1 What's the issue

Marine plastic pollution is a widely documented issue. The exact amount of plastic is not known. The World Economic Forum (2022) estimate there to be betweel 75 and 199 million metric tons of plastic waste currently in the ocean, while Jambeck et al. (2015) estimated that the annual release in 2010 alone was between 4.8 and 12.7 metric tons. Most plastic sinks but most research is done on surface plastics. Subsurface plastics will leech and decay into the surrounding ocean. This is bad. Removing the plastics will stop them from leeching and decaying into the sea.

2 Why's it an issue

Health effects, effects on animals etc., effects on the conditions in the ocean (acidity etc.). There's also very little research going into it currently.

3 What are we doing about it

3.1 Plan Sea project

The Plan Sea project is an, at time of writing, ongoing student-led project at NTNU in Ålesund. The goal of the project is to find a solution to the problems of subsurface marine plastic pollution as laid out above.

3.2 Previous work (Specialization project)

This report is in a way a continuation of a specialization project**?** done previously. The specialization project has always had the goal of being the groundwork for this master's thesis. The goal of the specialization project was to set up a framework to make work for the master's project easier. Part of the specialization project has been starting work on a simulator that can be used to work on a control system. The control system is currently rudimentary implemented and there is room for improvement.

The goal of the development for the conttrol sytem is to have it be platform agnostic. That is, the control system does not care whether it's connected to a simulator or a vessel in the real world. The way this is ideally implemented is by using ROS2. ROS2 is a framework to control robotics, built around publishers and subscribers that all act around topics.

An ideal solution will have a

4 How are we doing it

A system consisting of two distinct but connected parts. A surface vessel and a connected, non-buoyant remotely operated gripper.

5 Reader's guide

References

Jenna R. Jambeck, Roland Geyer, Chris Wilcox, Theodore R. Siegler, Miriam Perryman, Anthony Andrady, Ramani Narayan, and Kara Lavender Law. Plastic waste inputs from land into the ocean. *Science*, 347(6223):768–771, February 2015. doi: 10.1126/science.1260352. URL https://www.science.org/doi/10.1126/science.1260352. Publisher: American Association for the Advancement of Science.

World Economic Forum. Top 25 recycling facts and statistics for 2022, June 2022. URL https://www.weforum.org/stories/2022/06/recycling-global-statistics-facts-plastic-paper/.