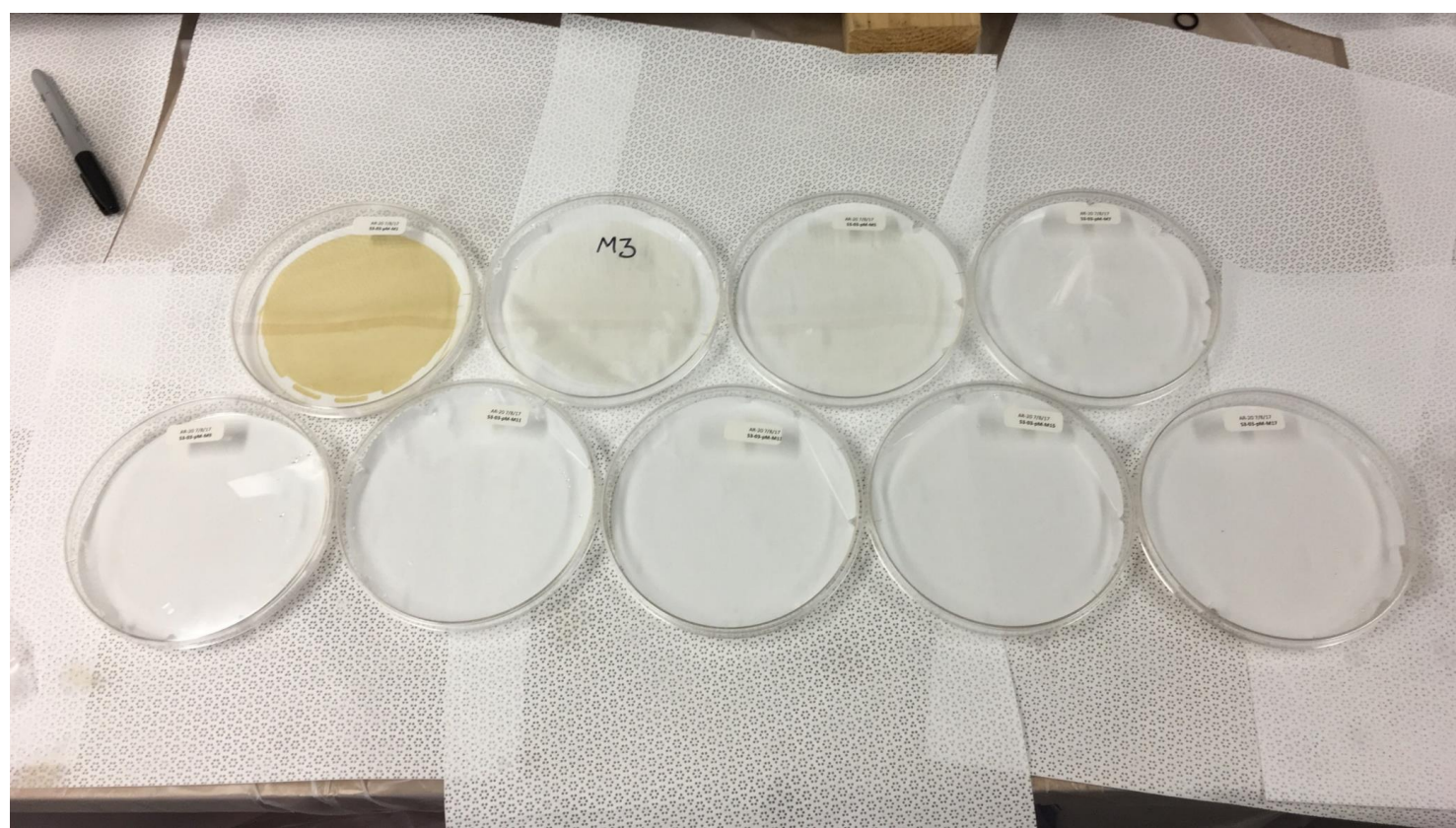


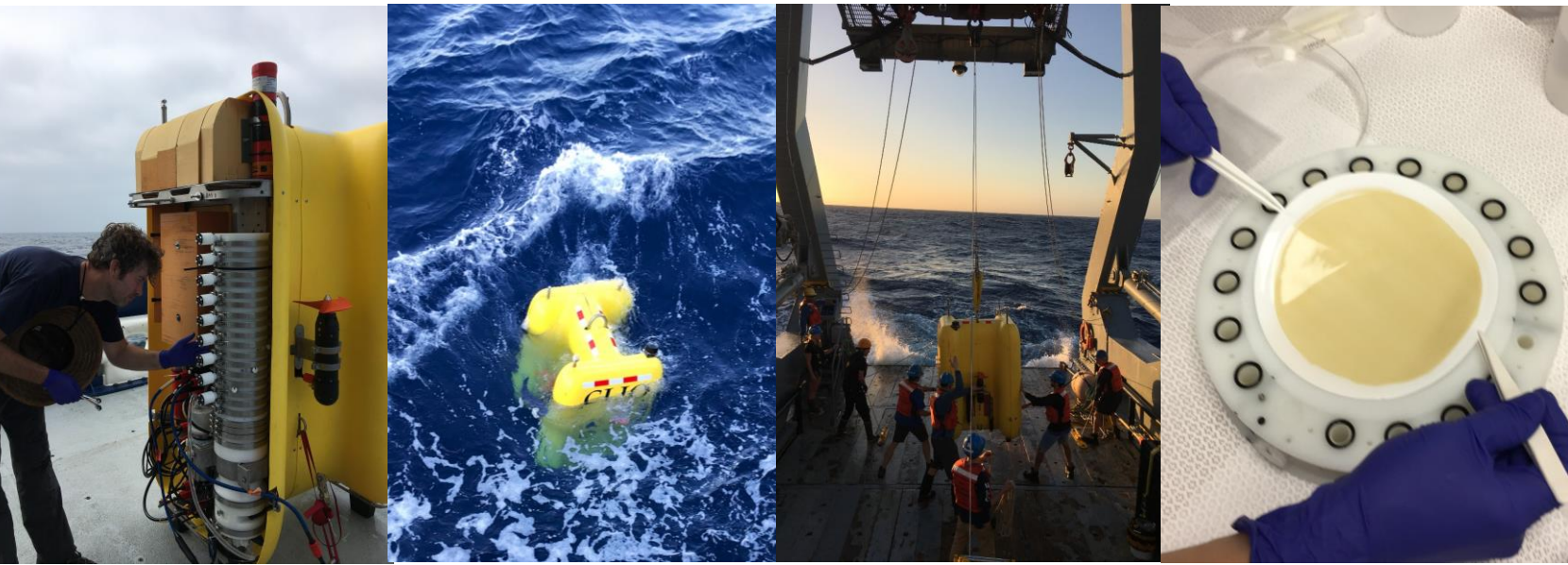
Clio: A fast vertical-
profiling vehicle
designed for global
ocean biogeochemical
mapping
Toward routine operations



MOTIVATION: Studying the “-omics” associated with marine microorganisms typically requires filtering large volumes of seawater in situ. Clio’s primary payload consists of two Suspended-Particle Rosette (SUPR) multi-samplers capable of returning up to 20 sets of filtered samples and filtrate per dive, and filtering up to 280 L of water per sample, making it ideal for current and future large scale microbial biogeochemistry efforts (e.g. Geotraces and Biogeoscapes)

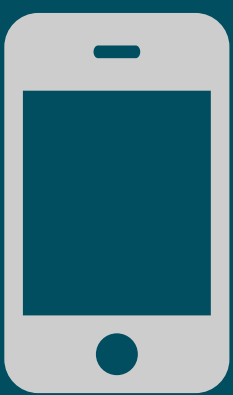
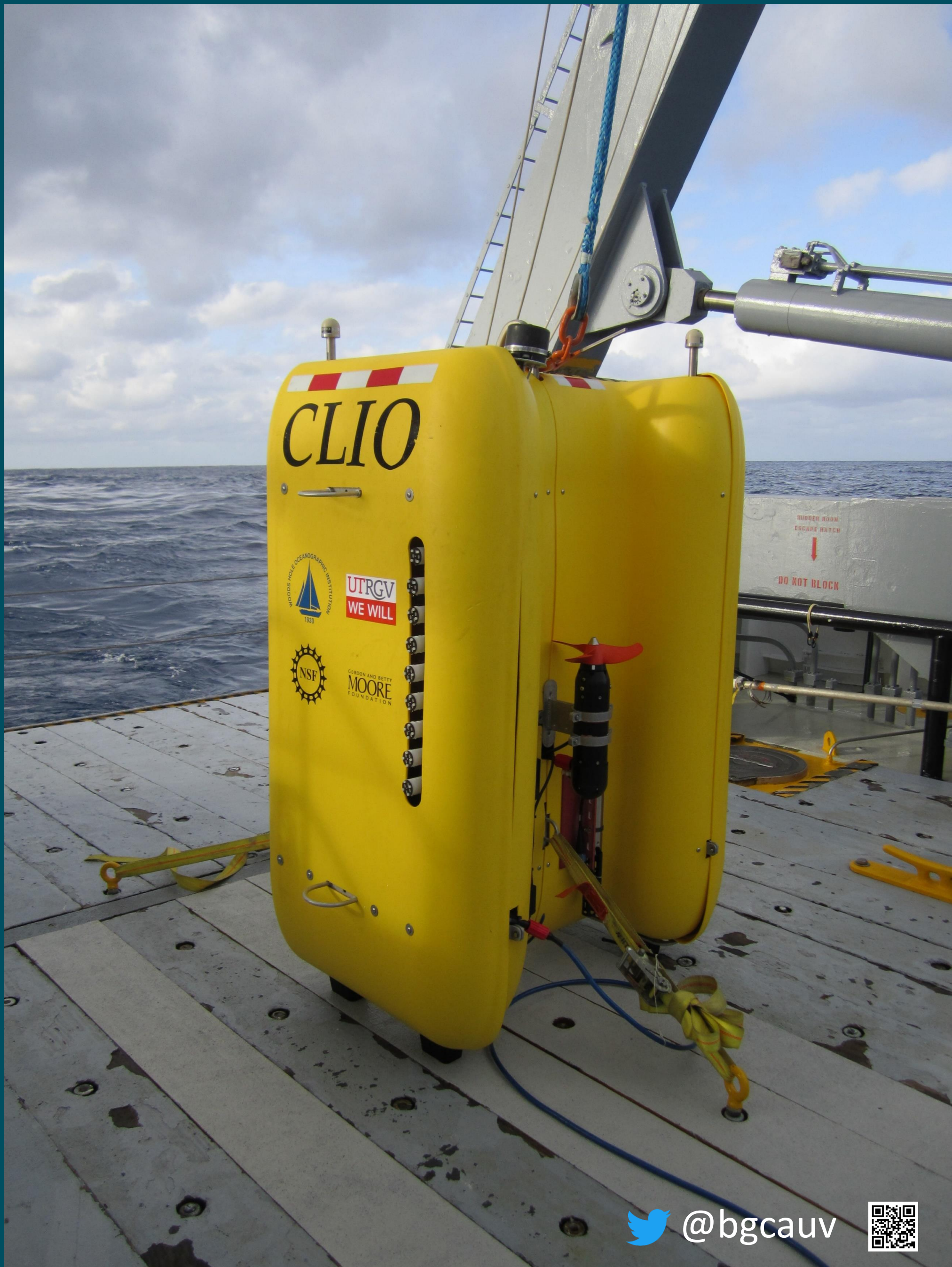


OPERATIONAL STATUS: Since sea trials in 2017 Clio has participated in 5 cruises including most recently a June 2019 section cruise between Bermuda and Woods Hole. On that cruise Clio executed a total of 9 nightly dives 12-16 hours in length and filtered a total of 20,878 L of seawater. The vehicle holds depth to a precision of better than 5 cm, is rated to 6000 m (4100 m maximum depth to date) and transits the water column at 45 m/min.

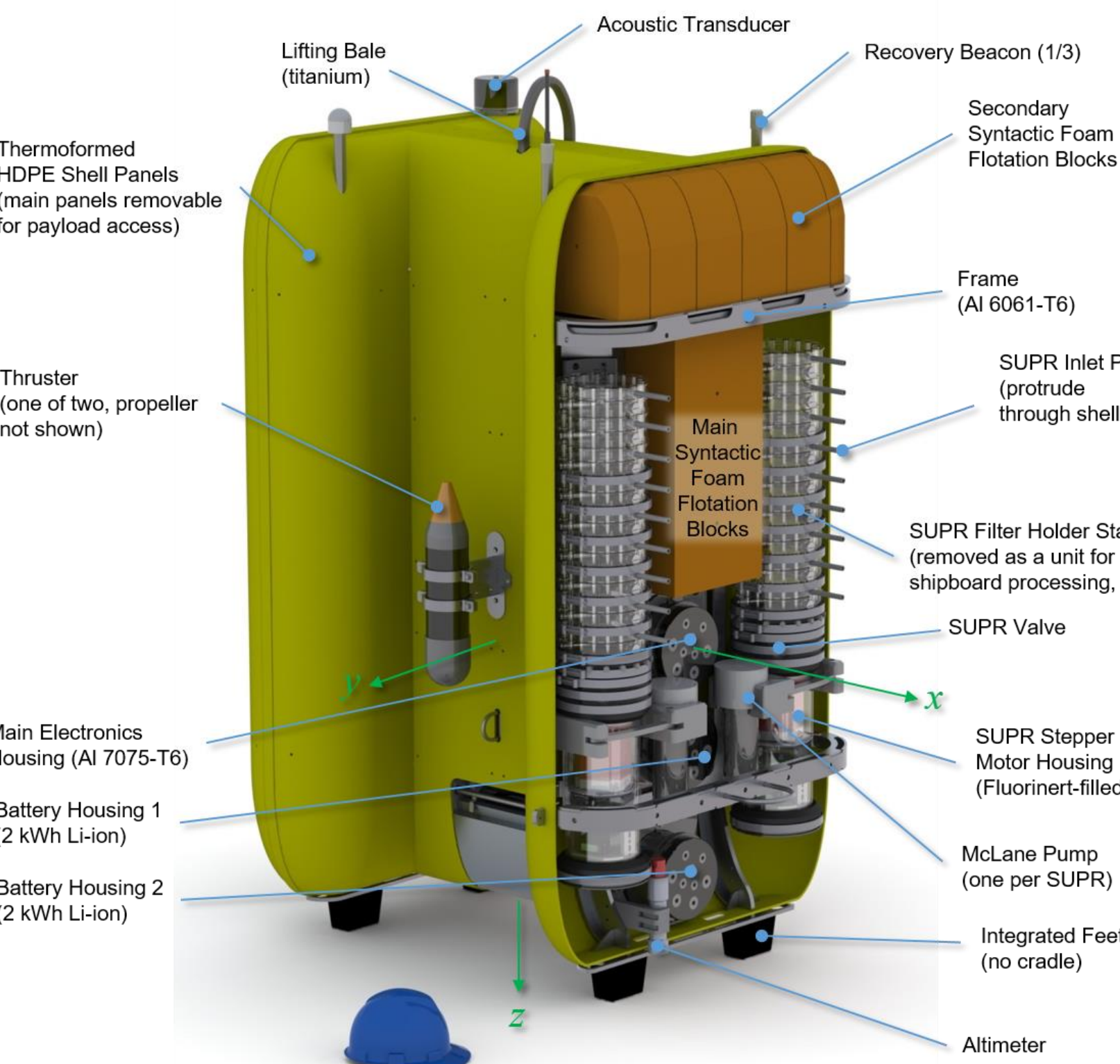
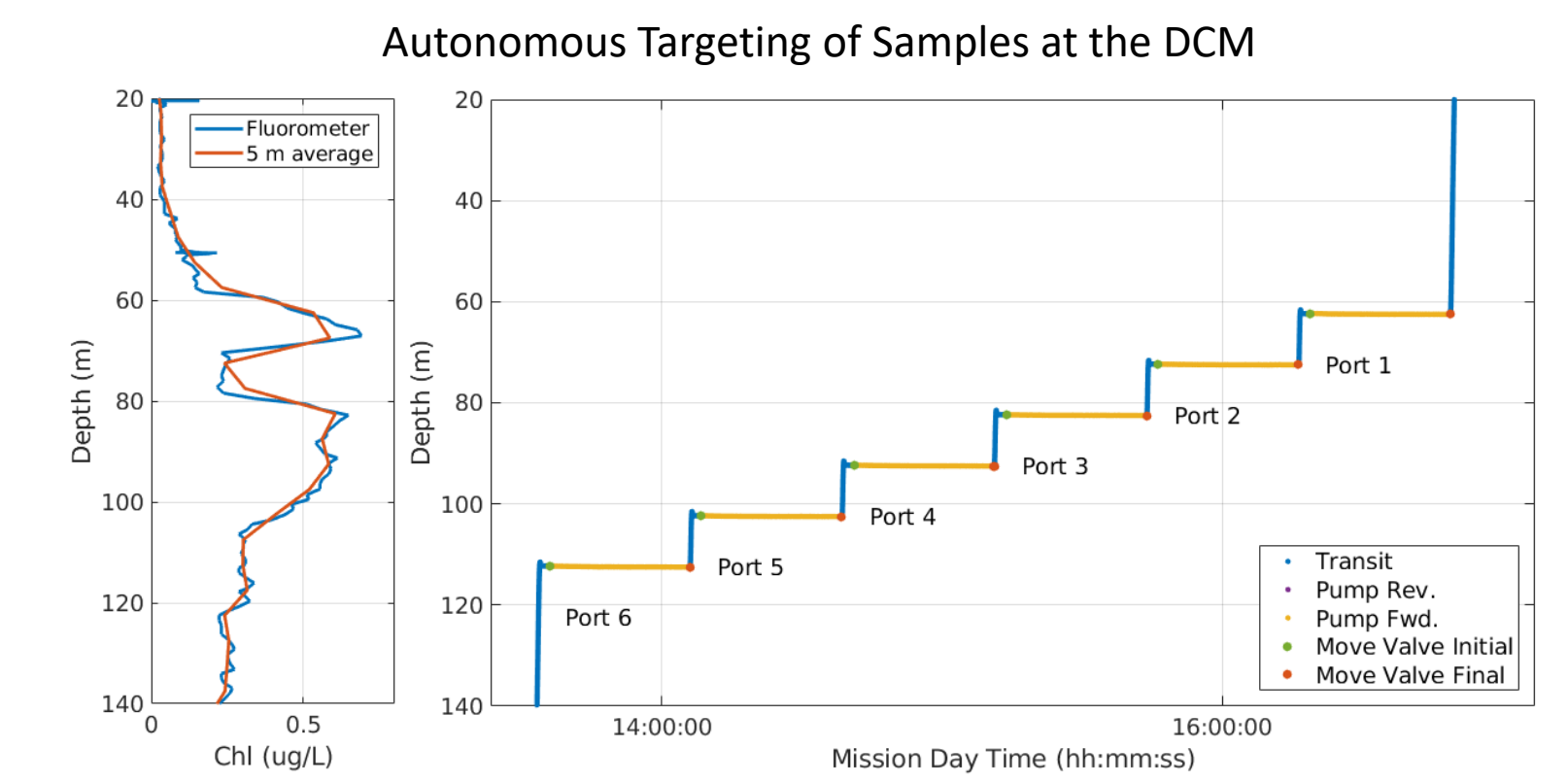
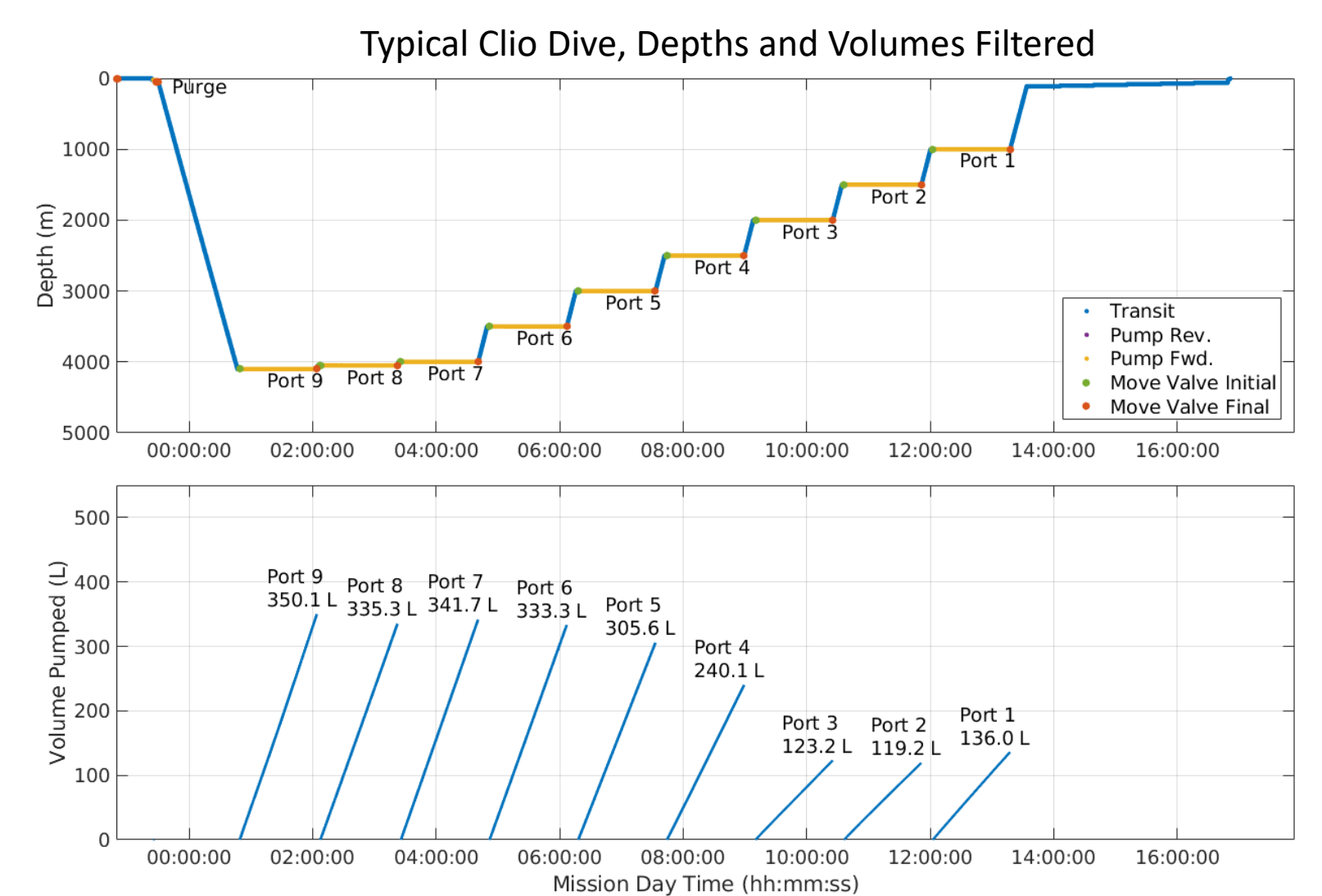
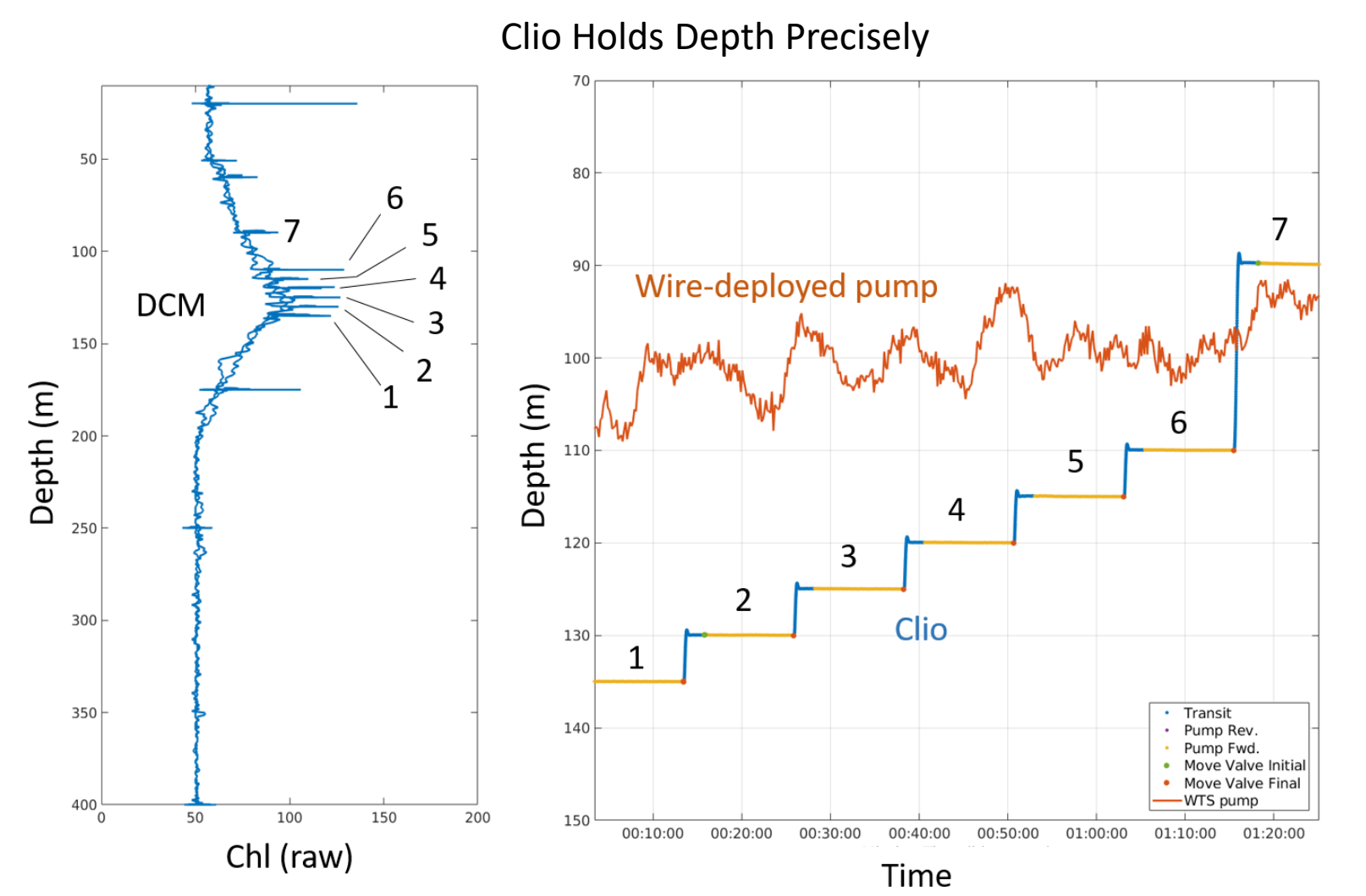
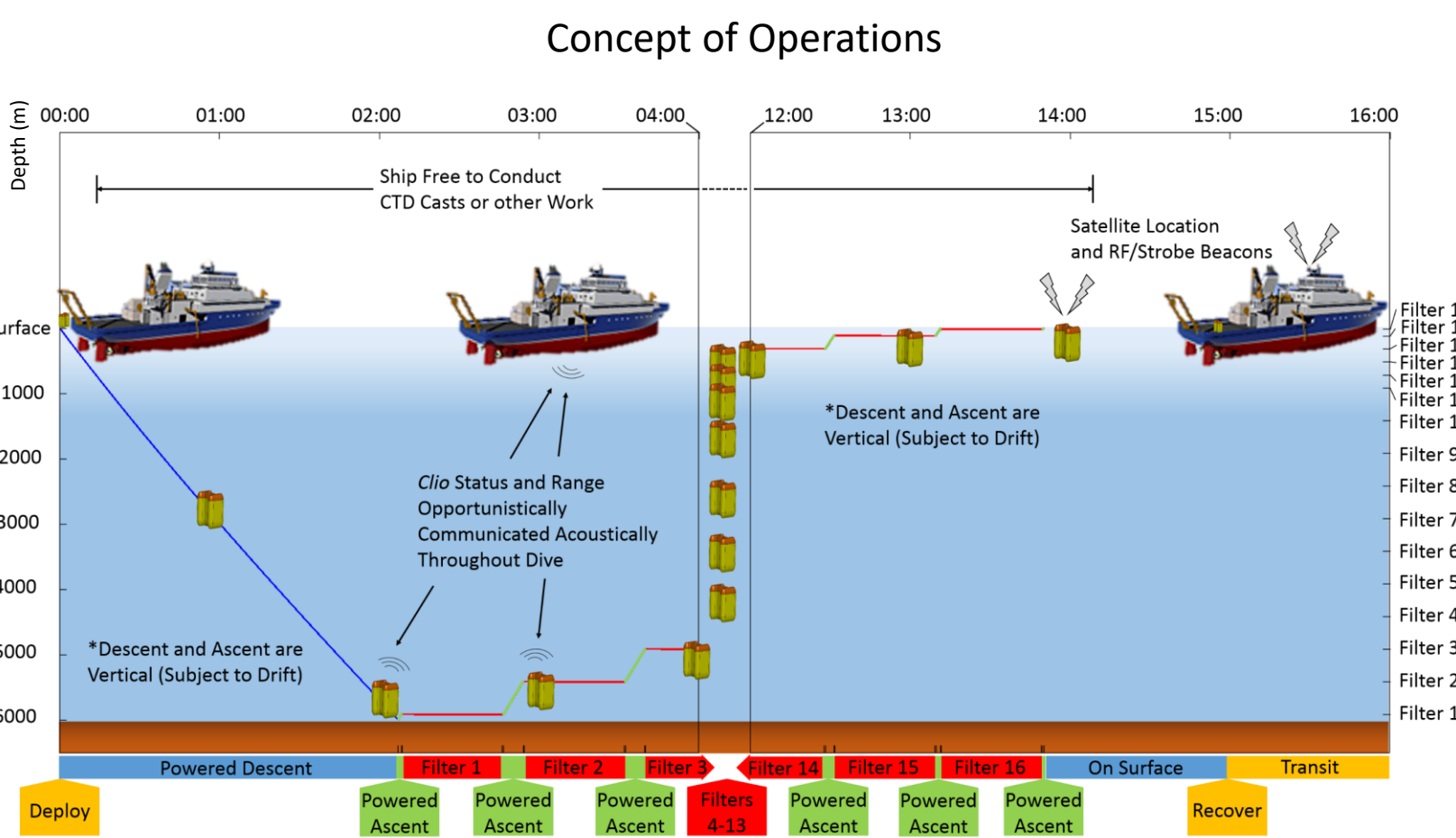


ADAPTIVE SAMPLING: Clio’s last three dives included autonomous data-driven selection of sample depths to better capture the deep chlorophyll maximum. Clio’s large payload capacity (10s W, 10s kg) could host novel samplers as well as in situ sample processors and other profiling instruments.

The Clio AUV autonomously collects
filter samples for “-omics” studies,
filtering 1000s of liters of seawater
per dive.



Take a picture for a list of abstracts with **scientific results** using **Clio samples**



Michael V. Jakuba¹, John “Chip” Breier², Mak A. Saito¹, Rod Johnson³

