

(Un)lock down science: How did the first Corona-lock down affect atmospheric microplastics?

Background

The world has changed in spring 2019 and governments imposed curfews in countries around the globe to prevent the spreading of the new Corona virus. Such wide-ranging measures, that made big cities resemble ghost towns for months, were unique in human history. People remained at home and with them, one of the most important sources for atmospheric microplastic –their clothes.

“We have a unique chance to measure human impacts on the environment if humans stay at home” was our thought when our research group met in the online meetings while our running experiments were paused. An idea arose: Can we use this historic chance and perform high quality research about the impacts of human absence on the environment?

We used material that everybody had at home and developed a simple protocol to collect atmospheric microplastic fallout from the windowsills twice a week over multiple months. This was the beginning of an exciting project, which included all research group members. We created a great and well-documented sample with corresponding meta data that awaits for being analysed.

Why we want you

We are looking for a highly motivated person, who takes this historic chance and creates evidence about the effect of the lock down on the microplastic in the atmosphere. Now, that the first lock down was two years ago and the situation has normalized, we are planning to repeat the measurement to compare lock down-data with data from the same season without lock down. You can become an integral part of our research group project, participate the sampling yourself, and help us bring our data to publication.

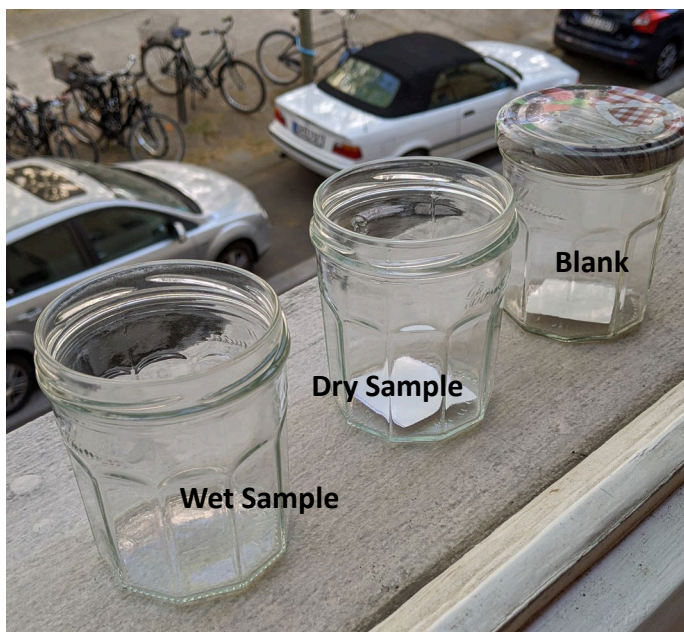


Fig.1: Sampling of atmospheric microplastic fallout on a windowsill. The dry sample collected microplastic on sticky tape, the Blank sample was used to determine the impact of the sample preparation on the microplastic collection, and the wet sample was used to collect precipitation during the exposure time of 24 hours per sample.

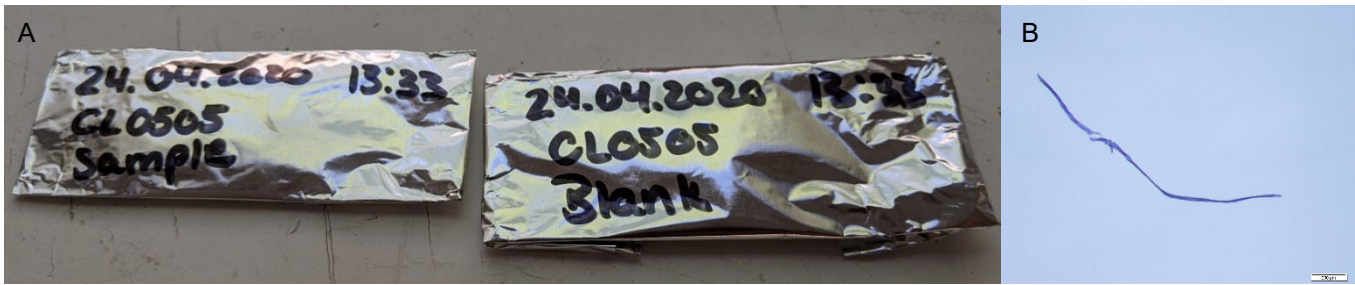


Fig. 2: Sample and Blank sample, preserved in aluminium foil, from a sampling on 24th April 2020 (A) and a blue microplastic fibre under the microscope (B). The scale bar has a length of 200 µm.

Preliminary research questions for the master thesis

1. Can a lock down decrease the atmospheric microplastic fall out?
2. How strong and fast is the increase of microplastic in the atmosphere after the lock down?
3. How different is the microplastic composition (in terms of types, size, material) at our sampling sites?
4. Can the results of microplastic composition at the different sites be related to the surroundings and the corresponding activities (e.g. traffic, industry, etc.)?

Supervision

The project is embedded in our research group (ca. 25 persons). Postdocs, Master students, technical staff, and our research group leader Patricia Holm contributed to the study design and sample collection. The project management is shared by three postdoc researchers (Dr. Joschka Wiegler, Clara Leistenschneider, and Serena Abel). We offer a place in an inspiring environment with regular group meetings, where we discuss recent project developments and new ideas.

Facilities

Analysis of the samples will be carried out by established methods in our lab, using Fourier-transform infrared spectroscopy (FTIR), and micro-FT-IR.

Requirements

Even though a background in natural sciences is not strictly necessary, MSD students are supposed to study the focus area in natural sciences. Technical understanding and statistical skills would be benefits. You should enjoy working systematically and carefully and should have a tenacious attitude. You should be eager to explore the scientific literature on the topic. We welcome candidates who bring enthusiasm for an innovative research project and who want to dive into microplastic research, a field with great and recent social relevance.

Contacts

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