

# OCEAN SCIENCE IN ACTION

## 10.3 LIFE ON-BOARD - A DAY AT SEA UNDERTAKING BIOGEOCHEMICAL SURVEYS VIDEO DURATION- 03:45

In this lecture, we will take you through a typical day on board a small research boat as it makes new and important observations from the Pemba Channel.

The Angra Pequena is a 24m long wooden, hulled expedition yacht that was home to the science team for the entire duration of the survey of the Pemba Channel.

During their work, the scientists on board will collect many samples and make many measurements using a variety of equipment.

The principle instrument used is a profiling system known as a CTD, which consists of several sensors able to measure parameters such as temperature and salinity down through the water column. The sensors are surrounded by several grey water bottles, known as Niskin bottles, that can be triggered to close at selected depths beneath the surface. Due to the importance of the CTD, it is checked carefully before each use.

Once ready, the CTD system is deployed by a winch over the side of the ship, which can be difficult even in light swell.

Whilst the CTD is away, the team get ready or perhaps sit and wait.

Depending upon how deep the CTD is sent, it can be a long wait before it reaches the surface again.

Once back on deck, water is collected from the Niskin bottles into a variety of ocean containers. Here, water is being collected into large 10L bottles.

What happens next depends upon the analysis planned.

Often, volumes of water are carefully measured and then filtered, to capture the particulate organic material present in seawater. Despite the simplicity of this approach, filtration remains one of the best ways to do this and many different particulate pools can be recovered and analysed.

Once the filtration has finished, the filter is catalogued and stored for later analysis.

Collecting water by CTD deployment is not the only activity onboard. For some work, scientists need to deploy and drag nets through the water to catch the fast swimming organisms that would otherwise avoid the CTD. Here we can see a 'bongo' net, so named because of the dual netting hanging from the frame, being deployed to capture zooplankton.

These nets can be pulled vertically when the vessel is stationary, or at an angle through the water when the ship is moving forward slowly. The aim is the same and it is to capture the zooplankton living in the upper ocean.

Once back at the surface, the nets are first hosed down to ensure nothing remains trapped in the folds of the net.

The collection device at the end of each net, known as the cod end, is carefully recovered as this is where the zooplankton are retained.

After more careful washing of the net, the cod end is then opened and we get our first glimpse of the contents, which are poured onto a coarse mesh filter.

The sample is then carefully transferred into a storage bottle.

Sometimes we want to collect surface samples for phytoplankton. This also requires use of a net but the net is used on deck rather than over the side of the vessel. Here we see the hand drawn collection of a single sampling bottle, before the water is poured into a net to collect the phytoplankton.

And then we move on the next station.

Of course, it's not all work, work, work, at the end of the day we might occasionally take a moment to watch the sunset before getting ready to repeat it all again tomorrow.