Creation of long term BCP zooplankton data series as part of the LifeWatch marine observatory

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Marine zooplankton is a diverse and ubiquitous group and is a crucial component of marine ecosystems as it is situated at the base of the food web, serving as food source for higher trophic levels. Abundances of the different zooplankton species can be used to determine the ecological quality of marine water bodies. At this point, long time series on zooplankton are lacking for Belgian waters. Such time series are invaluable to support the scientific knowledge development on the structure and functioning of the marine ecosystems.

In 2012, VLIZ initiated a standardized sampling of zooplankton within the Belgian part of the North Sea as part of the LifeWatch marine observatory. Nine stations are sampled monthly, and 17 stations are sampled seasonally for zooplankton. A vertical WP2 haul is used for this and samples are processed in an semi-automated and standardized method with the Zooscan, shortly after collecting. Additionally, in 2014, within the framework of a doctoral study at Ghent University, the continuous Video Plankton Recorder (VPR) is being tested and optimised in order to provide an supplementary tool for the sampling of zooplankton in the Belgian part of the North Sea. We expect the VPR to contribute to the analysis of the effect of different stress factors in the environment to the zooplankton community.

Both the Zooscan and the VPR generate high resolution digital images. Using automated image recognition algorithms, we assign particles to a certain taxonomic level. This method provides exact counts and size calculations of individuals on each taxonomic level. In addition, micro-debris (e.g. plastics, fibres) can also be counted and visualized. Whereas the Zooscanner creates a digital copy of the sample during post processing in the lab, the VPR generates data in real time while being towed on a v-fin behind the ship. All resulting data are stored together with a full set of metadata and supporting environmental data, including, temperature, pH, turbidity etc.

Both methods are part of the LifeWatch marine observatory. LifeWatch supports biodiversity and ecosystem research by building an infrastructure that allows researchers to communicate, share data, analyse results, create models, manage projects and organise training. All collected samples, both original and digital, are being made available to the scientific community.