SPlasH! - Stop to plastic in H2O!

An EU Project to investigate the state of the port environment

A. Reboa, L. Cutroneo, G. Besio, F. Borgogno, L. Canesi, S. Canuto, K. Djaoudi, F. Enrile, I. Forioso, G. Greco, V. Lenoble, A. Malatesta, S. Mounier, M. Petrillo, A. Stocchino, J. Tesan, M. Capello

University of Genoa

PARTNERS

UNIVERSITÀ DEGLI STUDI DI GENOVA

UNIVERSITÉ DE TOULON

EUROPEAN RESEARCH INSTITUTE

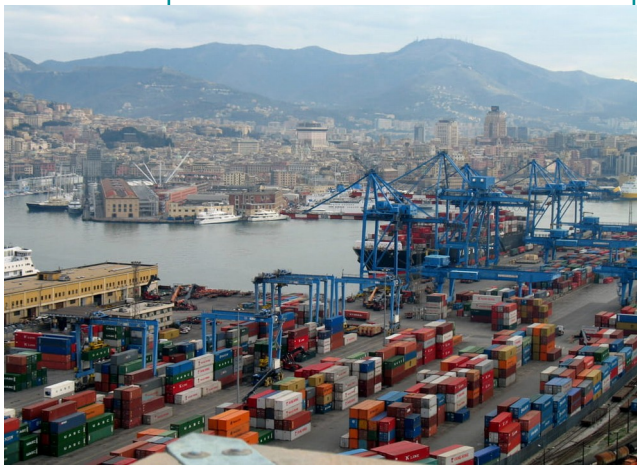
PORTS

Shipping

Commercial activities

Industrial

Urban discharges

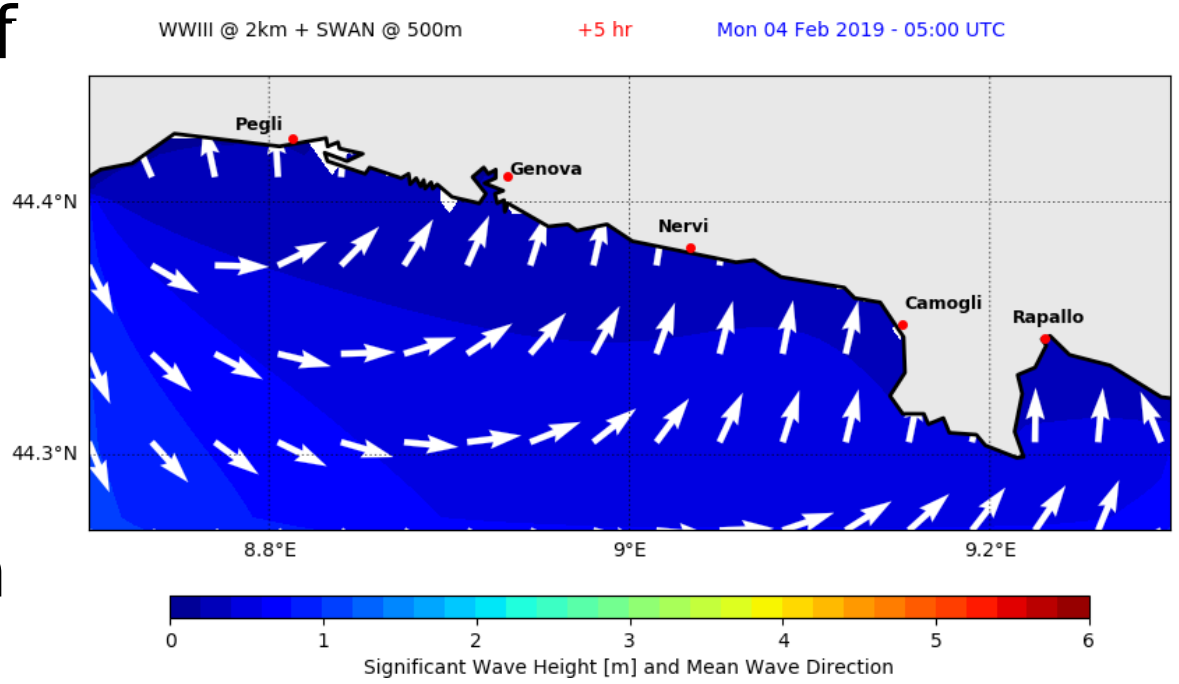


PROJECT GOALS

- 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

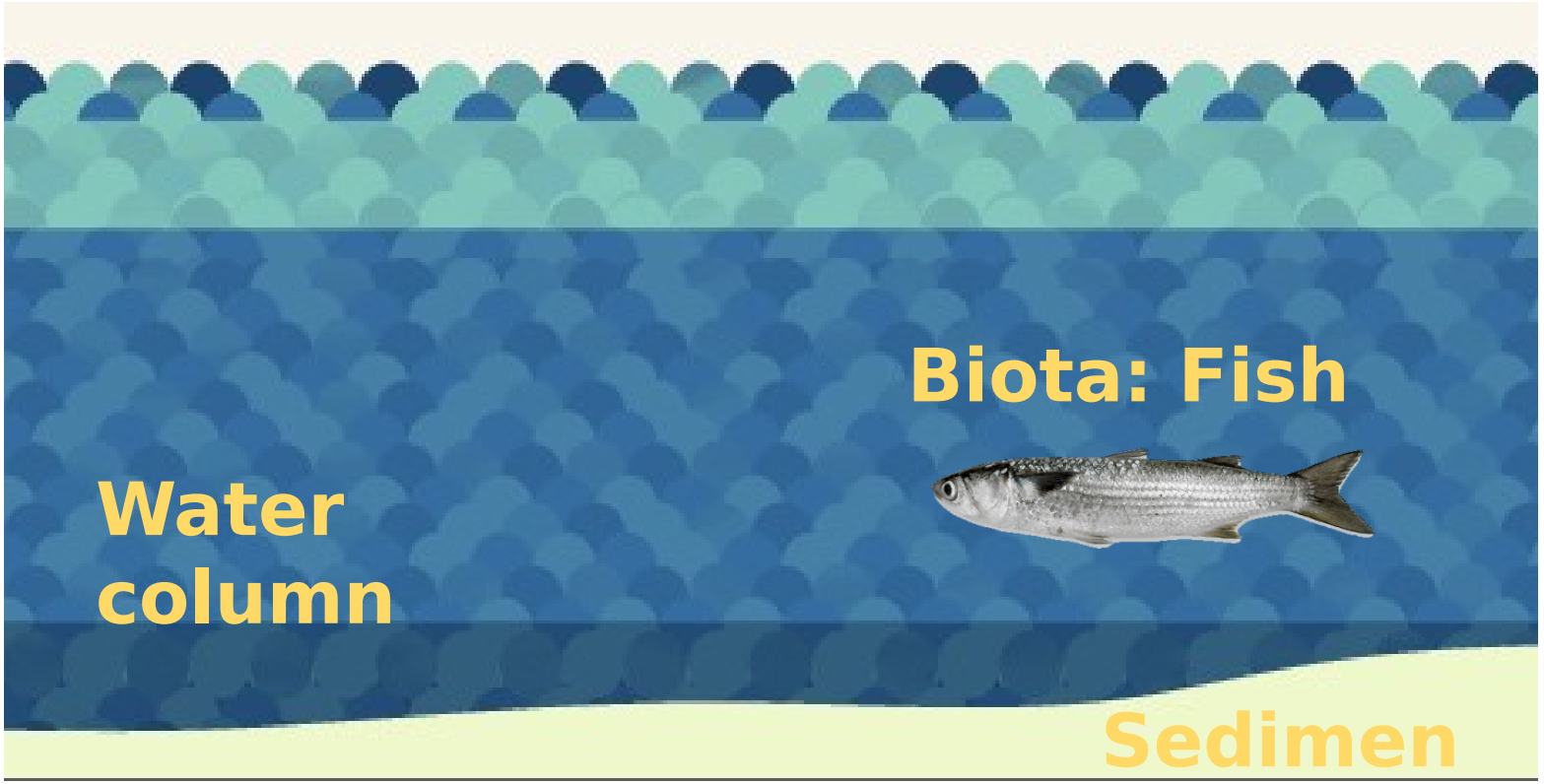
- Dispersion models of how marine weather conditions can affect MP transport
- Development of innovative MP sampling prototype
- Mapping MP concentrations and distribution in port areas



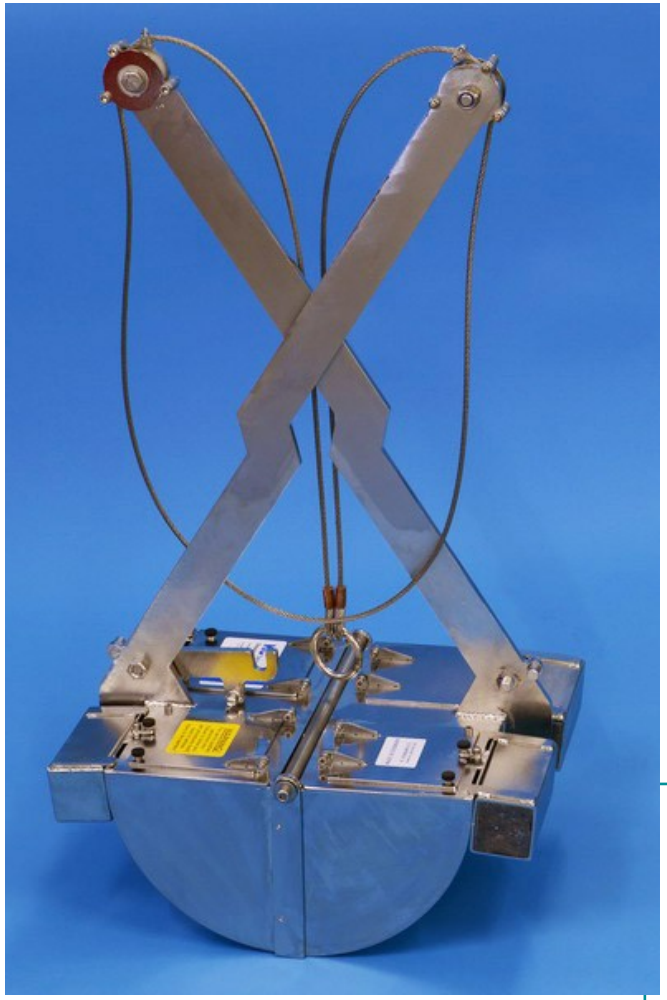
ROLE OF

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

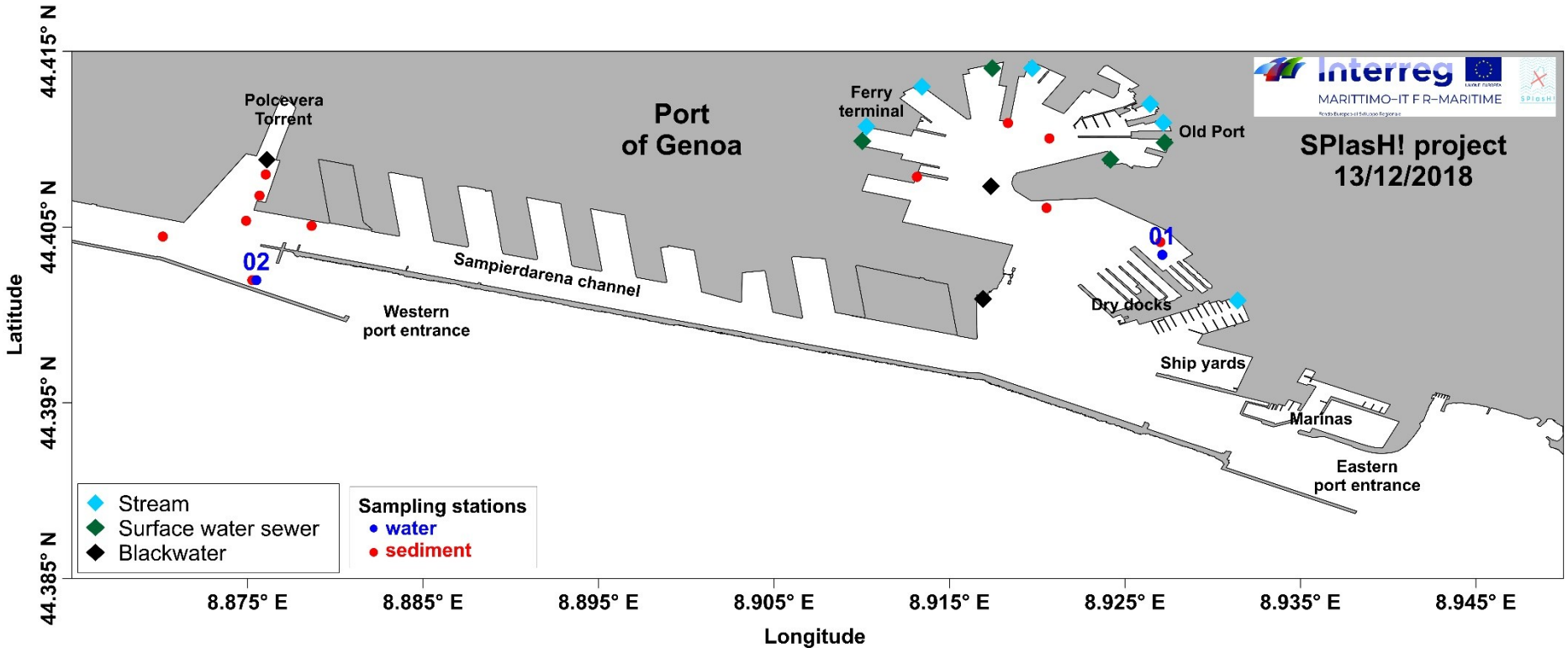
MP stomatal content

Why Mugilidae?

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

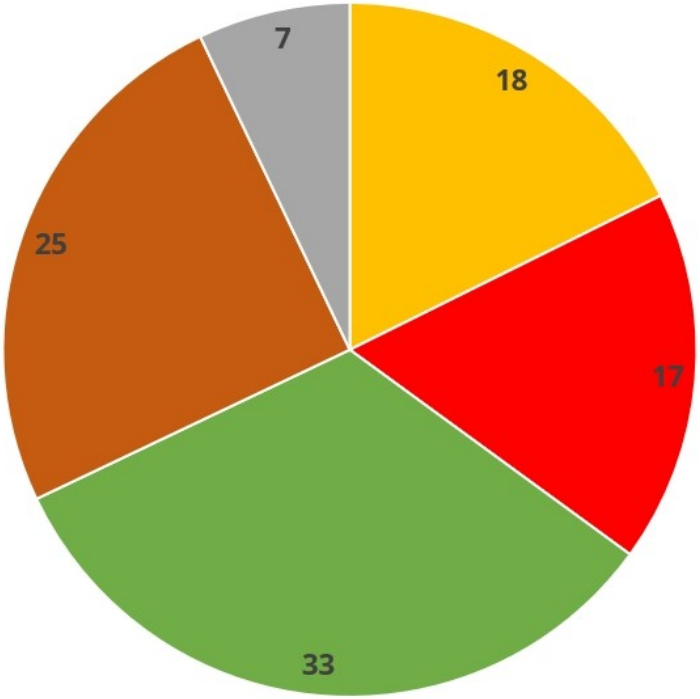
SAMPLING STATIONS

PORT OF GENOA - ITALY



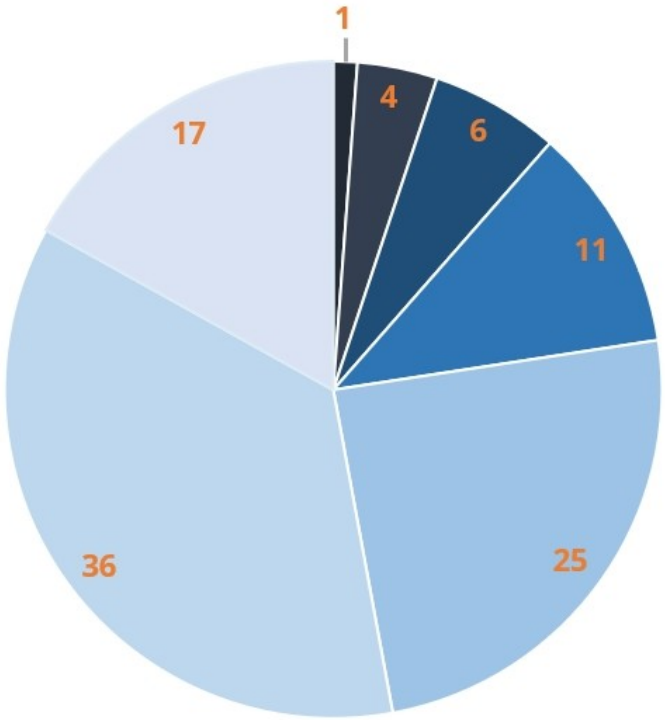
GENOA RESULTS: SEDIMENTS

% SHAPE



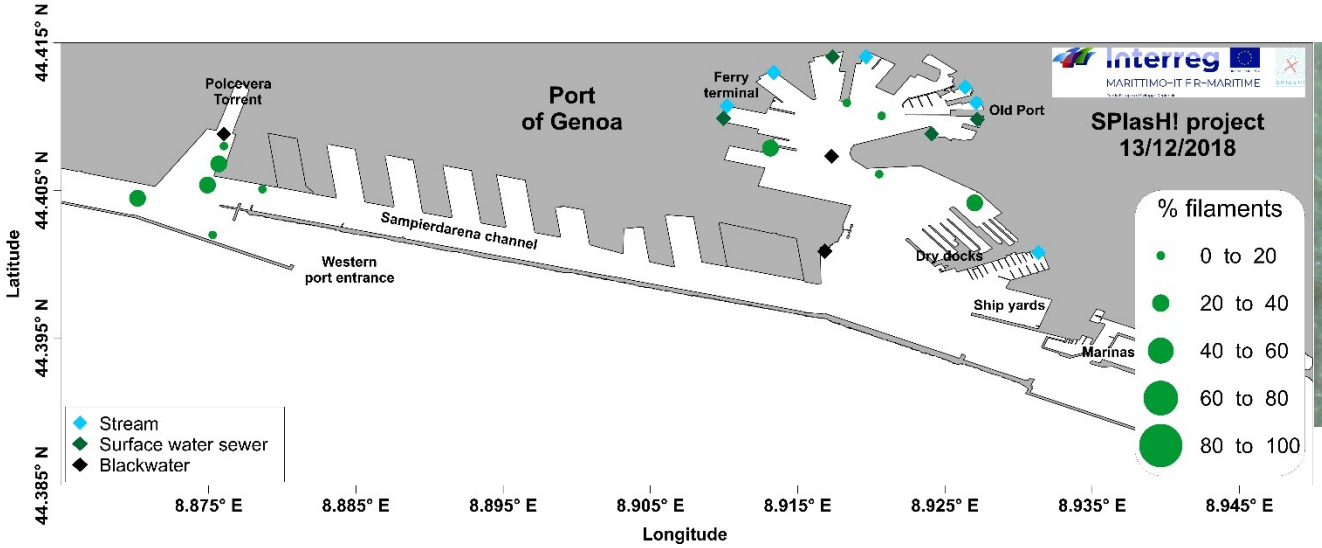
Filaments Spheres Granules Fragments Others

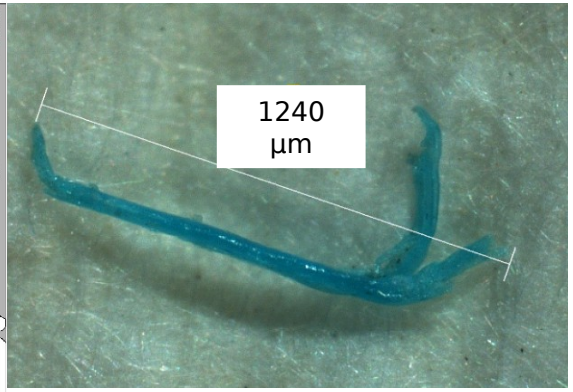
% SIZE

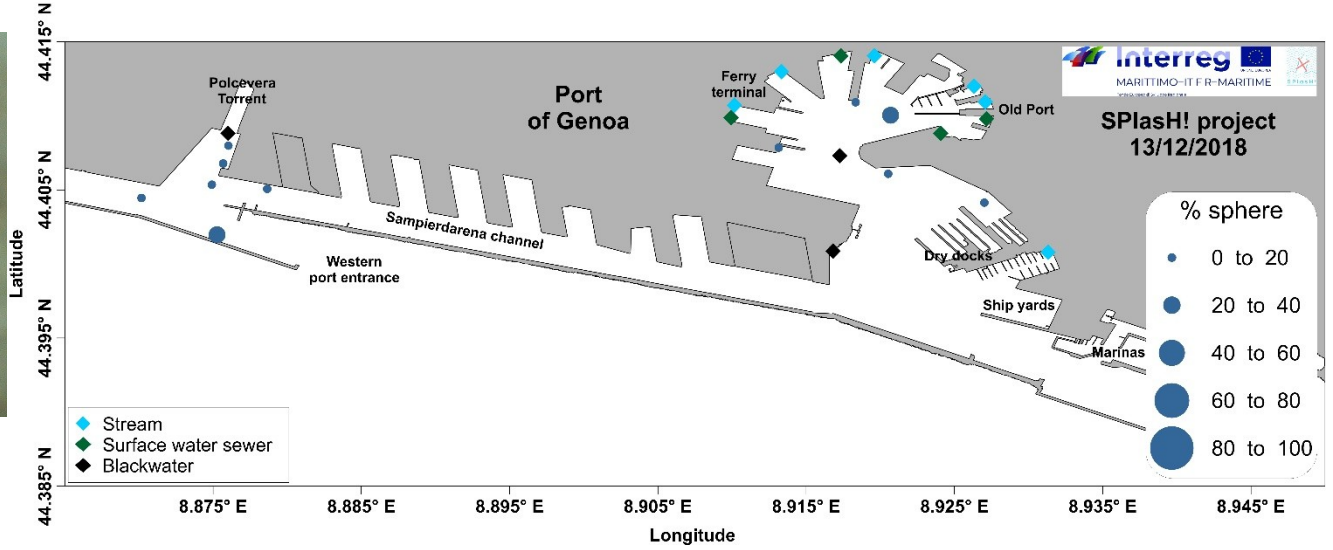


Ø ≥ 2000 µm
1000 µm ≤ Ø < 2000 µm
500 µm ≤ Ø < 1000 µm
250 µm ≤ Ø < 500 µm
125 µm ≤ Ø < 250 µm
63 µm ≤ Ø < 125 µm
Ø < 63 µm

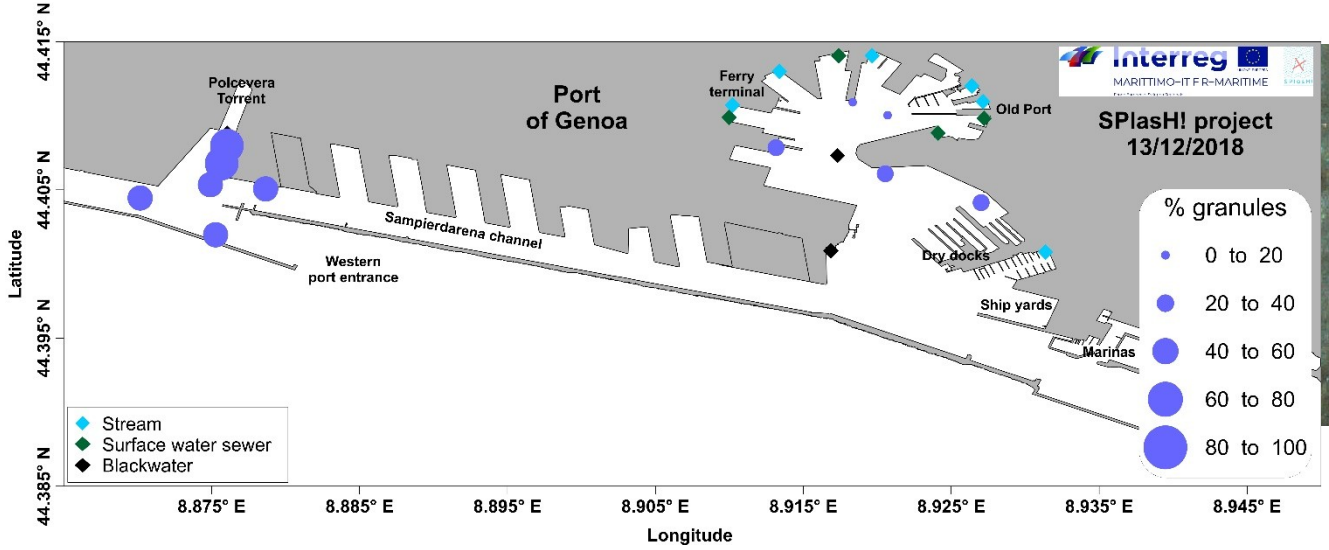
GENOA RESULTS: SEDIMENTS

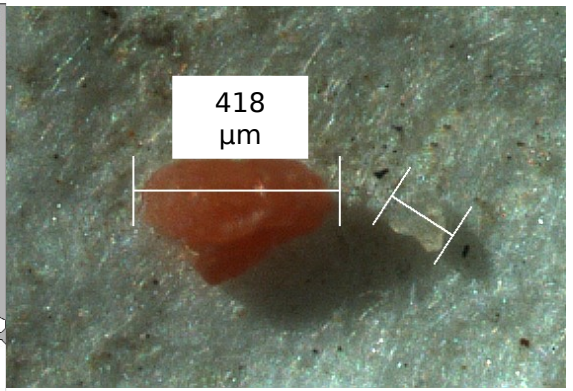


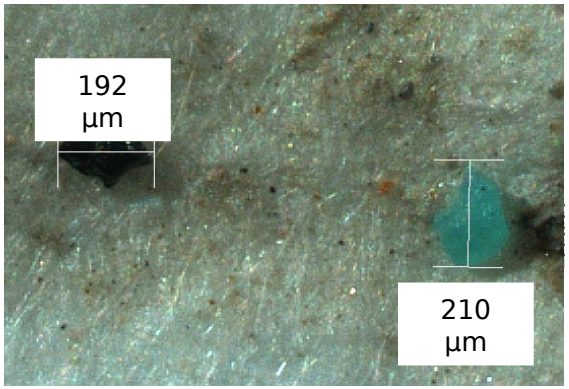


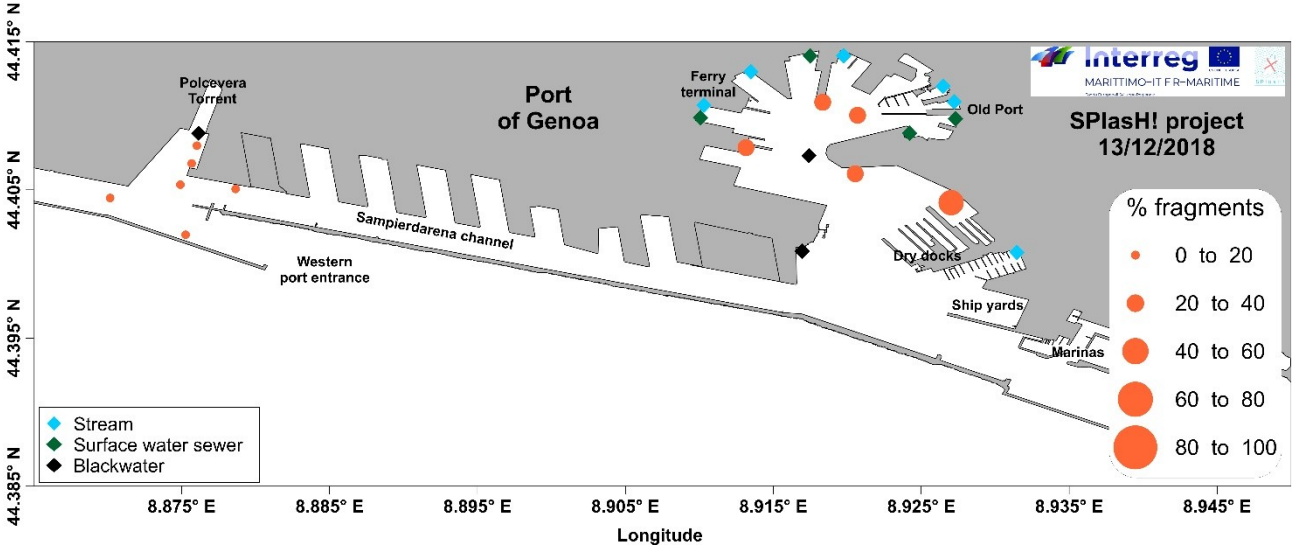


GENOA RESULTS: SEDIMENTS



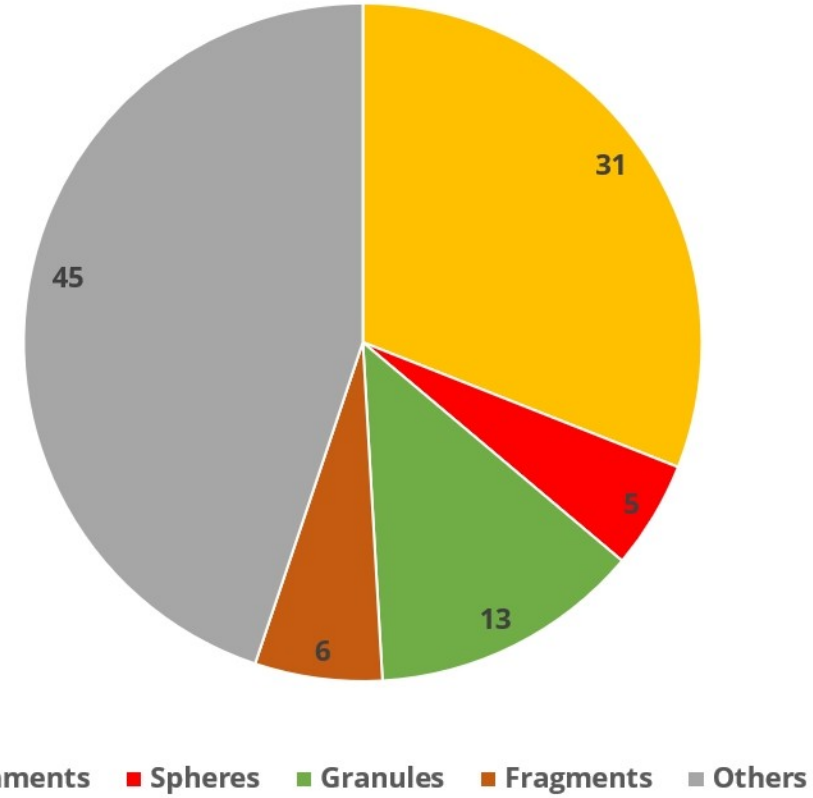




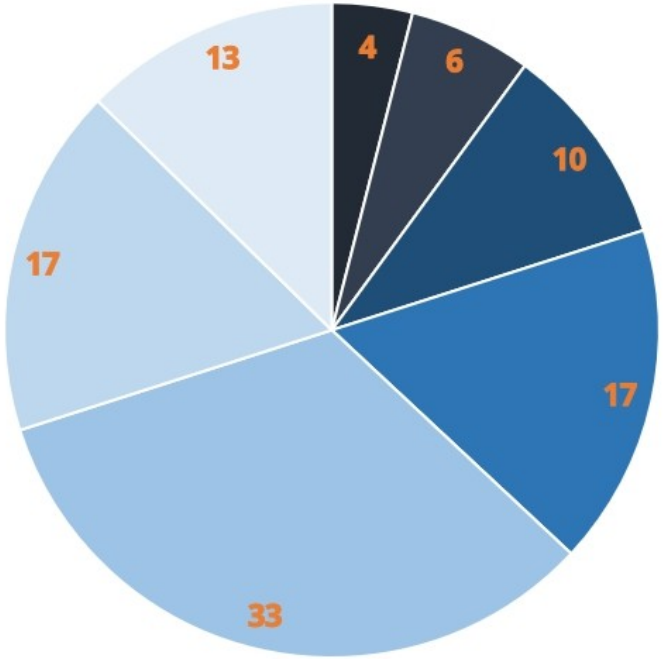


GENOA RESULTS: WATER

% SHAPE

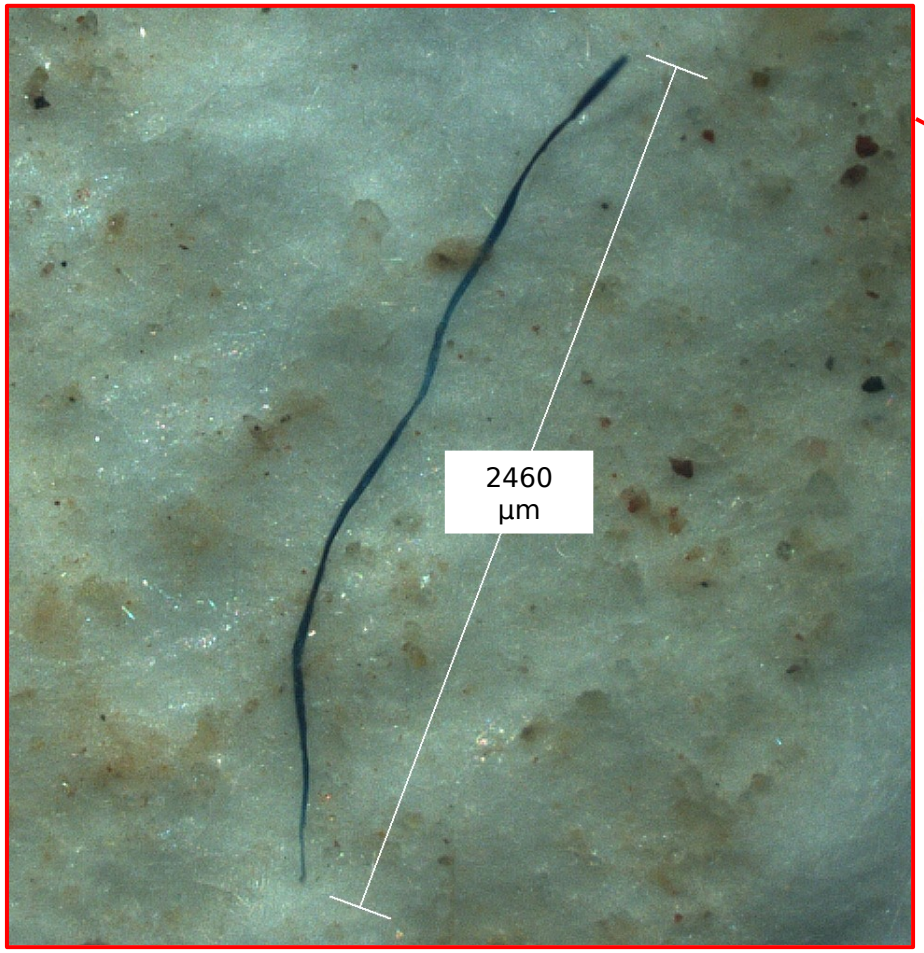


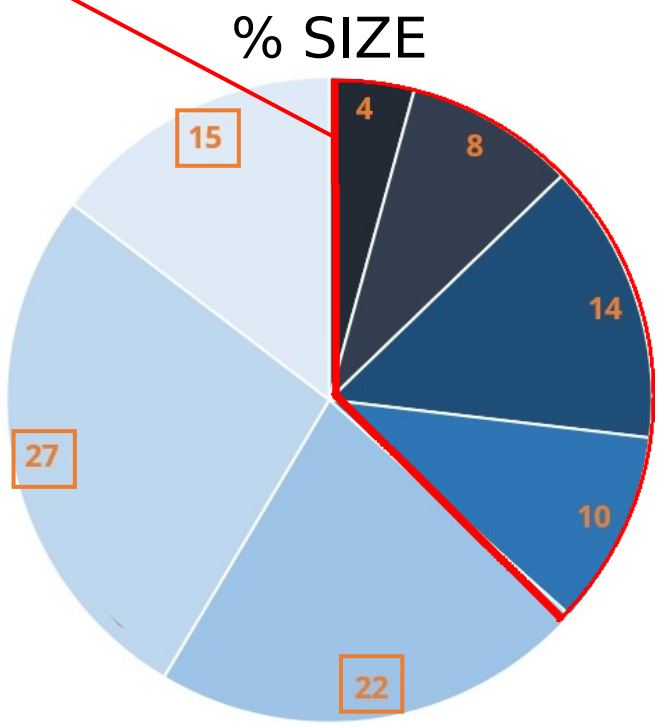
% SIZE



RESULTS: FISH (Mugilidae)

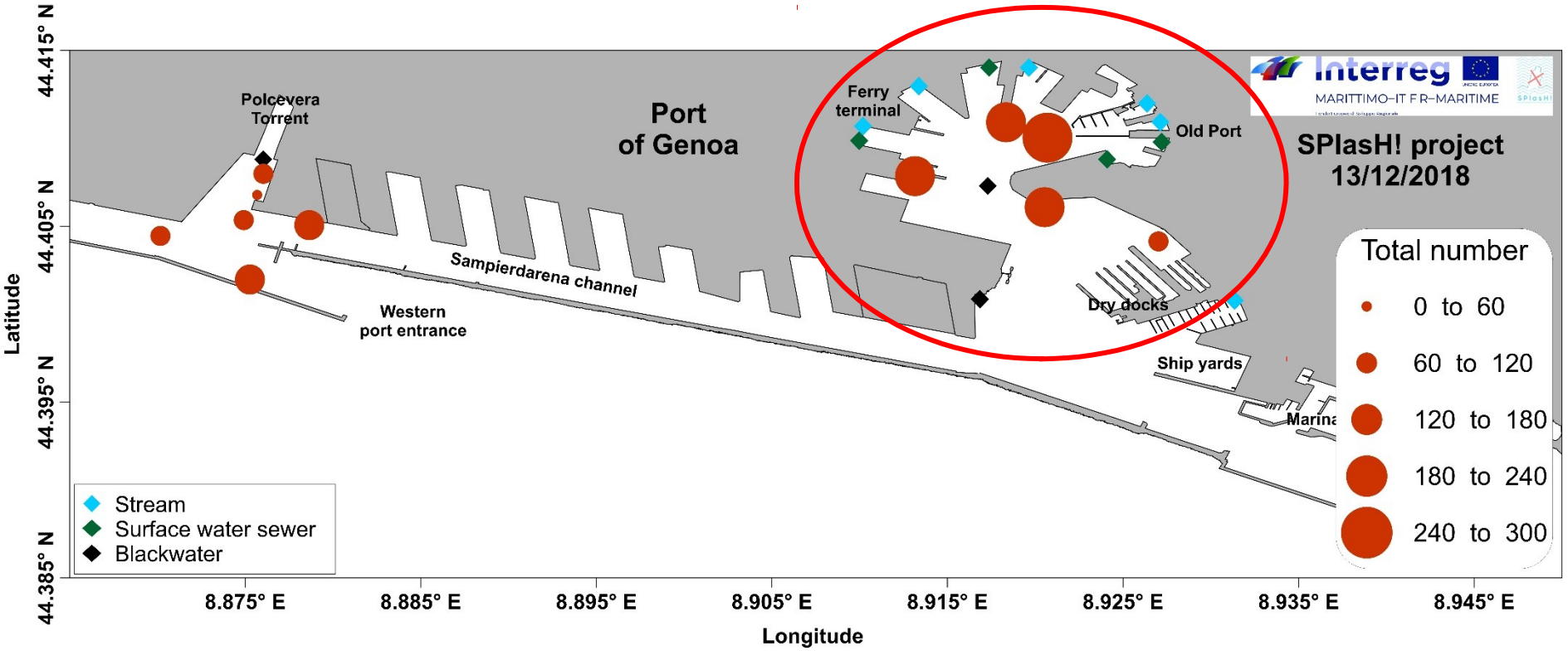
from Mediterranean Sea (industrial fisheries)





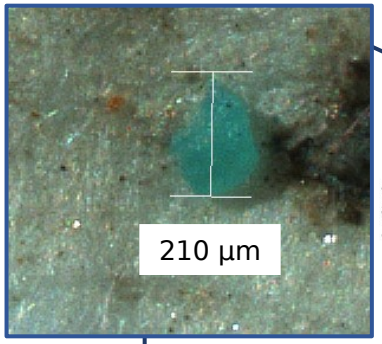
(Almeida, 2003; Pedro et al., 200

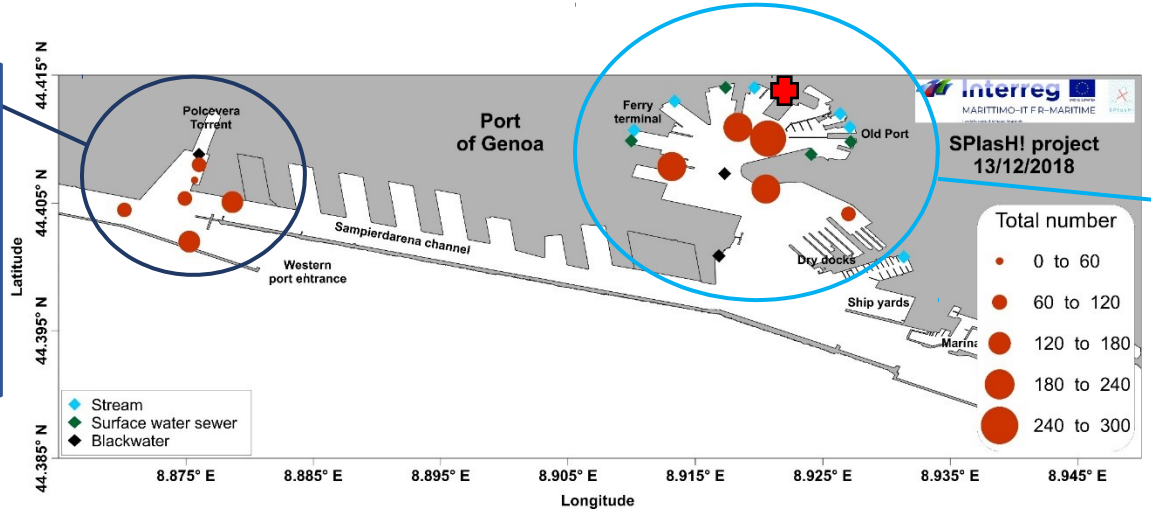
DISCUSSION

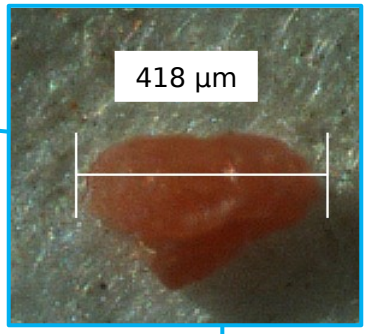


The analysed items are found mostly in the inner part of the port compared to the mouth of Polcevera Torrent, due to a more relevant anthropic impact: sewages, losses from land and ships, street runoff, etc.

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 was performed during May 2019, in order to allow a comparison with the results from sediment and water samples collected again in the same area: analysis on these samples are still in progress
- Mugilidae from commercial fishery in Oristano (IT) were collected during June 2019, in order to analyse their stomatal content: analysis on these samples are still in progress
- The same approach will be applied on the other ports of the project area, as Toulon

Thank you
for your attention!