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# SUSANE, a device for sampling chemical gradients in the benthic water column

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## Résumé

In aquatic environments, the benthic water column may exhibit concentration gradients of various substances. They result from transfers and chemical reactions that may occur both within this layer, and/or at the sediment–water interface (SWI). Characterization of these gradients yields important information for the quantification of such processes and transfers. However, it is difficult to actually sample these gradients in the field, since turbulence decreases their vertical scale. We describe a sampler designed to collect simultaneously 16 discrete water column samples at a centimeter-scale vertical resolution. This small device (40 × 40 × 60 cm) is reliable, safe to handle, and easily deployed from a small boat using a cable or a Scuba diver. With small adaptations, it may be deployed using a ROV or autonomous submersibles, at any depth. It is made of materials compatible with trace element and dissolved gases work, and simultaneously draws samples from various heights above the SWI into 60 mL syringes. The altitude of the sample inlets is field-adjustable. Sampling artifacts are minimized by in situ flushing of tubing dead volumes, by rapid and simultaneous sample collection, and by sampling an undisturbed water-column. Thus, this device can contribute to the characterization of vertical concentration gradients in benthic water-columns. Such gradients of various compounds and metals from two coastal sites (Quiberon Bay, Berre Lagoon, Loire river Estuary) are shown, illustrating the sampler's usefulness to describe and investigate processes in the benthic zone.

Susane may be loaned : let's collaborate !

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