

Detecting marine litter in Greece using drone data and the picture pile sorting application

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MARINE
REMOTE SENSING
GROUP
<http://mrsg.aegean.gr/>

DEPARTMENT OF MARINE SCIENCES
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Citizen Science

Public involvement in scientific research!

Marine Litter



Citizen Science for Marine Litter

- Citizen science can expand our knowledge of the distribution of marine litter by increasing both temporal scales and spatial coverage, especially in remote areas
- Citizen engagement in beach litter projects leads to positive behavioral change.



14.1.1 ... Floating Plastic Debris Density

Plastic debris washed/deposited on beaches or shorelines (beach litter)

Plastic debris in the water column

Plastic debris on the seafloor/seabed

Plastic ingested by biota (e.g. sea birds)

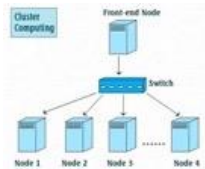
Tangaroa Blue

**“Our mission is to reduce
marine debris in our oceans
But if all we do is clean-up,
that’s all we’ll ever do!”**

Key Points & Actions

- Assure the quality of the collected data: Clear protocols, training of volunteers, participation of professional scientists, and revision of samples and data
- Ensure standardized methods and quality control so that the data can legitimately be compared and used
- Project design
- Collaborations with NSOs and other stakeholders in the design phase

Marine Remote Sensing Group (MRSG)



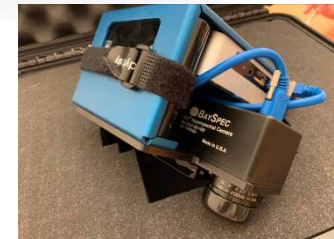
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Multispectral
Sentinel-2
Sentinel-3



Agro Mapping



Hyperspectral

Marine Litter Detection

Research

Costal marine litter detection



Costal marine litter detection



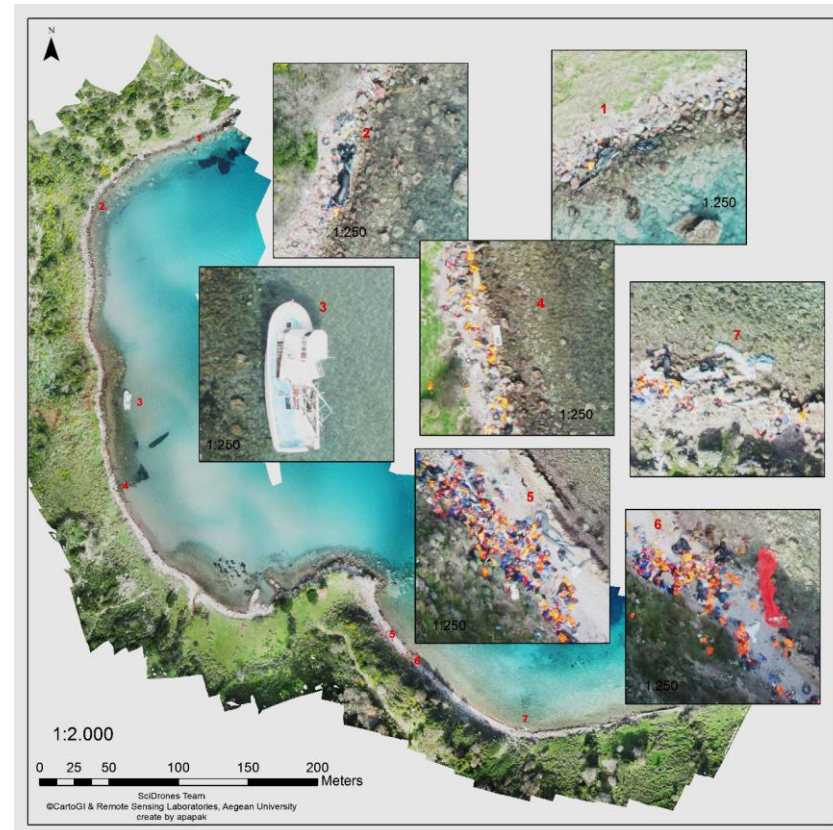
Preliminary study on the emerging marine litter problem along the eastern coast of Lesbos

A.F. Velegrakis, O. Andreadis, A. Papakonstantinou, K. Topouzelis, S. Katsanevakis, E. Manoutsoglou, M. Doukari, F. Psarros, and Th. Hasiotis

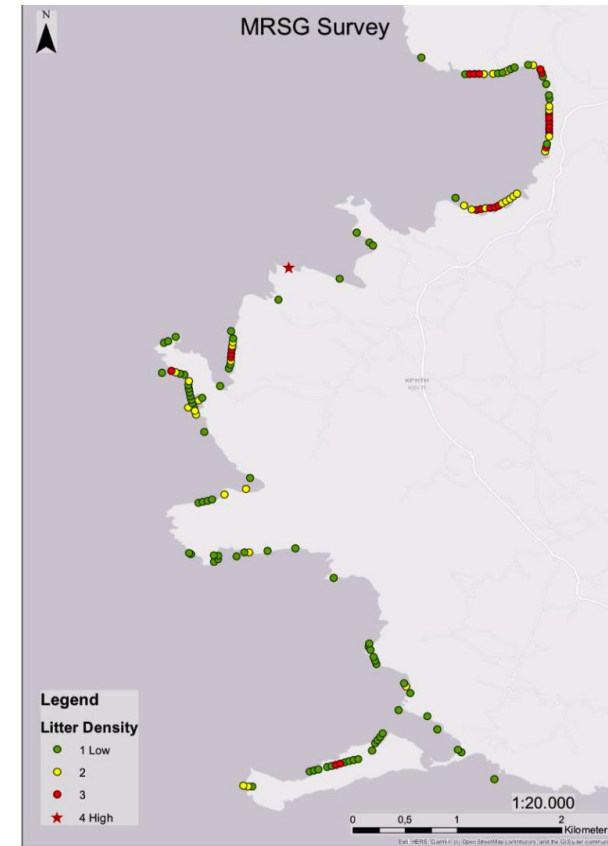
Costal marine litter detection

- The type of litter recorded was
 - mostly lifejackets
 - ship wrecks
 - PVC boat remains,
 - discarded clothing and personal items,
 - boat engines and engine fragments.
- The litter concentrations varied along the coastline in terms of their distribution over the "dry" (land) beach and the nearshore seabed.

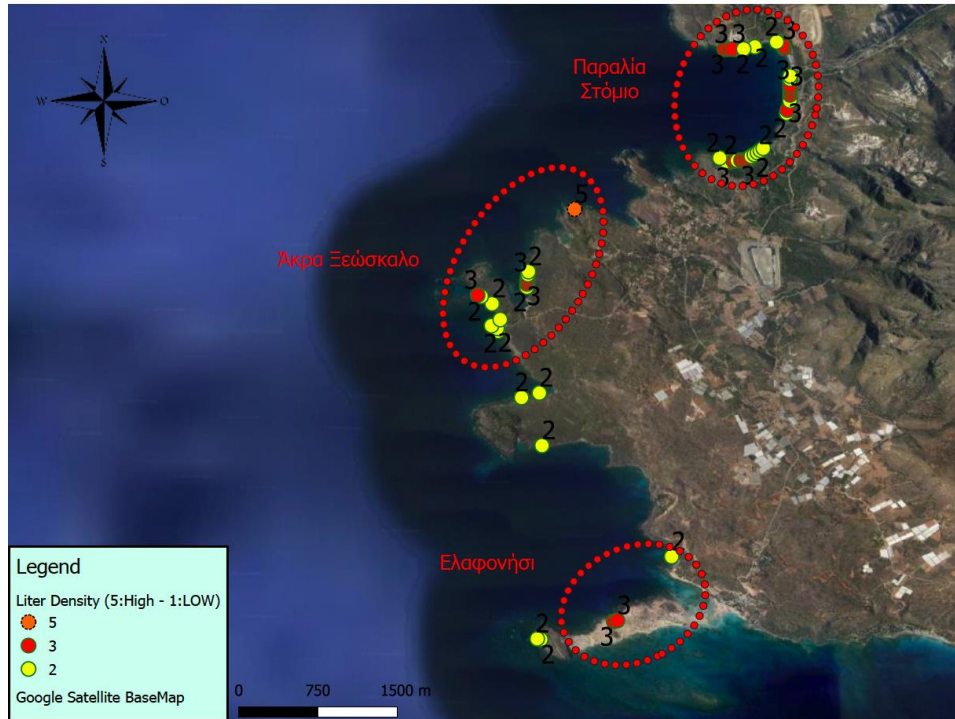
Tsonia Beach



Creta Island Oct 2019

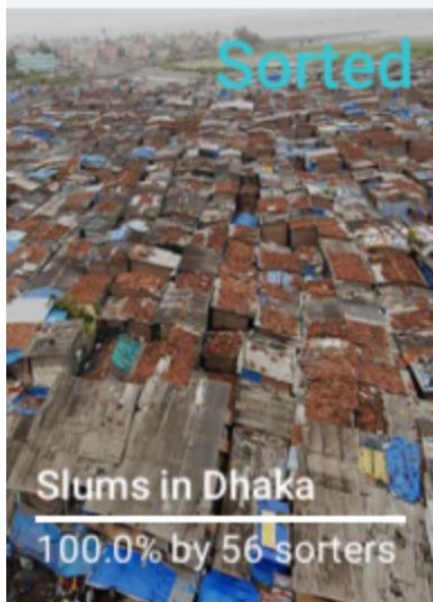
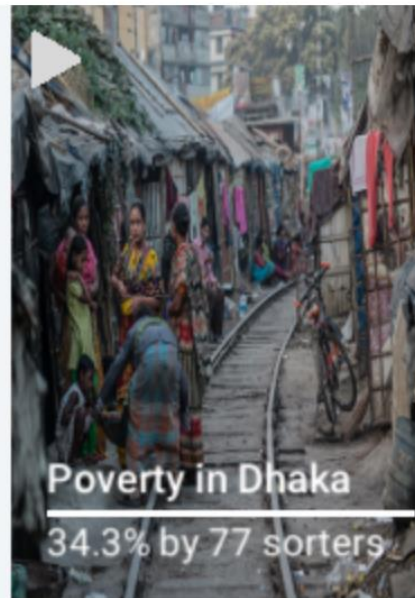
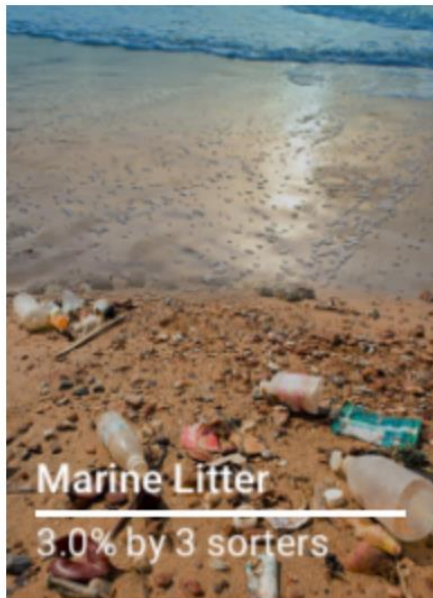


Concentration maps and image example



UAV image examples with marine litters







Marine Litter

University of the Aegean, International Institute for
Applied Systems Analysis

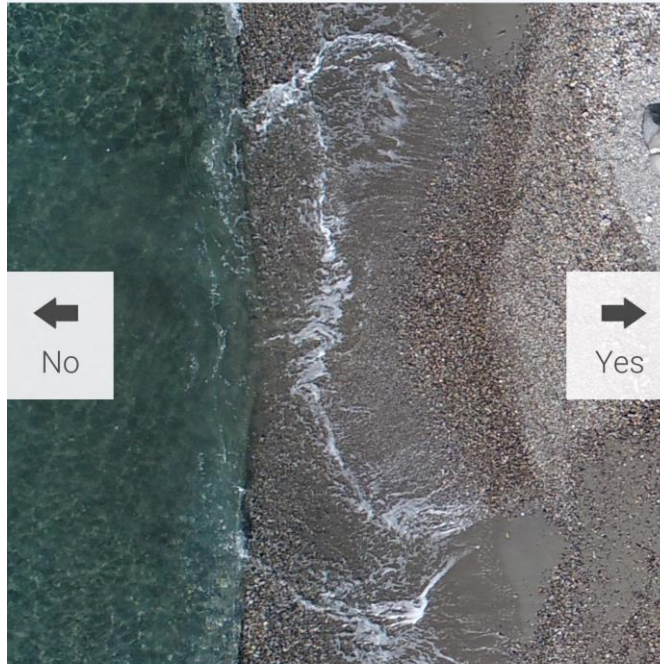
Every year millions of tons of litter end up in the ocean, due to the increasing coastal and marine human activities. The impacts of this pollution are not contained only on marine life and coastal ecosystems, but also on tourism, economy, public health and everyday activities. The ocean has provided for us since the beginning of life itself and now is the time to help back by mapping the areas in need!

Marine litter can be found in various forms and sizes, from straws and plastic bags to car tires and boat wrecks. Optically they are usually very different from the surrounding environment, but when underwater or in a deteriorative condition the distinction may be a challenge.

Score: 17

0%

Do you see
marine litter?
(Swipe to correct side)



←
No

→
Yes

Maybe



Picture Pile







Earth Challenge 2020

Our Research Questions

As a global call to action, Earth Challenge 2020 can become a nexus for collecting and harmonizing one billion data points in any research areas that impact environmental and human health. At the same time, we identified a set of “core” research questions through a public call as practical opportunities for communities to converge around. We will work with our partners to refine these questions into actionable targets in Spring 2019.



What is in my drinking water?



How does air quality vary locally?



What are the local impacts of climate change?



How are insect populations changing?



What is the extent of plastics pollution?



Is my food supply sustainable?