Supplementary Data for

Water column distribution of zooplanktonic size classes derived from in-situ plankton profilers: potential use to contextualize contaminant loads in plankton.

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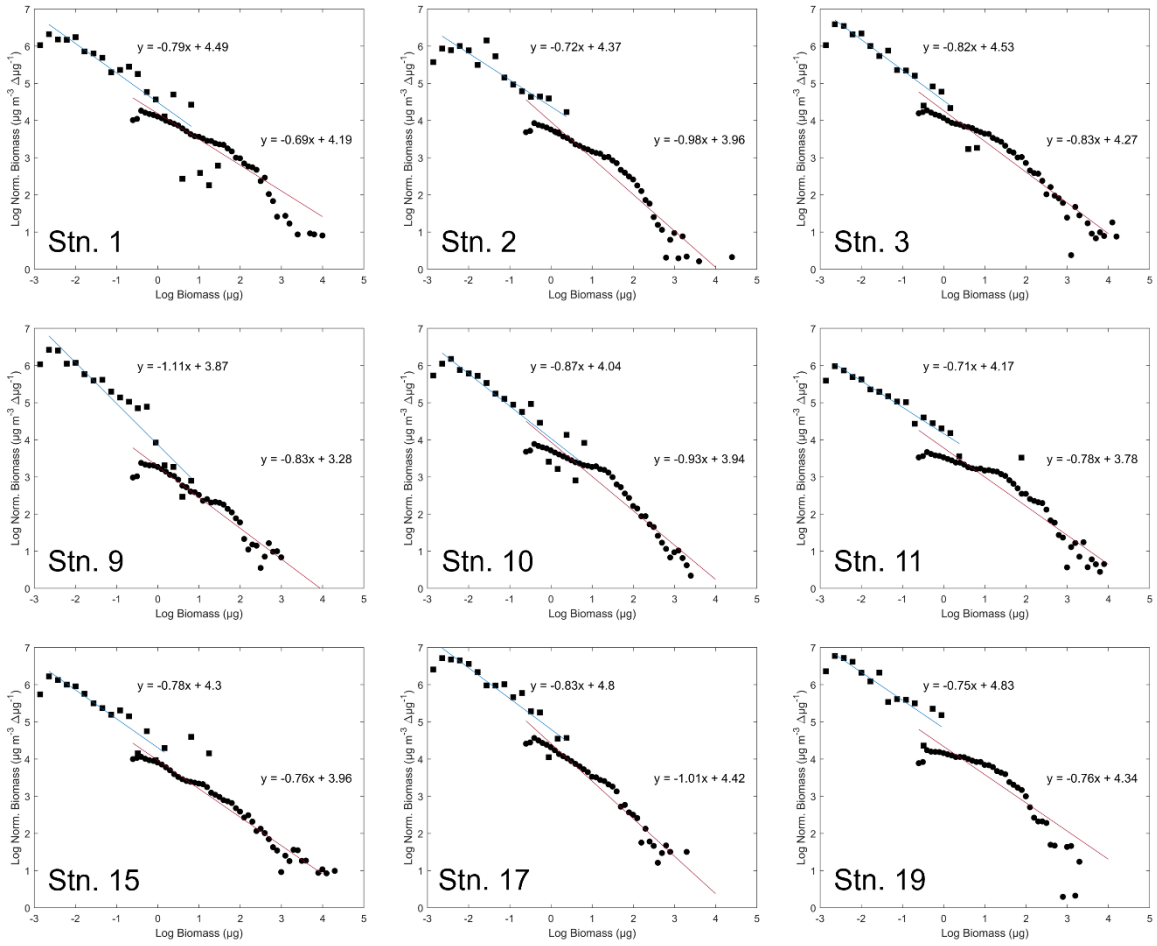

Figure S1. Normalized Biomass Size Spectrum (NBSS) based on LISST-HOLO and LOPC data collected from 200 m depth or bottom to the surface at nine stations sampled across the Mediterranean Sea. The methodology to produce the NBSS can be found in Schultes et al. 2009. Linear regression applied on NBSSs gave the slope and the Y-intercept values for the LISST-HOLO (blue line) and the LOPC data (red line). The graphs show an overlap in the size range covered by both sensors between ca. -0.5 to 0.5 log (µg) equivalent to ca 100 to 215 µm ESD. The agreement between data from both sensors was good, generally showing continuity in the shape of the size spectrum, although a slight offset was found in Y-intercept values. Y-intercept values calculated from LISST-HOLO data were consistently higher than for LOPC data, 0.36 (STD ±0.13). This offset has little influence on biomass estimation but could be used in future size structure studies to standardize data from both devices. In this study, biomasses for the 60-200 µm size class were calculated using 120 µm as a merging threshold (LISST-HOLO data for smaller sizes and LOPC for larger ones). This threshold corresponds to the third size bin of the LOPC, which is the one form which the LOPC biomass estimates are significant (as illustrated by the peak on the left end side of the LOPC NBSSs).

Schultes, S., & Lopes, R. M. (2009). Laser Optical Plankton Counter and Zooscan intercomparison in tropical and subtropical marine ecosystems. Limnology and Oceanography: Methods, 7, 771-784.

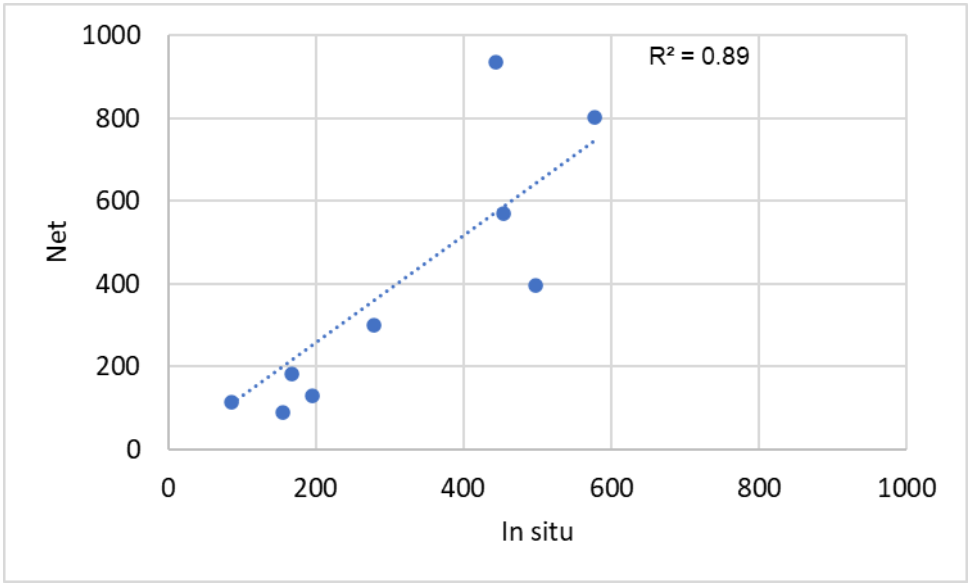

Figure S2. Biplot of plankton biomass (mg m^{-3}) estimated from in-situ laser profilers (X-axis) and from weighed net samples (Y-axis) at nine stations sampled across the Mediterranean Sea.

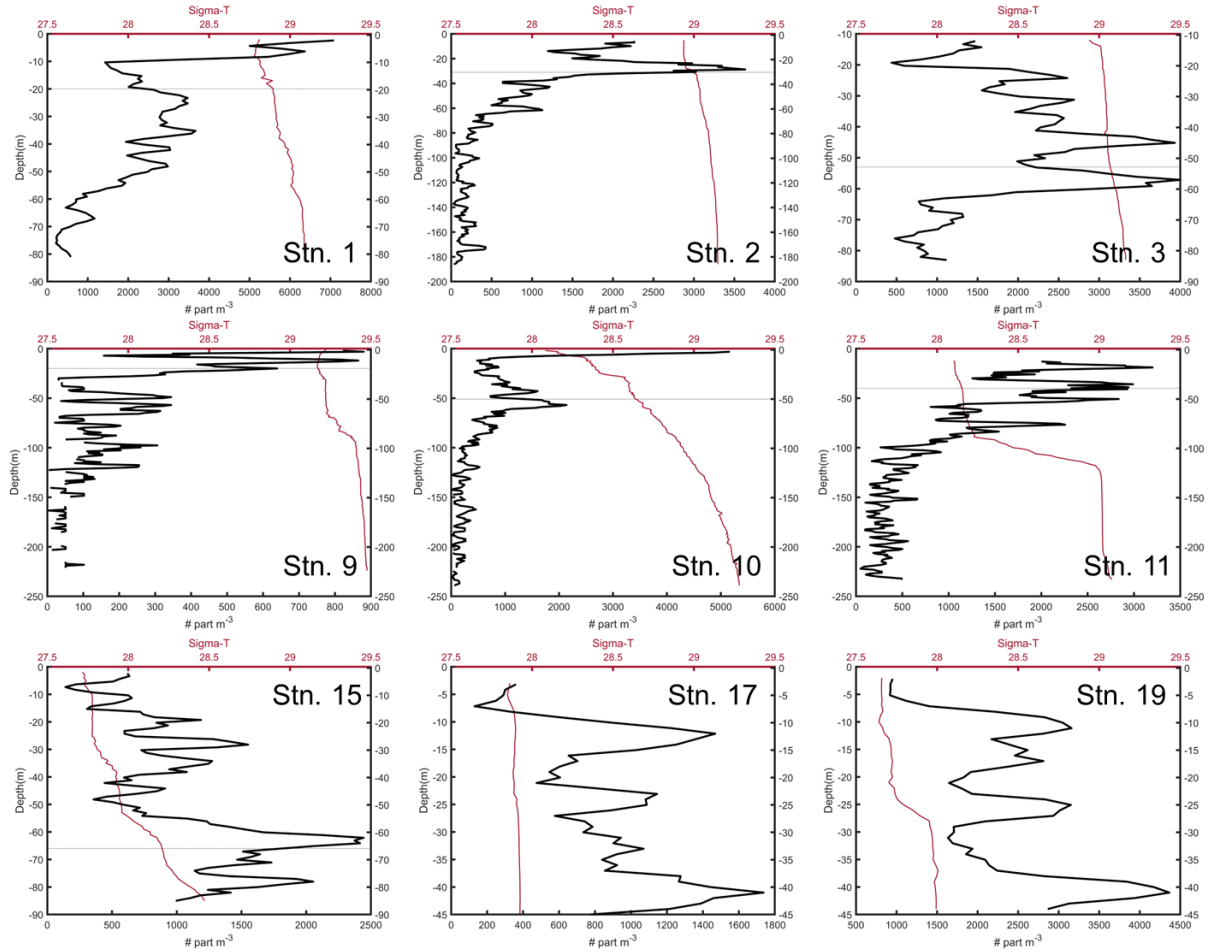

Figure S3. Vertical distributions of LOPC counts for particles larger than 500 µm ESD (black line) for nine stations sampled across the Mediterranean Sea during the MERITE-HIPPOCAMPE cruise. Particles larger than 500 µm ESD are assumed to be mainly zooplankton organisms. Sea water density is also shown (red line).

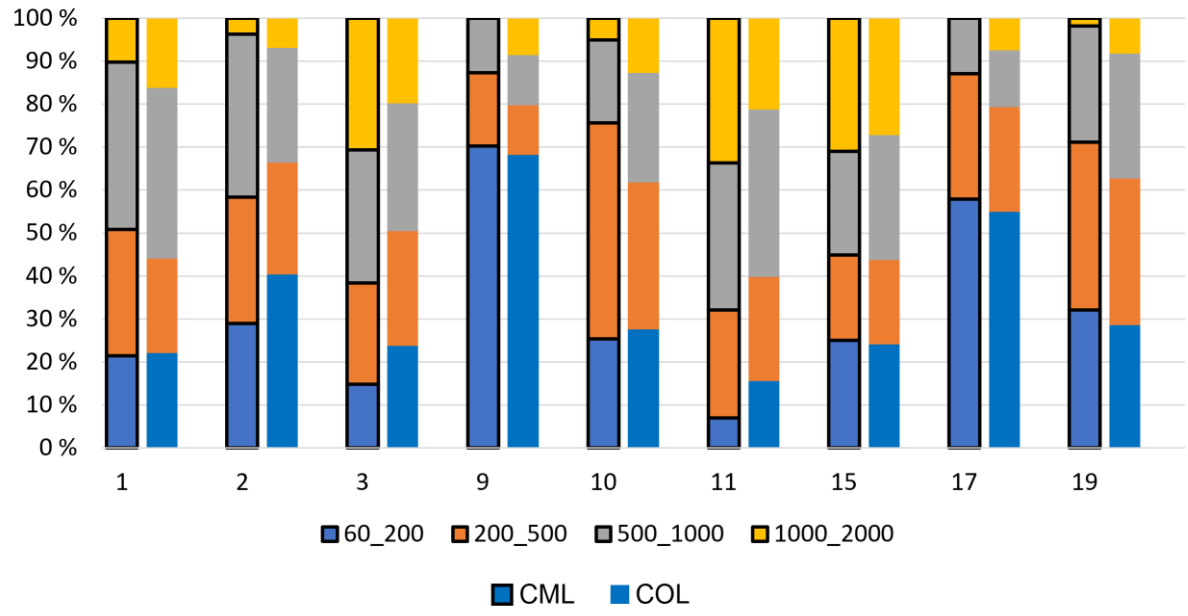

Figure S4. Relative distributions of sensor-estimated plankton biomass in four size classes 60-200, 200-500, 500-1000 and 1000-2000 µm in the chlorophyll maximum layer (CML; left bars) and over the whole water column (COL; right bars) for nine stations sampled across the Mediterranean Sea (see Fig. S1). Measurements were obtained from vertical water column cast using data from a 10-meter-thick water layer centred around the CML and from the whole water column (200 m or bottom to surface).

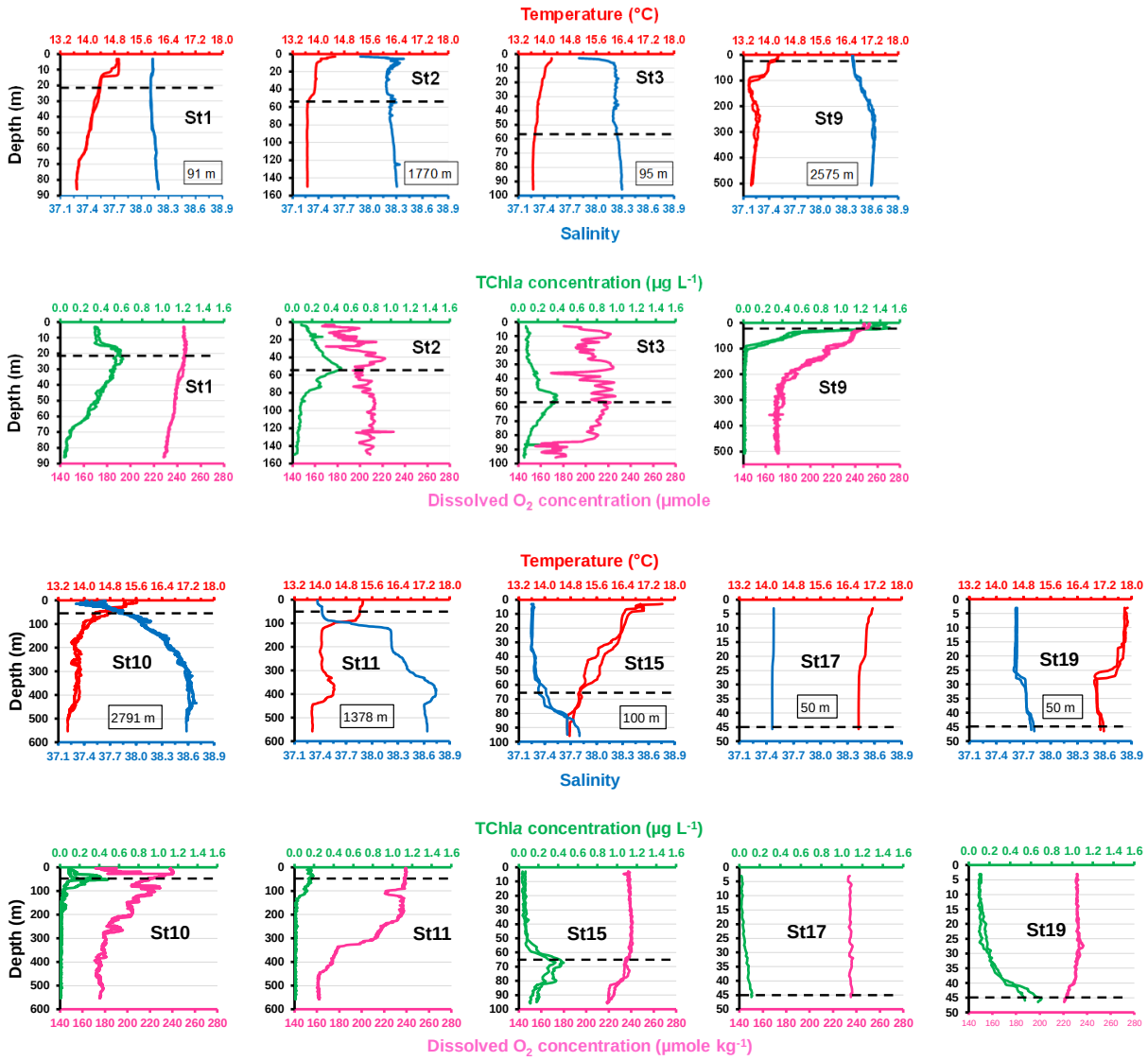

Figure S5. Vertical profiles of temperature (°C), salinity, chla concentration (µg L^{-1}) and dissolved O_2 concentration (µmol kg^{-1}) at nine stations sampled across the Mediterranean Sea. The dotted lines represent the depth of sampling in the chlorophyll maximum layer (CML). In box, the depth of the station. One or two profiles are displayed for each station. For each profile, only data acquired during the upcast are presented. Adapted from Tedetti et al., 2023.