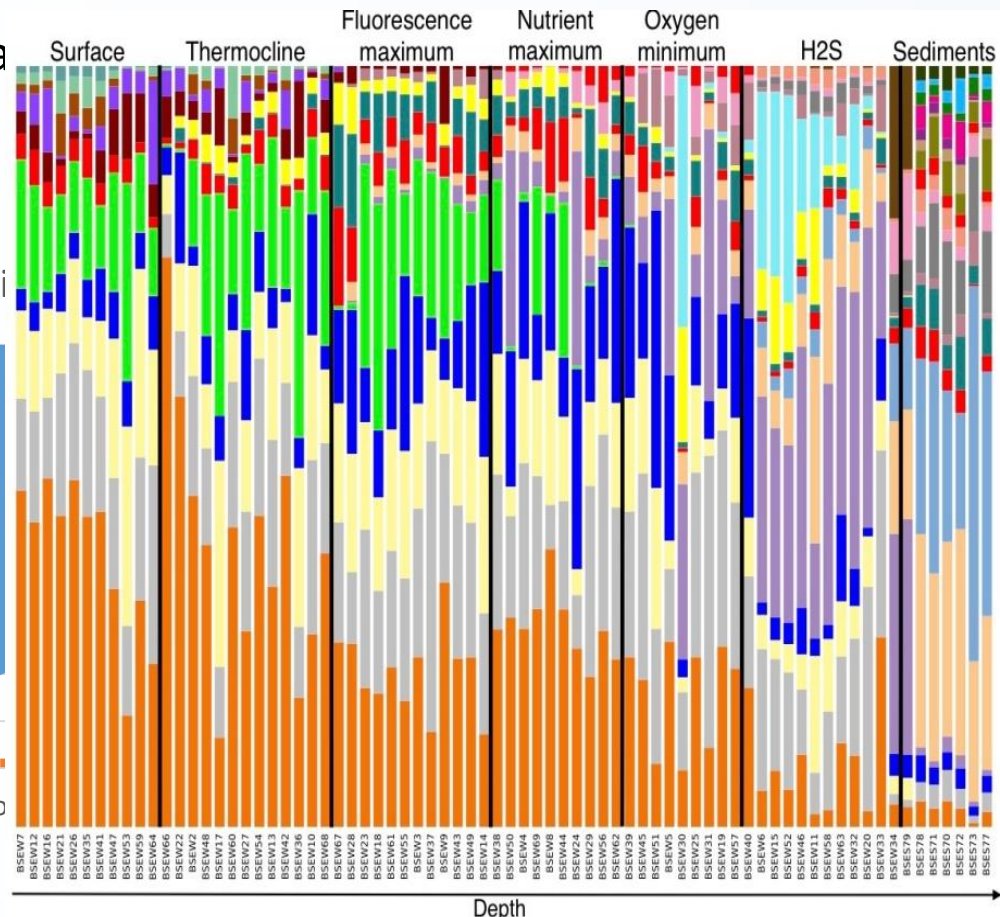
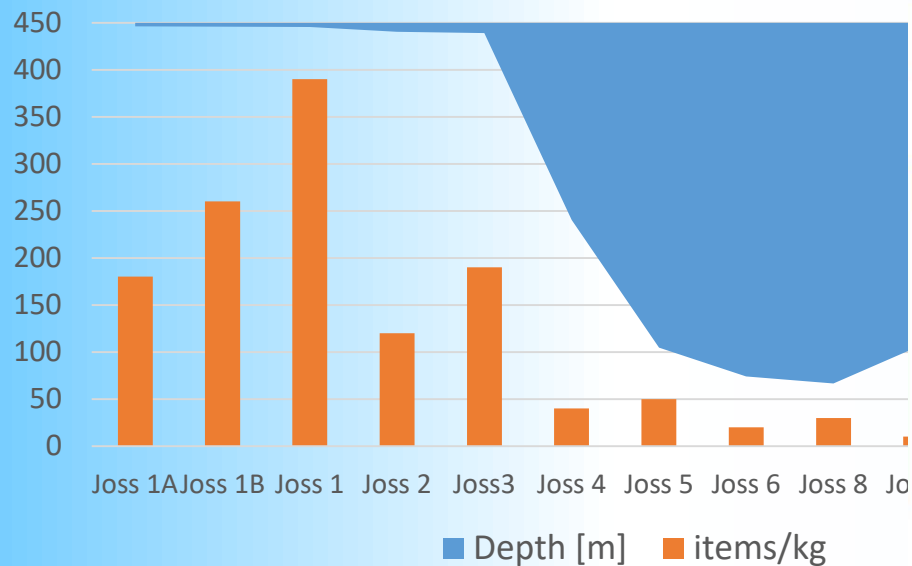


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## Microplastics in sediments - EMBLAS-II

- 12 sediment samples - JOSS (Consta
- University of Florence, Italy

Correlation of MPs abundance in sediments with





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## eDNA - from bacteria to marine mammals

- TOTAL 8900 OTUs **630 species**
- Bacteria 5620 OTUs 141 species
- Algae 1096 OTUs 185 species
- Protozoa 546 OTUs 146 species
- Invertebrate metazoans 150 OTUs 34 species
- Fish 1369 OTUs 76 species
- Marine mammals 39 OTUs 5 species

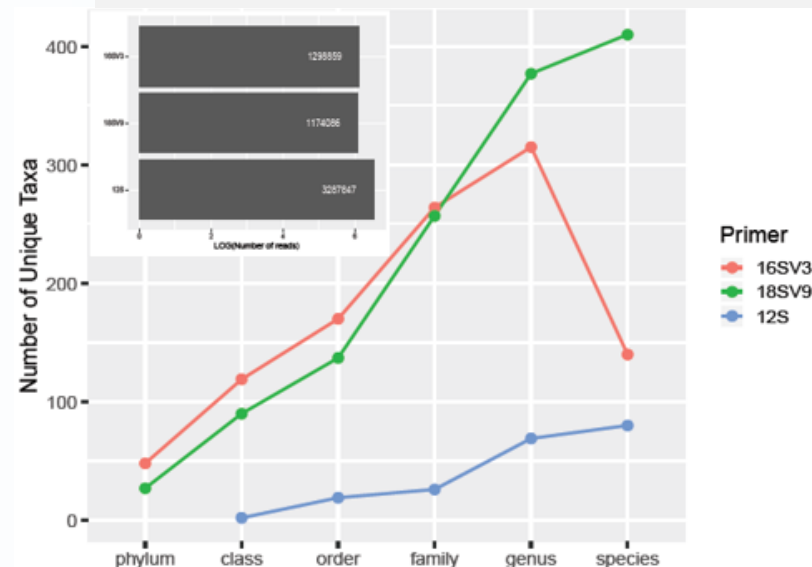
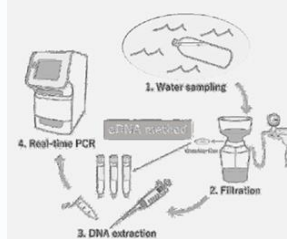
➤ **Red book/extinct species – European sturgeon**

➤ **Invasive species**

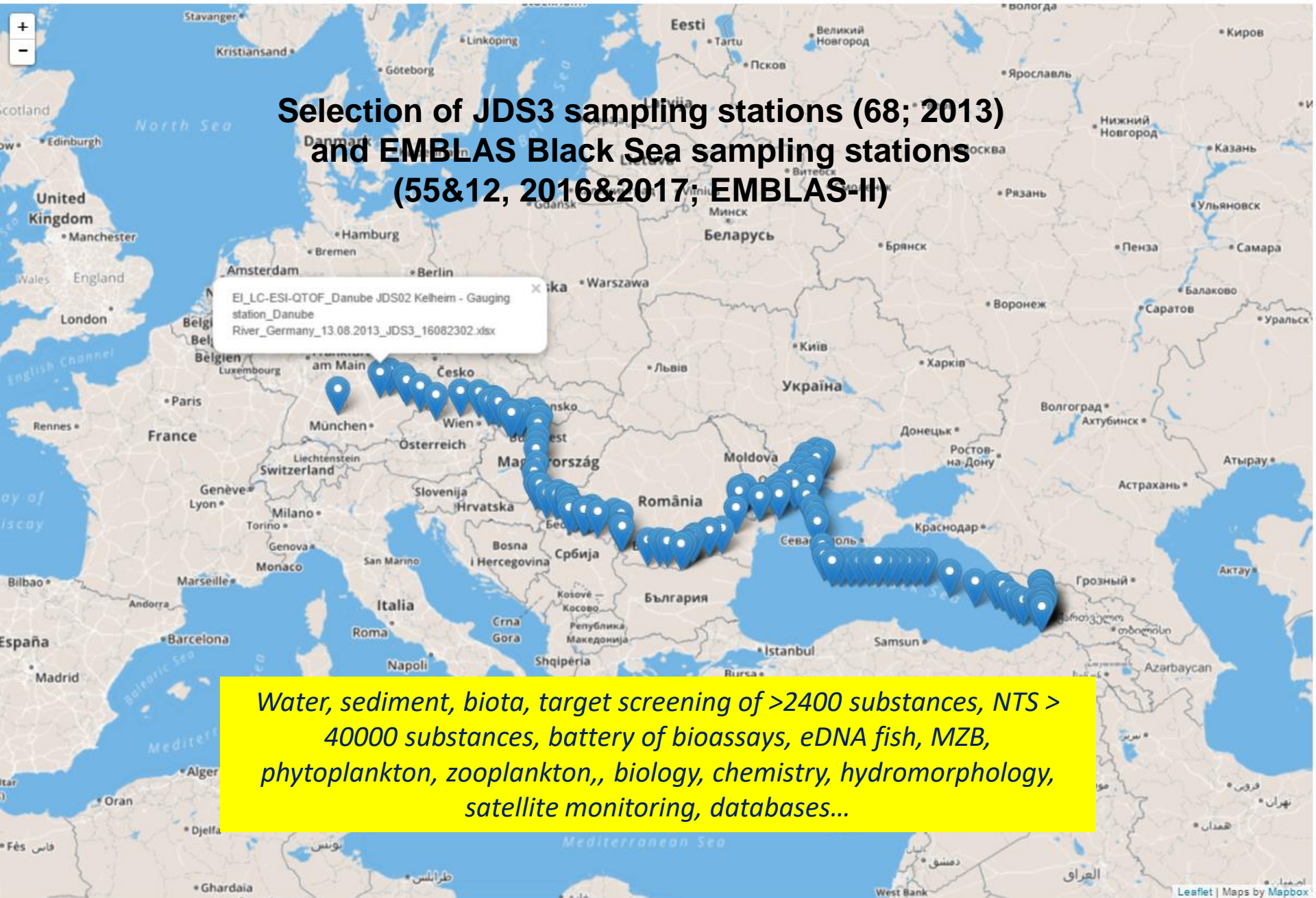
➤ **Unexpected species**

eDNA

= environmental DNA









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MSFD (territorial waters), WFD (coastal waters)  
and Bucharest Convention (BSC)

- **Projects that cover all six Black Sea countries**

- EMBLAS+, EUWI+, ANEMONE, CeNoBS...
- **UNDP – possible platform; need for at least 5-years plan**
- Development/update of harmonised monitoring programmes for all 11 MSFD descriptors
  - Underwater noise, Hydrography, Fish population
- Upgrade and implementation of BSC BSIMAP
- Delineation of coastal zone water bodies – update in GE, to be done in RF

- **Closer cooperation with other EU sea and river basin conventions**

- OSPAR, HELCOM, MEDPOL, ICPDR...



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## Databases

- Sustainable development and filling up of the BS WQD
- Data sharing – EMODNet, EEA, IPCHEM, NORMAN
- **Need for data from all previous EU-funded projects in the Black Sea region in a harmonised format**





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# <http://emblasproject.org/>

- EMBLAS-II and EMBLAS+: April 2014 – September 2020

## PUBLICATIONS



Public summary  
English version



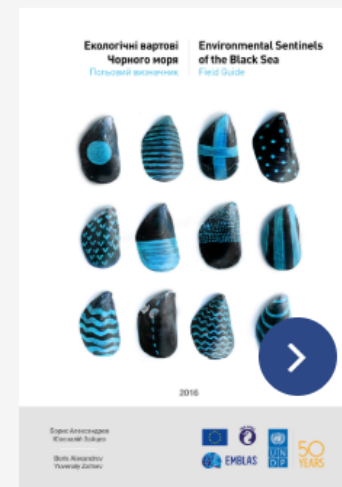
Scientific Report



Scientific Report  
Annex



12 new facts you  
wish to know about  
the Black Sea



Environmental  
sentinels  
English version