SPlasH! – Stop to plastic in H2O!

An EU Project to investigate the state of the port environment

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PARTNERS

UNIVERSITÀ DEGLI STUDI DI GENOVA

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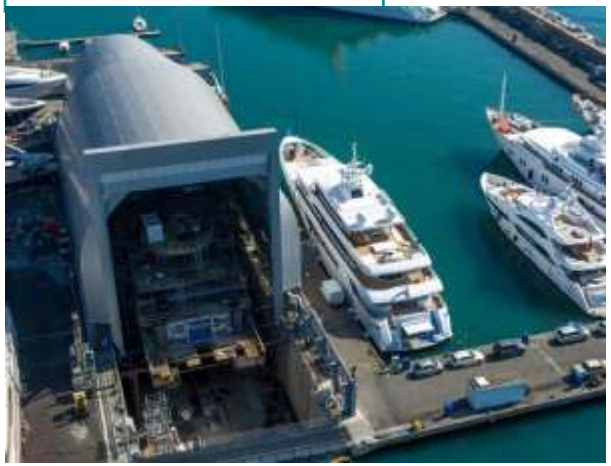
PORTS

Shipping

Commercial activities

Industrial

Urban discharges

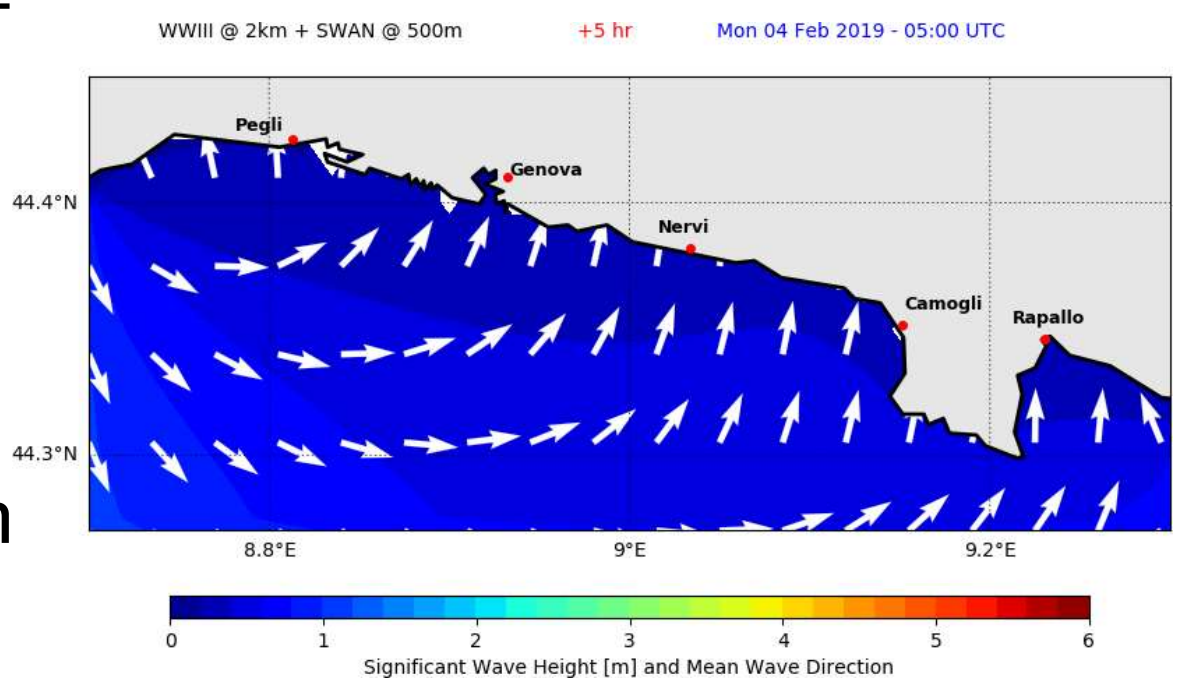


PROJECT GOALS

- Characterisation of ports as sources of MP: Genoa (IT), Olbia (IT), Toulon (FR)
- Improving of MP sampling techniques
- Understanding of MP dynamics: transport and distribution

PROJECT RESULTS

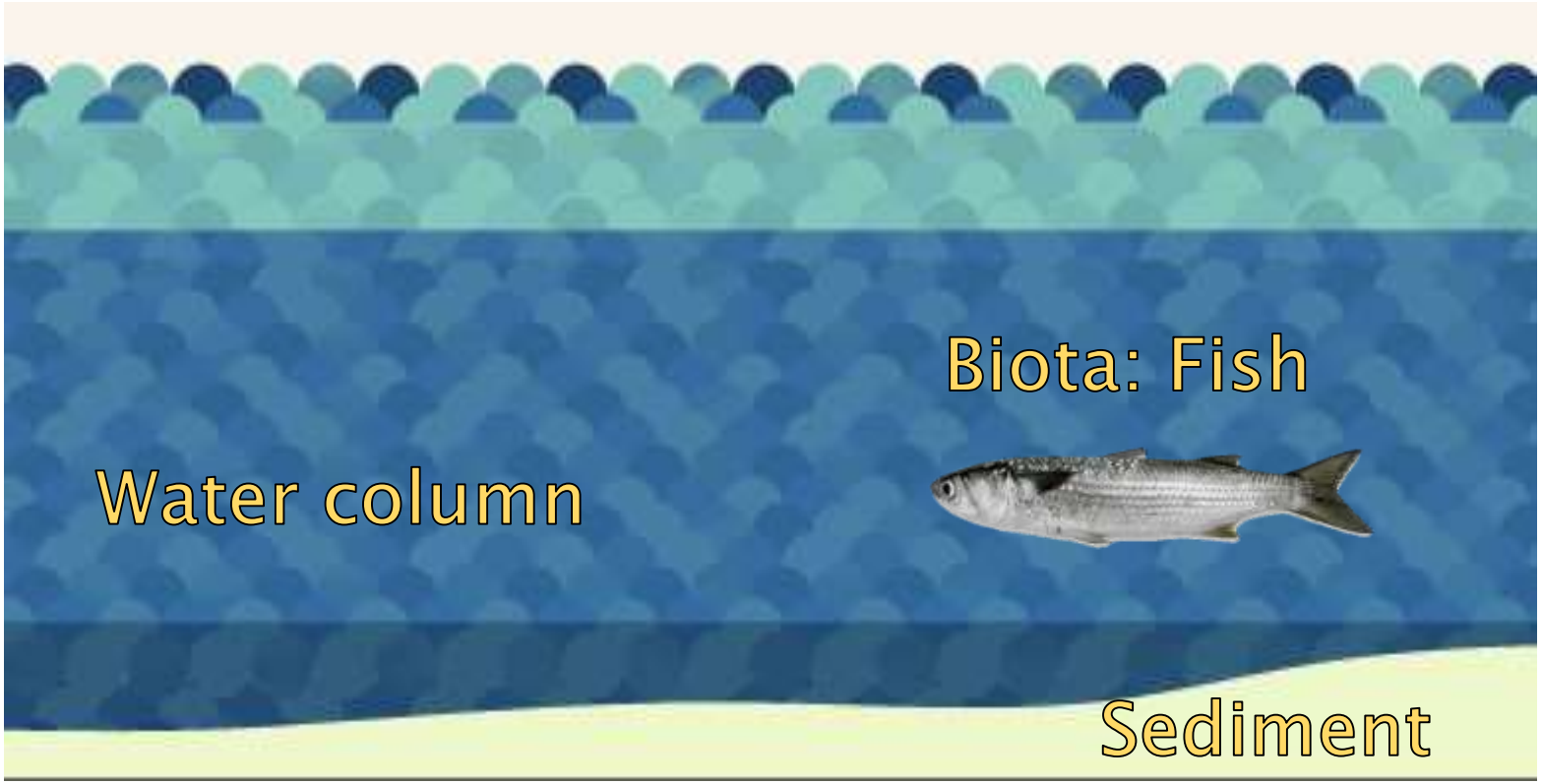
- Dispersion models of how marine weather conditions can affect MP transport
- Development of innovative MP sampling prototype
- Mapping MP concentrations and distribution in port areas



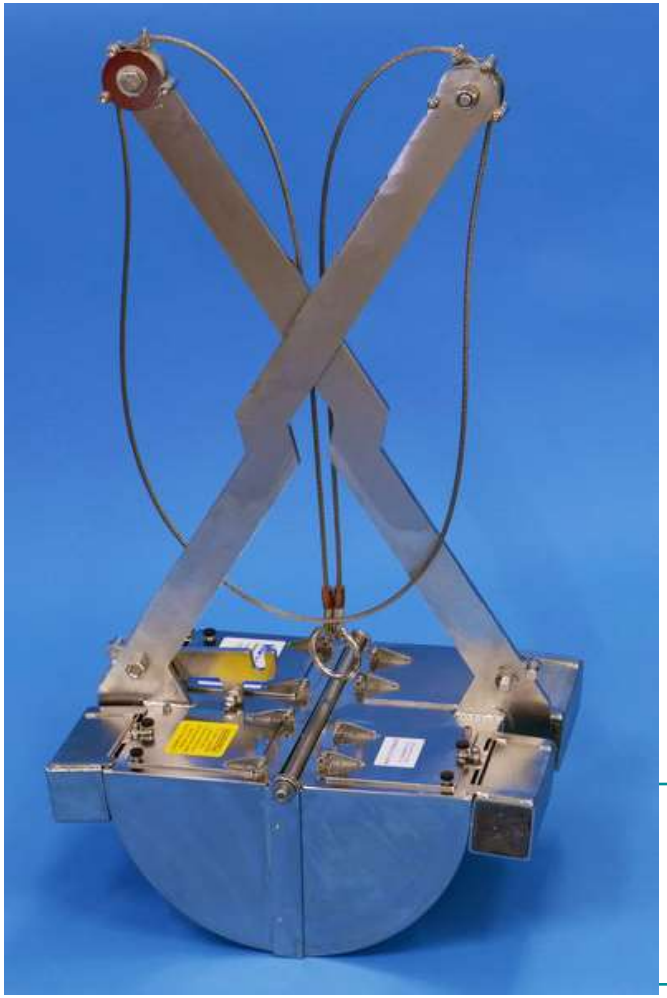
ROLE OF

DISTAV – UNIVERSITY OF GENOA

Qualitative and quantitative investigation on MP content in:



MATERIALS AND METHODS



Water column:
5L Niskin bottle

Sediment:
5L Van Veen
grab

MATERIALS AND METHODS

Bioindicator : Family Mugilidae

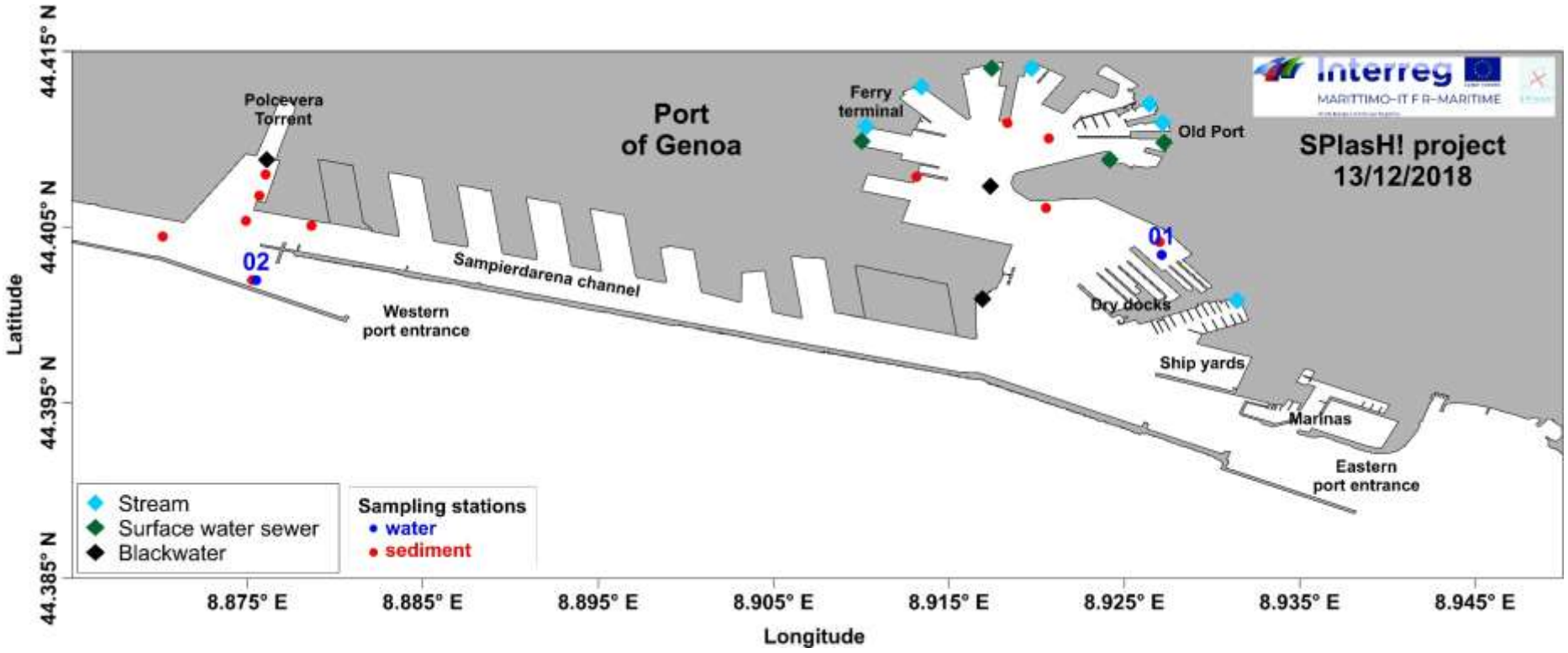
MP stomatal content

Why Mugilidae?

- common in ports
- resistant to stressors
- known in literature

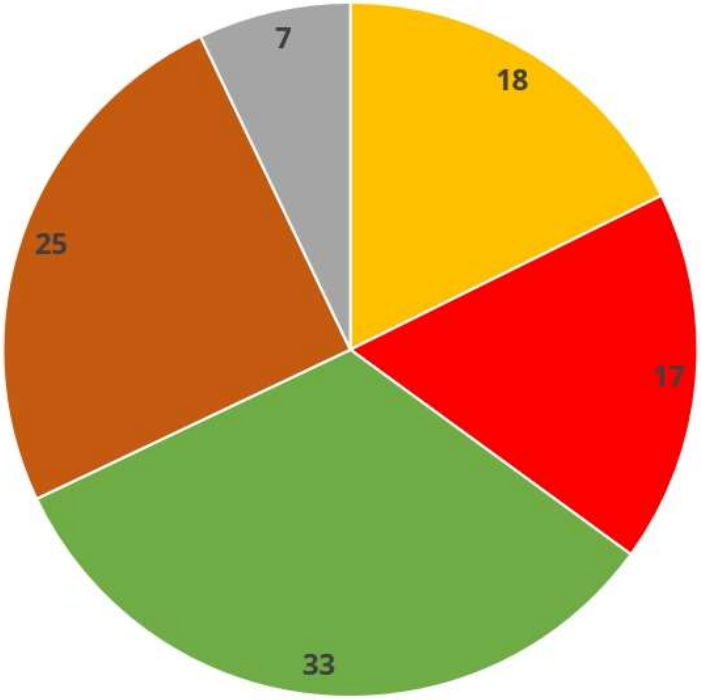
SAMPLING STATIONS

PORT OF GENOA – ITALY



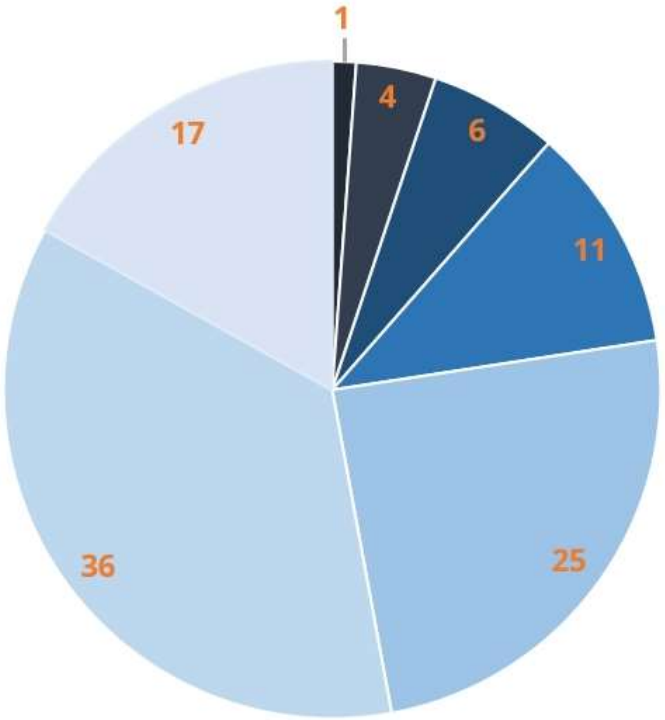
GENOA RESULTS: SEDIMENTS

% SHAPE



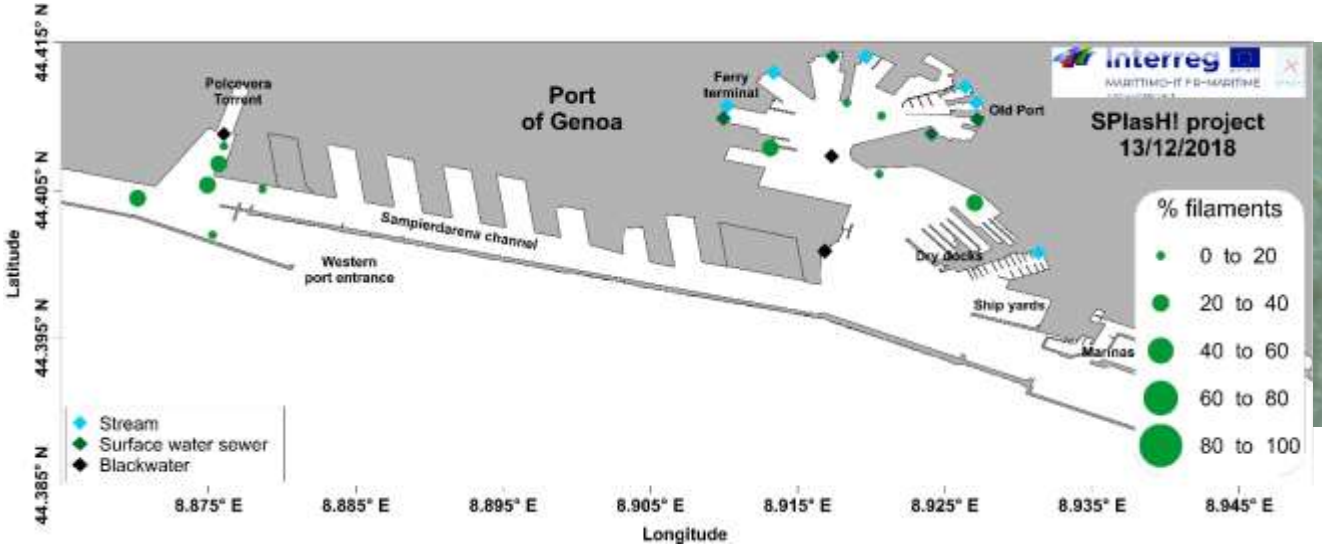
Filaments Spheres Granules Fragments Others

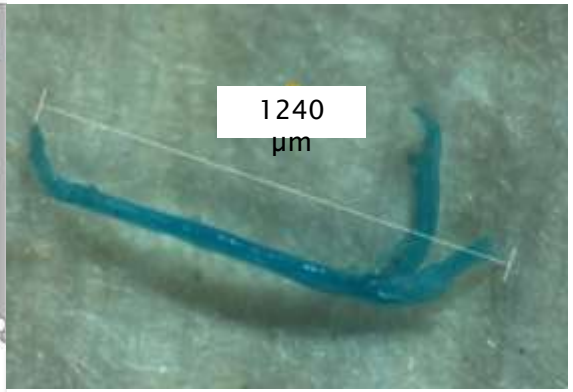
% SIZE

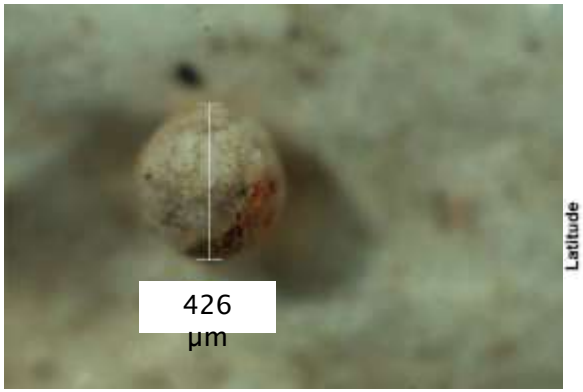


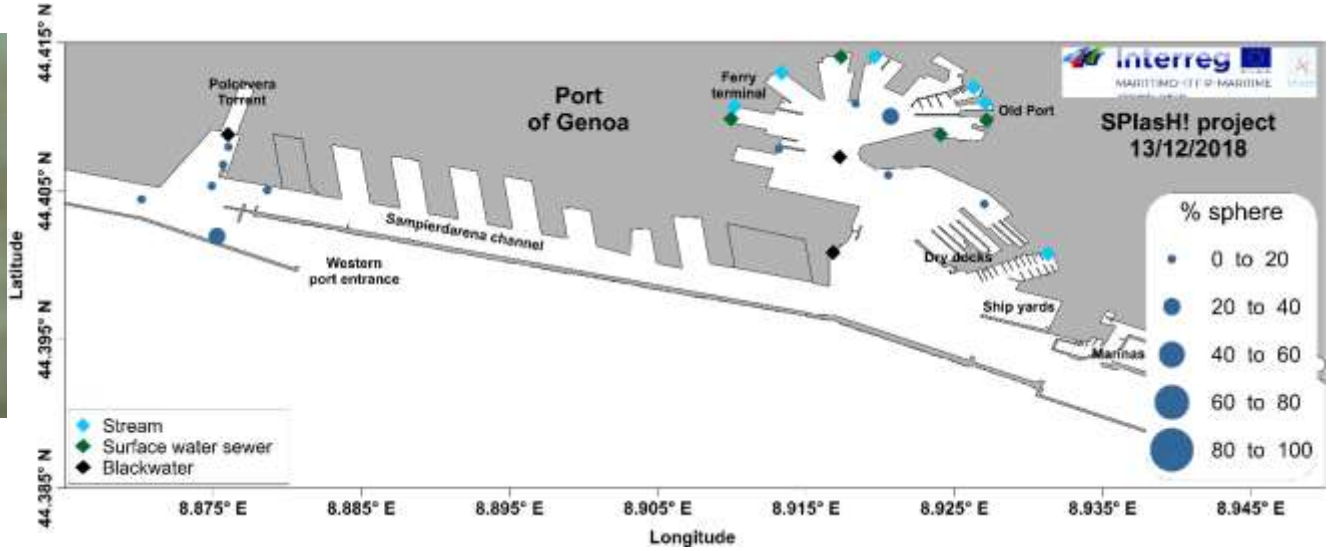
Ø ≥ 2000 µm
1000 µm ≤ Ø < 2000 µm
500 µm ≤ Ø < 1000 µm
250 µm ≤ Ø < 500 µm
125 µm ≤ Ø < 250 µm
63 µm ≤ Ø < 125 µm
Ø < 63 µm

GENOA RESULTS: SEDIMENTS

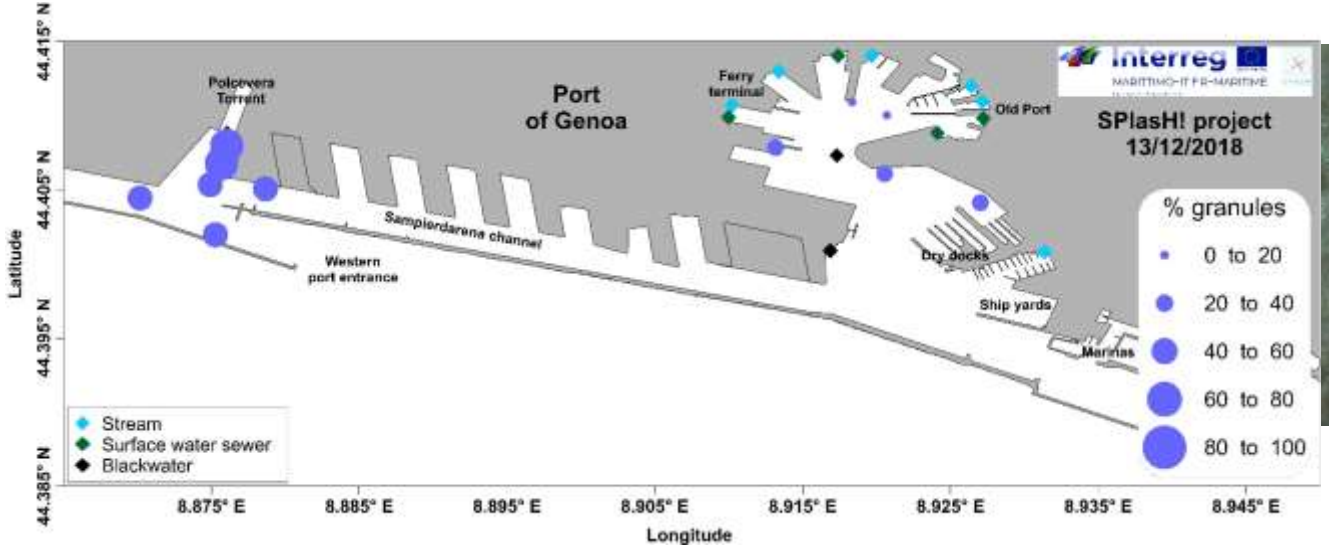


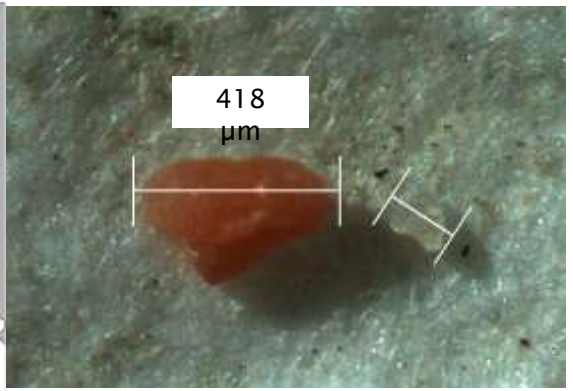


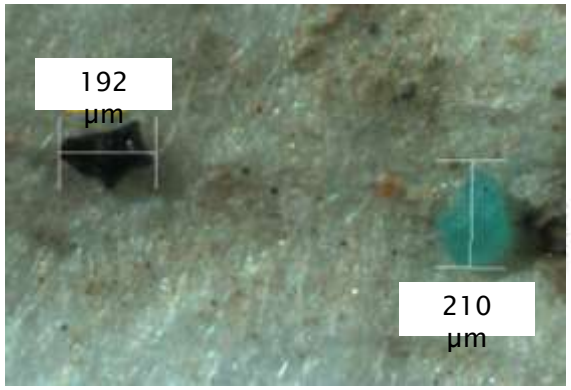


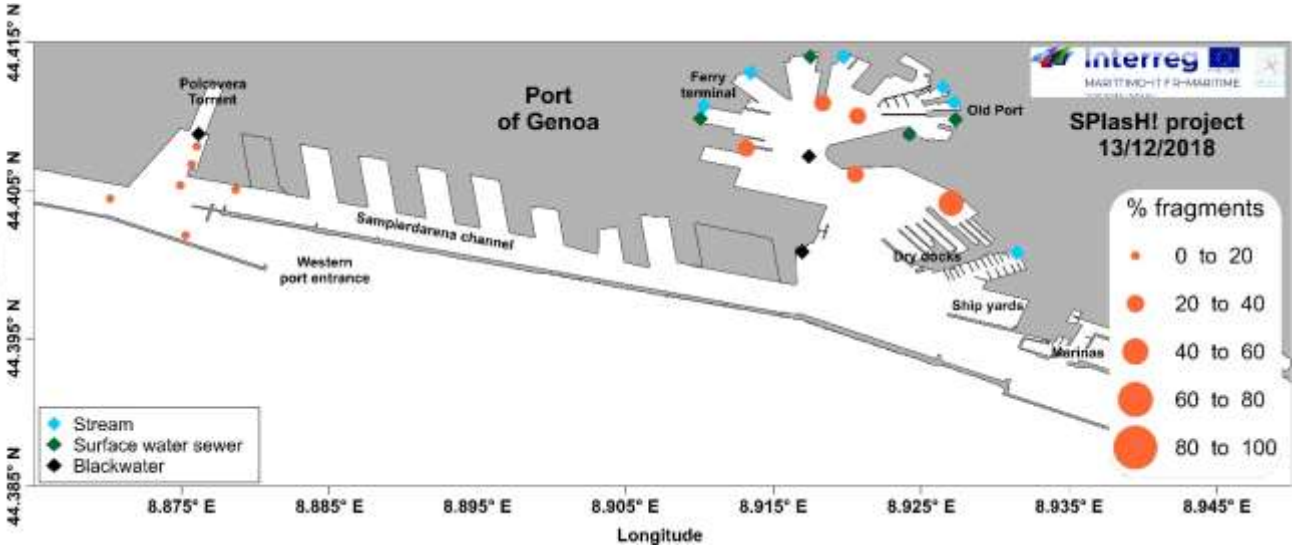


GENOA RESULTS: SEDIMENTS



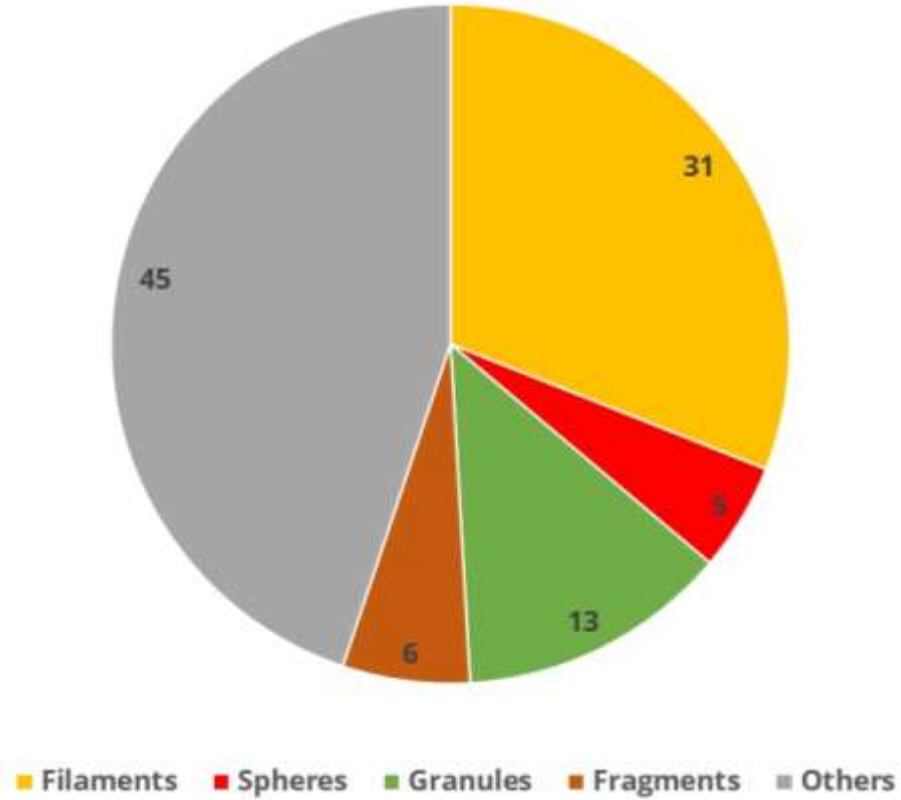




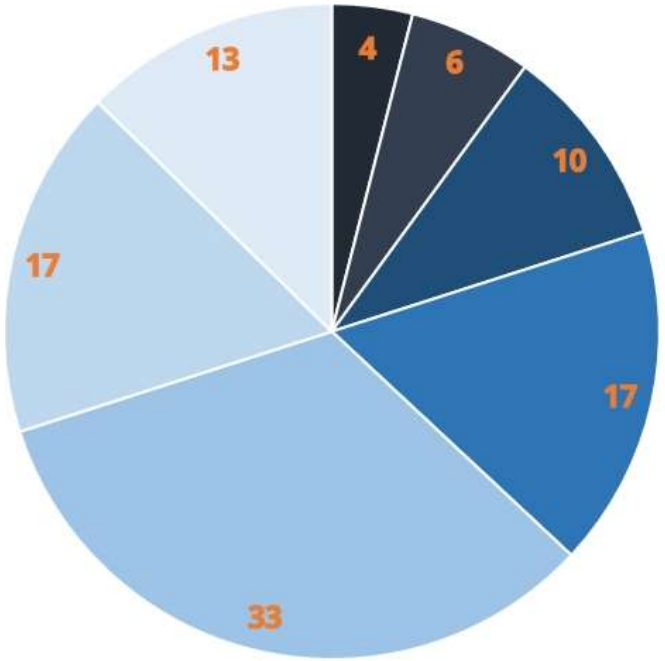


GENOA RESULTS: WATER

% SHAPE

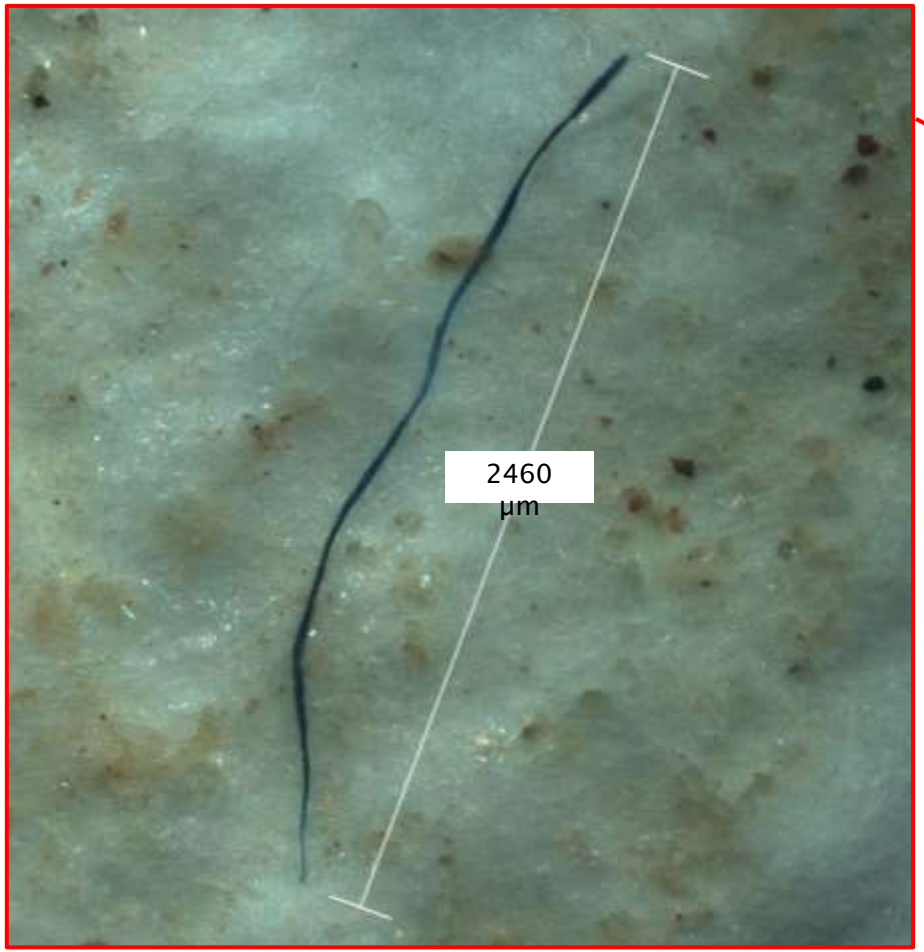


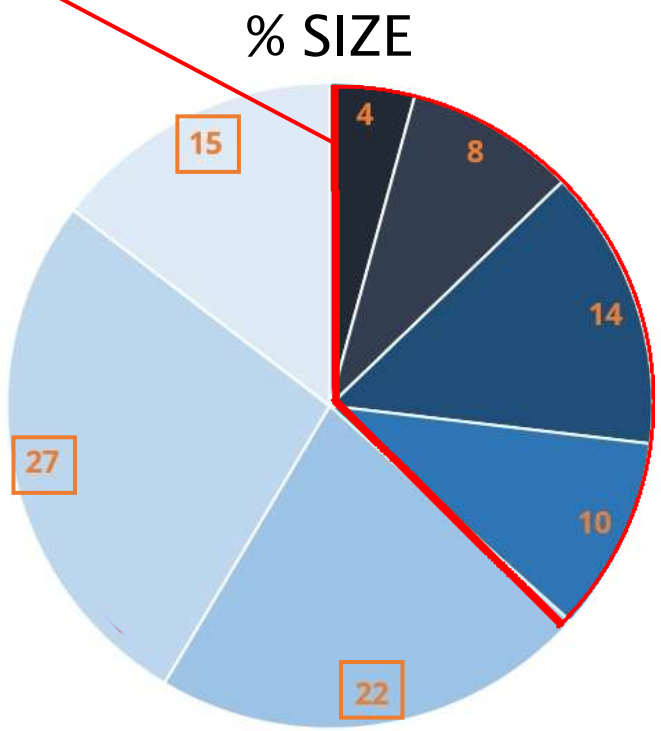
% SIZE



RESULTS: FISH (Mugilidae)

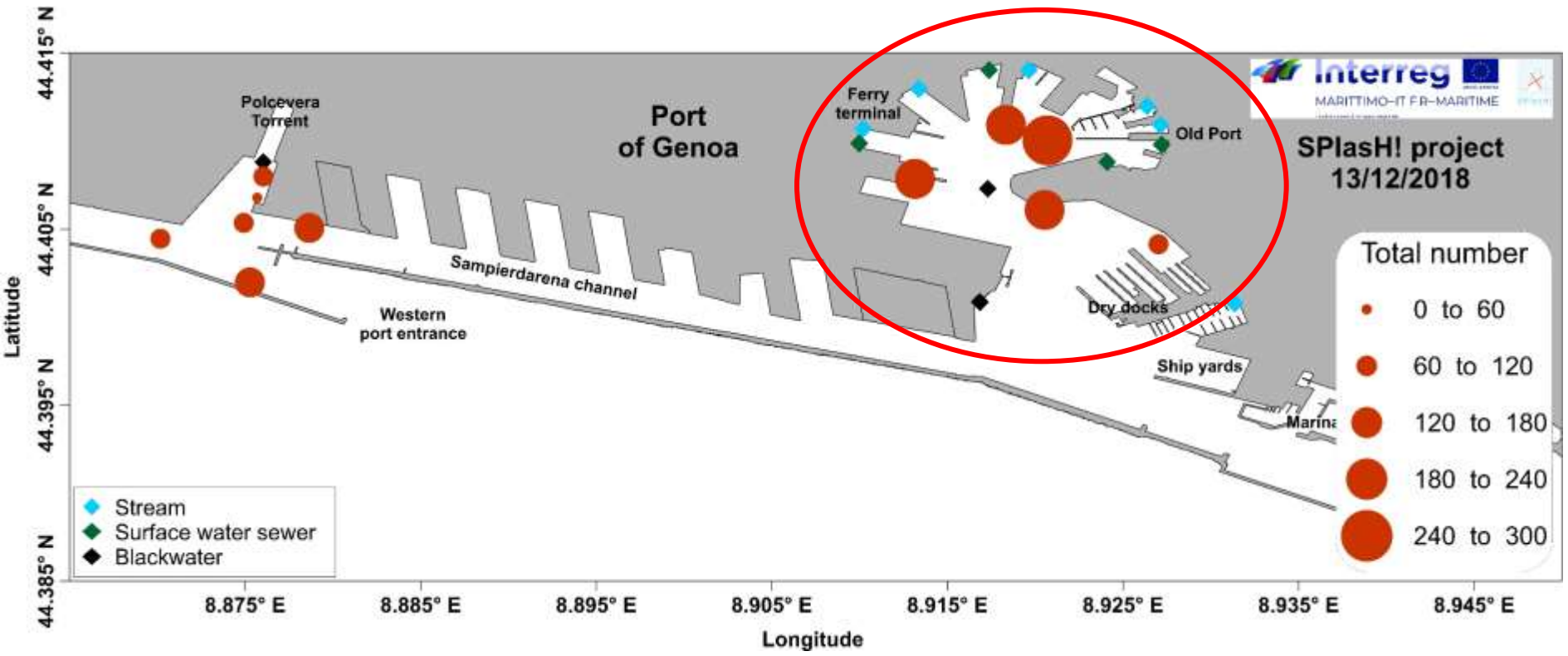
from Mediterranean Sea (industrial fisheries)





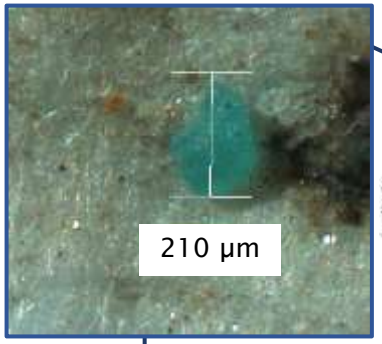
(Almeida, 2003; Pedro et al., 2008

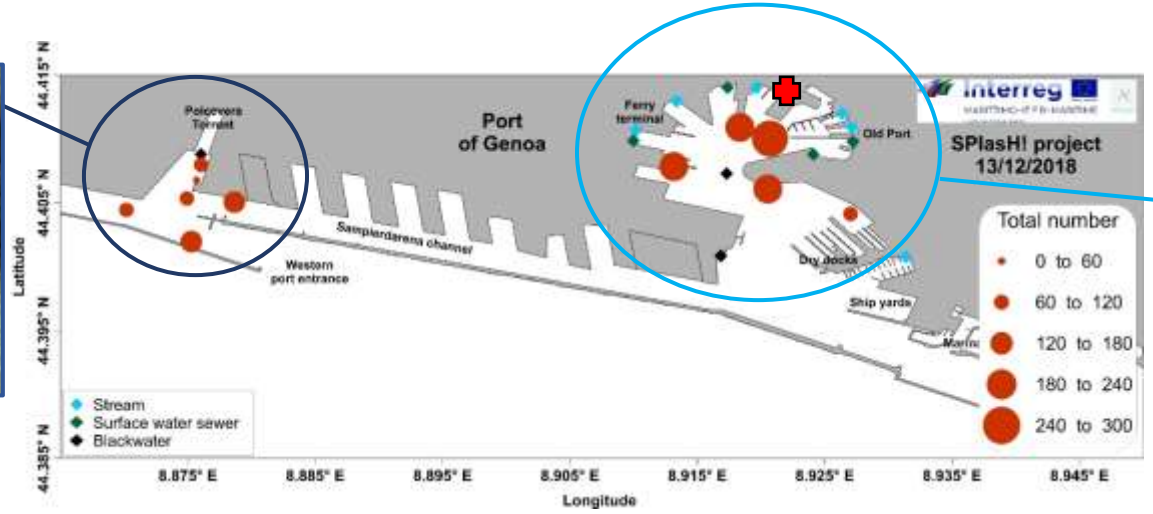
DISCUSSION

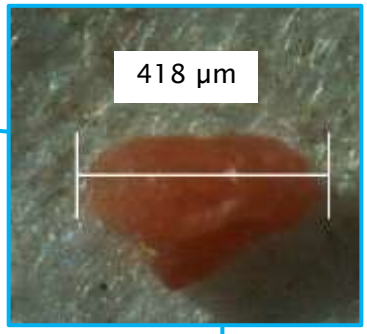


The analysed items are found mostly in the inner part of the port compared to the mouth of Polcevera Torrent, due to a more relevant anthropic impact: sewages, losses from land and ships, street runoff, etc.

DISCUSSION







Hydrodynamic at the mouth of Polcevera Torrent rounds the corners of particles, forming a tridimensional granular shape

Fragments are supposed to come mostly from land losses due to transport by wind, e.g. from the port waste collection site (cross)

DISCUSSION

- A relevant difference between water samples collected within the Port of Genoa is not present

- Analysis on polymeric composition of the items was performed in a parallel study in Ligurian Sea: around 50% of them were identified as cotton fibres by FT-IR analysis.

  Analytical identification will be performed on samples from the Port of Genoa, also testing Micro-Raman spectroscopy

CONCLUSIONS

- Sampling of fish in the Port of Genoa will be performed, in order to allow a comparison with the results from sediment and water samples collected in the same area
- The baseline analysis on stomatal content was performed on Mugilidae from industrial fisheries; the following studies on fish from port areas will focus on a single specie
- The same approach will be applied on the other ports of the project area, as Toulon and Olbia

Thank you for your attention!