Clean SUP

Update

Phase 1

20-10-2021

WATERLAB
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Techniekmenu
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Update phase 1

Intro

The four day SUP tour from Leiden to Delft on 24 -27 August was a huge success. During the trip, 62 young people paddled along the Vliet combining sport and environmental awareness by cleaning up plastic. This tour gave us a perfect opportunity to test a new method to investigate the sampling of a smaller fraction of plastics by the use of citizen science.
Not only the participating youth was enthusiastic; the tour also raised a lot of awareness in the media and positive reactions from bystanders along the Vliet. This update of phase 1 will provide a short summary of the preliminary results, challenges, the total number of children involved and media attention received from the Vliet Clean SUP 2021.

Testing the method

During the Vliet Clean SUP samples from the surface water with a newly build device, the SUP-Trawl (picture: left). This device would be thowed behind the SUP board while we were paddling down the Vliet. Additionally we build mini-plastic-trawls (Babylegs trawls) (picture: right) which would be build and thowed by the children involved.

Figure 1. SUP trawl behind a SUP (left) en the mini-plastic trawl behind the SUP (right)

Preliminary results

During the four-day Vliet Clean SUP we conducted a total of 10 measurements. On the first day we took 4, the other three days we took 2 per day. With the use of two nets, we were able to take two measurements simultanuously.

All our samples contained plastic with an average of 83417 items per km². The average distance was 1.4 km. The map illustrates where the samples were taken. A more accurate version of the map will follow in the report.

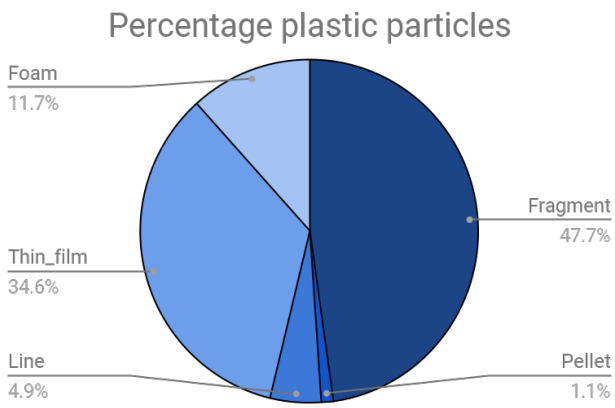
Figure 2. Map of sample locations

Table 1. Data of the SUP trawl collected during the VCS

ID	date	location	Duration	KM	Plastic	item/km²
R1-24	24-08-2021	Leiden City	0:32:00	1.1	yes	127745
G1-24	24-08-2021	Leiden City	0:32:00	1.1	yes	203593
R2-24	24-08-2021	Leiden rural	0:46:00	1.6	yes	337625
G2-24	24-08-2021	Leiden rural	0:46:00	1.4	yes	95260
R1-25	25-08-2021	Vlietlanden	0:30:00	1.0	yes	23076
G1-25	25-08-2021	Vlietlanden	0:30:00	1.0	yes	31132
R1-26	26-08-2021	Leidschendam	0:44:00	1.6	yes	16505
G1-26	26-08-2021	Leidschendam	0:44:00	1.5	yes	9048
R1-27	27-08-2021	Delft	0:48:00	1.7	yes	7755
G1-27	27-08-2021	Delft	0:48:00	1.3	yes	26760

Particle types

Almost 50% of all the particles we collected were fragments, i.e. fragmented pieces of larger plastics. We found many different colloured pieces. The 3 nurdles (pellets) in sample R2-24 close to a wastewater treatment plant raised our attention. We do not find these very often in our surface water samples. The nurdles are visible in the centre on the right picture (two black and one transparent). Nurdles are also called pre-production plastics as this is there first form leaving the plastic producing factories. These three nurdles have ended up in the Vliet before they could become a product.



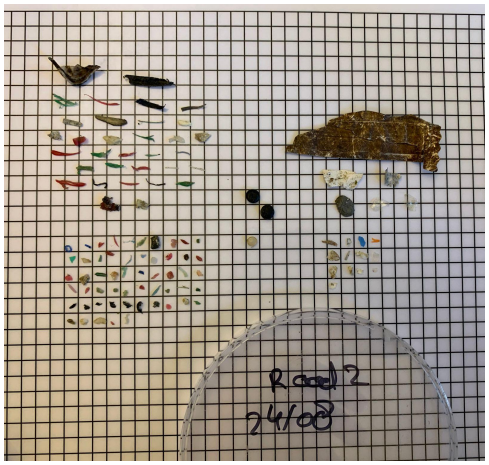


Figure 3. The data on particle types (left) and a picture of sample R2-24 as an example of the collected particles on a 5mm-grid (right)

Challenges

A minor challenge was speed. As the net has a very small mesh size it creates high resistance which reduces the speed. We expected this to happen. To stay with the group that was doing the cleanup needed planning which was improved over the days.

One of the biggest challenges was the organic material floating on the water. The ammount of plants in the sample made it very difficult to analyze. This is a fact we have to take into account for the future.

For the mini-plastic trawls the speed was no problem as these are much smaller compare to the larger SUP-trawl. However the plants that filled the mini-plastic trawls also provided difficulties for the analysis. Therefor we focussed our attention on the analysis of the SUP trawl samples.

Figure 4. sampling with the SUP-trawl in waters with extremely high organic matter coverage (left) with a high concentration of duckweeds and other organic matter in the net (middle) which made the analyse of plastics challenging (right).

Vliet Clean SUP-events

In total there were **460 children** involved during the Vliet Clean SUP 2021 events:

- Vierdaagse Vliet Clean SUP: 62
- Vierdaagse vakantie evenementen: 181
- Workshops afval suppen in de wijk: 192
- Wakkere Wegwerp suppers ism Merijn Tinga de Plastic Soup Surfer: 25

In addition there was a spin-off in collaboration with Hoogheemraadschap Rijnland. The team was invited to do a workshop about plastic polution during the local scouting event, *Scout It Out* in Theme Park Duinrell on the 9th October 2021. 2500 children were attending the event and we made >50 Mini-plastic Trawls (baby-leg trawls) with each trawl 1 or 2 children worked on. We provided a protocol, a manual, and the link to the website to provide all the necessities to do it by themselves or with their group.

Outreach

Next to the media attention we received from among others Trouw, AD, Radio NPO 1, and Omroep West (Radio, TV, and online), we also received a considerable amount of attention from spectators or people walking along the Vliet during the expedition. Some recognized us from the item on TV from Omroep West or the newspaper articles which was a nice support. The list of media coverage can be found on the next page.

The Banner, made by Waterlab, was a great addition at the start and finish as a communicator. People could read it for information but it also functioned as a conversation starter. The clear explanation of our research on the Banner was also used during the *Scout-it out* event.

Figure 5. photo by Werry Crone from the Trouw article

Media-list

Film SUP onderzoek
Filmp Vliet Clean SUP
Trouw link
Radio 1 journaal item about Vliet Clean SUP (link from 2:21:53)
Omroep West item (link halfway)
Omroep West Website:link tv:link (previous to the event link)
Sleutelstad (Leiden) Link
Hoogheemraadschap Delfland link
Hoogheemraadschap Rijnland link
H2O netwerk link
Scouting Nederland link
Den Haag FM link link
AD link
AD link
Wethouder Ruimtelijke ordening Delft - Martina Huijsmans - Tweet link
Report Scouting Hubertus Brandaan about participation VCS: link
Report Scouting Nautilus about the last leg Link

Figure 6. scouts of the Hummbertus Brandaan being interviewed by Omroep West at the start of the Vliet Clean SUP.

Next steps

For the next few weeks we will finalize the protocols, report of the results and website content on both the website of Waterlab and Stichting The Ocean Movement. On the websites of both organisations we will share our experiences and protocols for the mini-manta-trawl and the SUP-trawl so people can build their own to take samples. We will also share our future plans for the project on these pages.

As agreed to, we will organize a get-together at Humbertus Brandaan on the November 13 2021 to reconnect with the scouts and to inform them about the results.

After the event at Humbertus Brandaan we will finalize the project and write the final report with the milestones reached, data on citizen science, comparison of sampling methodology, summary of the final results, financial paragraph (budget versus actual costs) and deliver it to the project coordinator not more than 20 business days after the termination of the contract.

In the report we will focus on both the mini-plastic trawl and the SUP trawl method and describe the opportunities and challenges of both methods.
The data of the SUP-Trawls will not be compared to the data of the mini-plastic trawl as planned because of the challenges with the mini-plastic trawl samples.
The findings of de SUP-trawl samples will be compared with the macroplastic analysis of the litter collected during the Vliet Clean SUP. For this the OSPAR method which gives a good overview of the litter types and the amount of litter collected on the different days and transects of the Vliet.

With this update we hoped to have informed you about the progress of the project and we will keep in contact with the project coordinator, Marissa Frambach.