

Experiences from Early Adopters in EOSC RELIANCE Open challenge for Sustainable Development

Marine Litter Pollution Monitoring in the WHS of Venice and its lagoon

(pre and post COVID 19 Lockdowns)

Dr. Paolo Franceschetti
Venice Lagoon Plastic Free - ITA
p.franceschetti@plasticfreevenice.org

Manuel Scarpa
ISDI Group - Malta
m.scarpa@isdigroup.com



Main activities carried out with the RELIANCE Services

- A data centric RO was created in the ROHUB service with mainly excel datasets encompassing floating-stranded macroplastics surveyed and plastics derived microcontaminants pre-post COVID19 lockdowns;
- Different local associations and research centers are operating in the area. Necessary a common repository to collect and share ML data;
- The data are uploaded with a number of information: litter classification, quantity and geolocalization for both beach and canals floating litter with annexed documented photos;
- Continuous implementation of the database.

Main activities carried out with the RELIANCE Services

Link to RO: <https://reliance.rohub.org/overview?ro=b3dd84e2-9a82-4364-a030-7b8a4269744d&activetab=overview>

The RO focuses on the monitoring of the stranded and floating macro-litter pollution in the World Heritage Site of the Venice lagoon. The data also consider the covid-19 lockdown period.



LOCATION:

CONTENT

biblio

data

Floating ML data Legambiente 2016 (740Kb)

☆ 0.00 / 5 💬 0 ❤️ 0

2 Downloads 15 Views

[Hide more details](#)

Resources	11
Annotations	51
Events	101
Articles	0
Snapshots	0
Archives	0
Size	32795.91 KB

AGENTS

 Manuel Scarpa
Creator

COMPLETENESS 100%

DISCOVERED METADATA: ⓘ

[HYDROGRAPHY](#) [SATITE SCIENCES](#) [ATMOSPHERIC SCIENCES](#)
[MOBILITY AND HERITAGE SITE](#) [ENVIRONMENTAL POLLUTION](#)
[LANGUAGE](#) [ARTS, CULTURE AND ENTERTAINMENT](#)
[SPACE SCIENCES](#) [SPACE SCIENCES \(GENERAL\)](#) [VENICE](#)

TOOLBOX



SHARE



RESEARCH OUTCOMES: FLOATING LITTER IN VENICE HISTORIC CENTRE

- Canal survey of the floating litter in the city center of Venice in 2016 and 2020

2016

- **3,29** item/100m²
- **89%** of plastics
- **33%** cigarette butts
- **4,8%** small piece of plastic

2020

- **0,52** item/100m²
- **92%** of plastics
- **13%** cigarette butts
- **15%** small piece of plastic

COMPARISON

- **-84%** during covid period
- **+3%** more plastic
- **- 60%** cigarette butts
- **+320%** small piece of plastic

2016



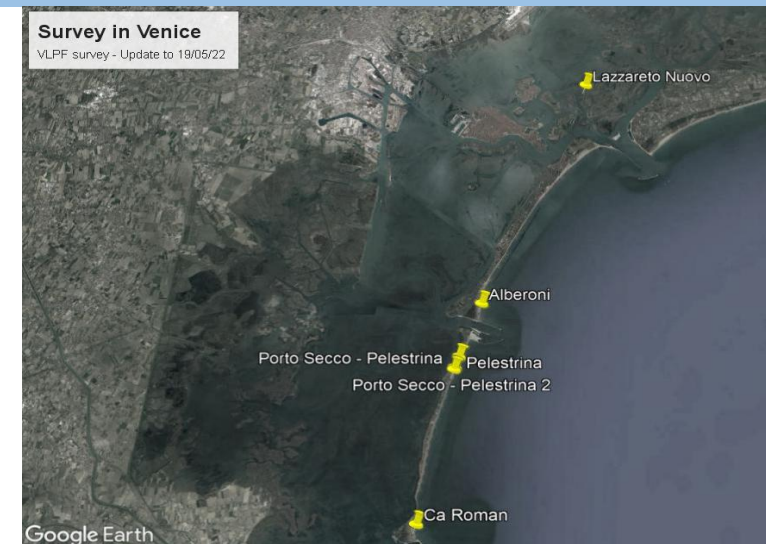
2020



Drammatic drop of plastics litter density during covid Lockdown period

RESEARCH OUTCOMES: BEACH/Stranded LITTER IN VENICE

- Two rapresenting environments: lagoon and sea beaches
- From 2021 continous surveyed at the same place at least twice per year
- 11 shores surveys up to present day



	LAZZARETTO NUOVO			PORTOSECCO				CA' ROMAN	ALBERON I WWF	PELLEST RINA	S.ALVISE
	21/04	22/03	22/09	21/07	21/09	21/12	22/07	21/05	22/04	22/05	22/06
Cloth/Textile	1%	1%	11%	0%	0%	0,1%	0%	1%	1%	0%	2%
glass	3%	3%	0%	0%	1%	0,2%	0%	1%	2%	1%	9%
Metal	3%	6%	0%	1%	2%	0,2%	0%	1%	1%	0%	5%
Paper	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Plastic	88%	87%	89%	95%	97%	98,5%	98%	95%	95%	99%	80%
Wood	4%	2%	0%	1%	0%	1%	1%	2%	1%	0%	1%
Rubber	1%	1%	0%	2%	0%	0%	1%	1%	1%	0%	0%
Unidentified	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%
TOTAL ITEMS	776	783	241	1.045	515	1.912	461	667	884	1.395	510

RESEARCH OUTCOMES: BEACH/Stranded LITTER IN VENICE

Lagoon Side

- Increasing rate 30% of litter per year
- - 7% of plastic compare with beaches
- In particular, in Portosecco sea environment
 - Increasing rate 50% of litter per year



	LAZZARETTO NUOVO			PORTOSECCO				CA' ROMAN	ALBERON I WWF	PELLEST RINA	S.ALVISE
	21/04	22/03	22/09	21/07	21/09	21/12	22/07	21/05	22/04	22/05	22/06
Cloth/Textile	1%	1%	11%	0%	0%	0,1%	0%	1%	1%	0%	2%
glass	3%	3%	0%	0%	1%	0,2%	0%	1%	2%	1%	9%
Metal	3%	6%	0%	1%	2%	0,2%	0%	1%	1%	0%	5%
Paper	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Plastic	88%	87%	89%	95%	97%	98,5%	98%	95%	95%	99%	80%
Wood	4%	2%	0%	1%	0%	1%	1%	2%	1%	0%	1%
Rubber	1%	1%	0%	2%	0%	0%	1%	1%	1%	0%	0%
Unidentified	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%
TOTAL ITEMS	776	783	241	1.045	515	1.912	461	667	884	1.395	510

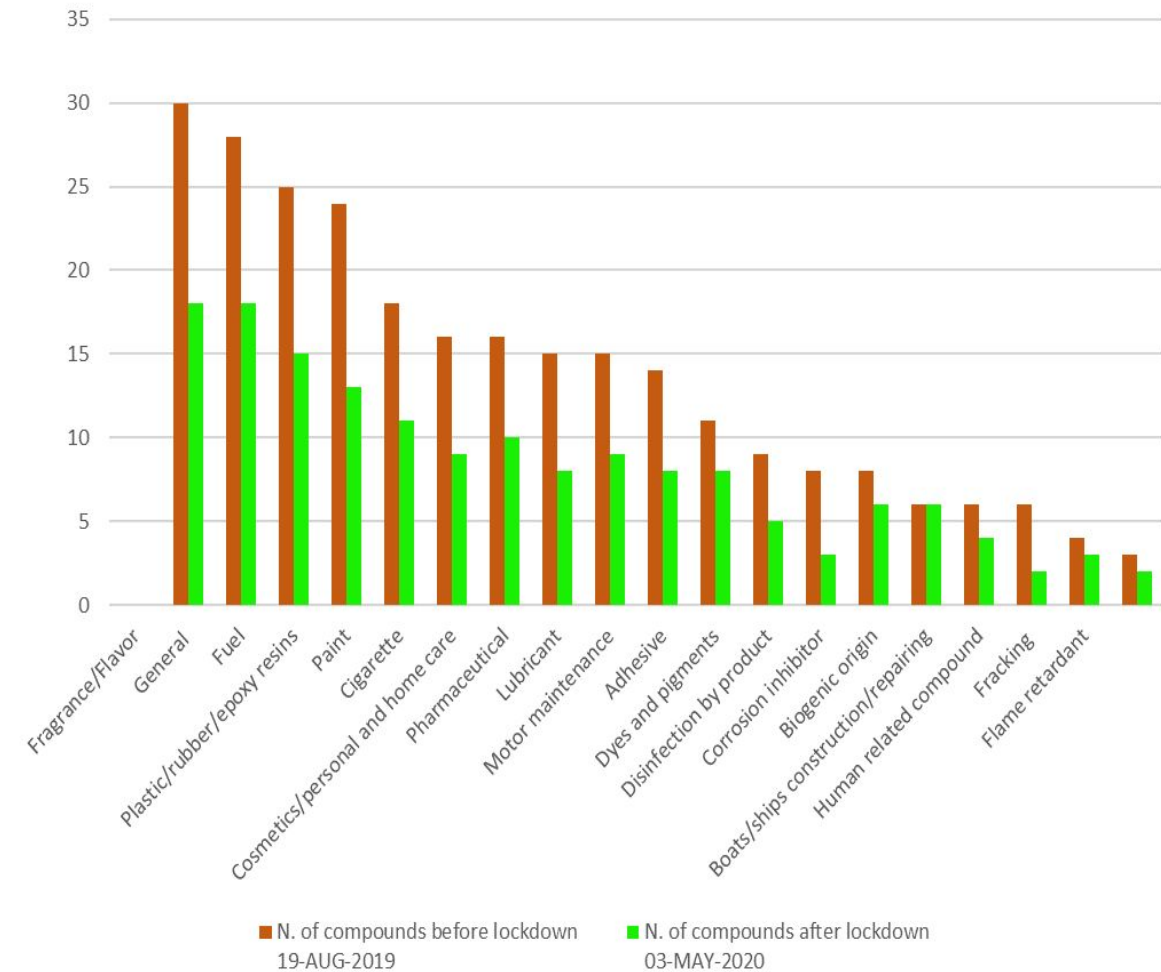
RESEARCH OUTCOMES

MICROPLASTICS DERIVED CONTAMINANTS

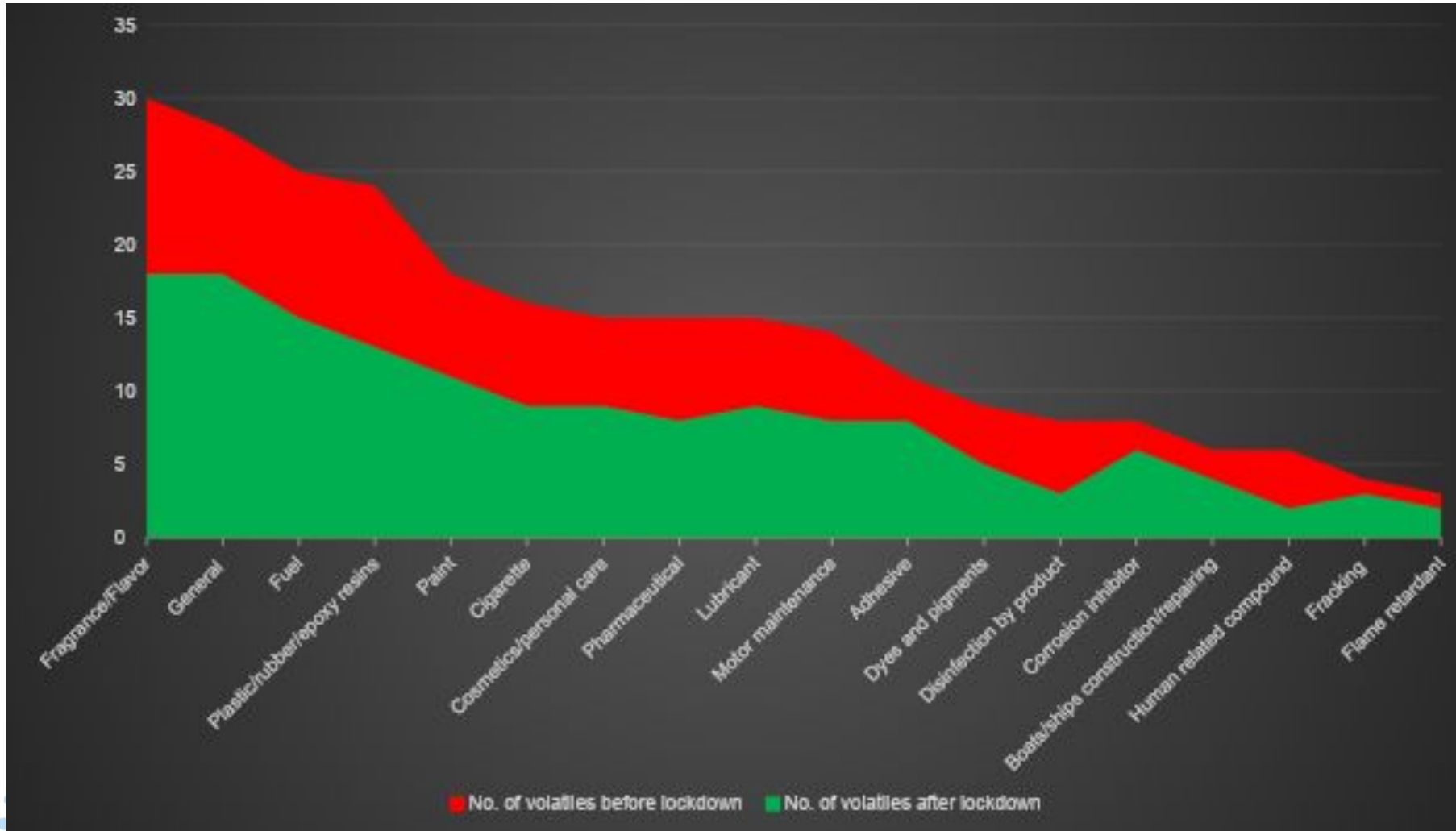
COVID-19 lockdown reveals **human impact** on microplastic and mass tourism-related pollutants and showcases **the environment's self-healing capacity** in Venice's World Heritage Site and its lagoon.

The chromatographic analyses enabled the identification of 40 analytes related to the presence of polymers in seawater, water traffic, and tourists habits. In Italy, on the 10th March 2020, the lockdown restrictions were enforced to control the spread of the SARS-CoV-2 infection; the ordinary urban water traffic around Venice came to a halt, and the ever-growing presence of tourists suddenly ceased. This situation provided a unique opportunity to analyze the environmental effects of restrictions on VOCs (**Volatile Organic Compounds**) load in the Lagoon. 17 contaminants became not detectable after the lockdown period (Credit to Prof. T. Cecchi ITT Montani of Fermo - ITA).

Self Healing Capacity of the Lagoon of Venice



Pre-and post covid comparison of analytes of polymers in the environment



FINAL CONSIDERATIONS AND REMARKS

- Using a standard database is possible to share and have continuous monitoring of ML pollution trends;
- We are involving other associations to increase the database before 2020 in beach litter (for example Legambiente e WWF);
- Possibility of enhancing comparative analysis and trends from Macro Litter to micro pollutants and tourism footprint to run via Jupyter Notebook



Thank you for your attention!
VENICE LAGOON PLASTIC FREE
p.franceschetti@plasticfreevenice.org