

AANDERAA NEWSFLASH

Sea to Space with NASA: use of Aquaoptodes in Photosynthetron



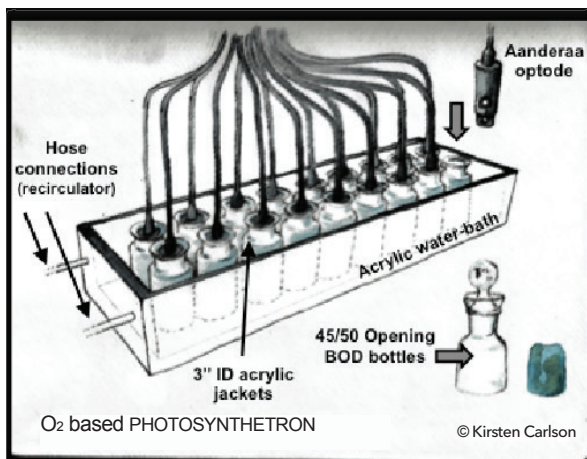
Dr. Ryan Vandermeulen at the NASA Ocean Ecology Laboratory has developed an experimental [Photosynthetron](#) to couple satellite information with processes at the sea surface.

In this temperature-controlled system, surface water samples from different depths are incubated in glass bottles and exposed to different light conditions to mimic day/night cycles at different waters depths.

Measuring changes in oxygen gives detailed information about the biological activity in the water, which is directly coupled to the carbon cycle. If nutrients and dissolved carbon are present and the water is exposed to light, algae (phytoplankton) will grow and produce oxygen at the same time as carbon and nutrients are consumed. This is called photosynthesis. Simultaneously, algae is eaten by bacteria and animals that live/grow in the

water which leads to oxygen consumption and a re-release of carbon and nutrients, biological cycle.

For this system NASA chose the [4531 oxygen optodes](#) that are widely used in aquaculture and coastal/lake projects. These rugged titanium/plastic sensors feature ultra-stable WTW foils, have inbuilt high quality temperature measurement/compensation and an inbuilt red reference LED to compensate for potential drift in the electronics. The sensors are connected with their serial ports to several 8-port Moxa adapters that are connected to a PC which logs and displays data from up to 80 sensors simultaneously, using the [Aanderaa Real-Time](#) collector software.



Major components of Photosynthetron system



The system [in action on-board a research ship](#)

For more information and questions please [contact](#) Dr. Anders Tengberg, Scientific Advisor and Product Manager.

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