

CEND_07_18 May 2018 cruise report AlterECO

The RV Cefas Endeavour sailed at about 02:00 (GMT) on Monday 7th May 2018 and steamed northward to Dowsing to service the SmartBuoy, Waverider and the 'noise lander'. Weather was exceptional, recovery and deployments were uneventful.

Endeavour then steamed overnight to the AlterEco mission area.

On Tuesday 8th May, a toolbox talk was carried out on deployment and recovery operations for Slocum Glider, seaglider and Wave Glider (Figure 2). The NOC Slocum Glider 345 ('Cabot') was then deployed successfully at 09:42. A CTD profile and water sample collection with 'Sula' were carried out in proximity of the glider deployment for validation of the sensors on the glider. The NOC Slocum Glider 436 ('Stella') was recovered at 12:29, followed by the deployment of the UEA seaglider 510 ('Orca') at 14:48, and deployment of the UEA seaglider 620 at 17:37. A post-deployment CTD profile with 'Sula' was carried out shortly afterwards with collection of water samples for salinity, nutrients, chlorophyll (Flu + HPLC) and SPM (at 17:55). All the CTD profiles carried out in the area north of the Dogger Bank showed vertical thermal stratification with a thermocline, and the presence of a deep chlorophyll maximum.

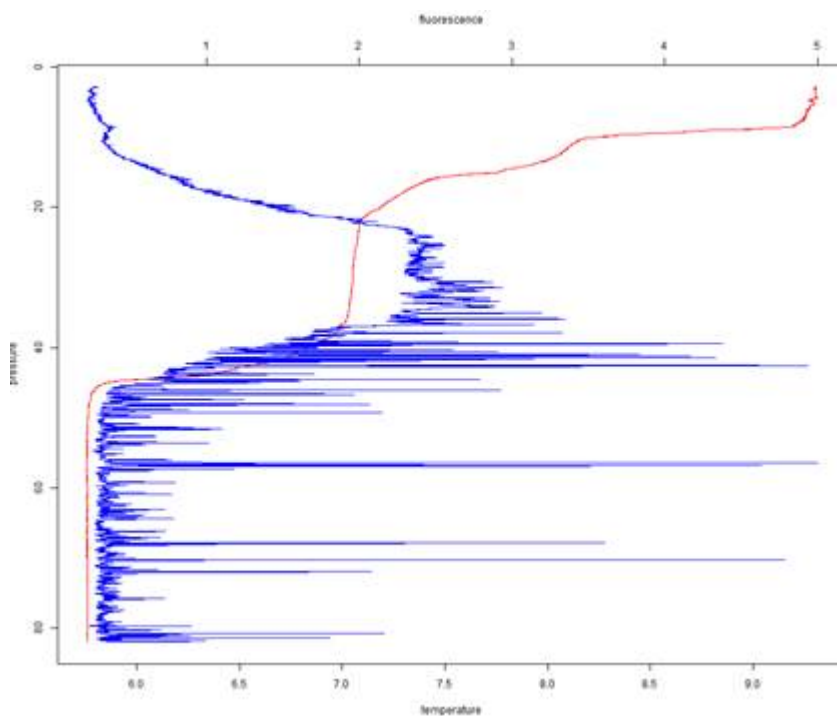


Figure 2. CTD profile from 55.949N , 1.9915E 10:40 UTC (No QC). Red = temperature, Blue = Seapoint chlorophyll fluorescence.

After a further toolbox talk, the Cefas Wave Glider 'Lyra' was deployed at 20:03 (on 8/5/2018).



Figure 2. Clockwise from top left corner: deployment of NOC Slocum Glider, recovery of UEA seaglider, recovery of NOC Slocum Glider and deployment of Cefas Wave Glider Lyra.

For the remaining part of the evening and night (from 21:00 on 8/5 to 06:00 on 9/5), sampling for zooplankton was carried out along 'Lyra's route every hour, while CTD profiles and water

sampling were carried out every 3 hours. The good weather and sea conditions (light airs and smooth swell) continued throughout the activities.

On the morning of the 9th May the Cefas Wave Glider 'Lyra' (at 09:52) was recovered, to carry out checks on the WBAT acoustic system with which 'Lyra' is fitted. Check completed, the Wave Glider was then redeployed at 10:27.

The NOC Slocum 352 (OMG1) was successfully recovered at 12:56, followed by the deployment of the UEA seaglider 579 ('Humpback') at 13:42, and a post-deployment CTD profile with the Rosette 'Sula', and water samples collection. After a short steam, the Endeavour returned following the course of 'Lyra', with hourly zooplankton sampling resumed between 17:30 to 21:30. CTD profiles and water sampling were carried out at 17:00 and 20:00.

Hourly zooplankton sampling along Lyra's route (as well as 2 further CTD profiles and water sampling) continued the following morning (10th May) from 05:30 to 11:00, until the RV started the steam southwards to the Vattenfall sites. A total of 40 zooplankton samples (20 with the 80 μm and 20 with the 270 μm mesh size net) were collected along Lyra's route, in addition to 8 CTD profiles, and water samples for analysis of salinity, chlorophyll, dissolved inorganic nutrient concentration SPM.

Endeavour then sailed south for the Vattenfall wind farm deployments and the servicing of the remaining two SmartBuoys.



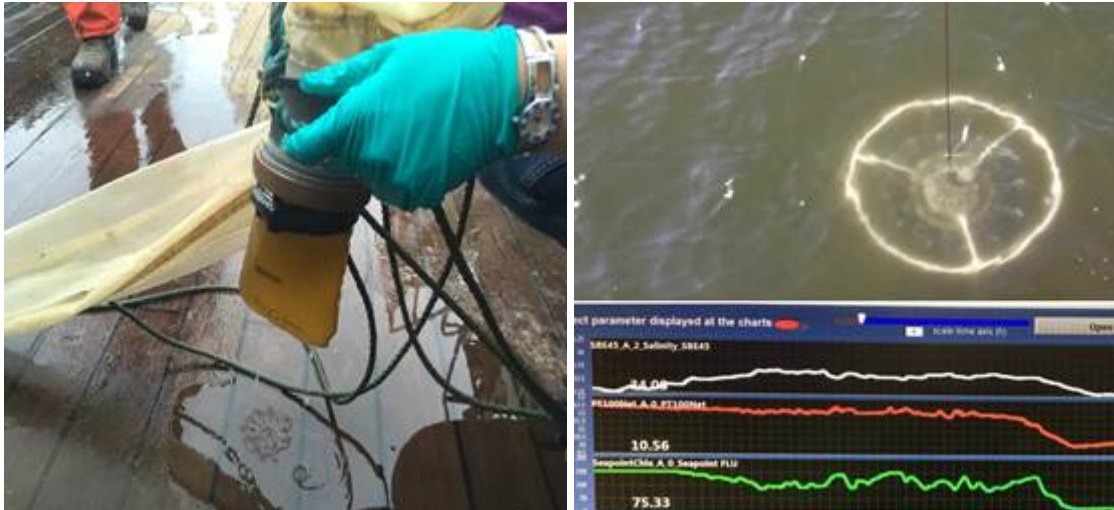


Figure 3. Satellite image of the Southern North Sea 09 May from NASA. Cod end of zooplankton 200 μm ring net at West Gabbard2 and CTD/Rosette profiles at Warp, during the phytoplankton bloom.

During the survey, a Cefas water sampler (integrated with the Ferrybox system) was tested for the collection of nutrients and phytoplankton samples, while a pair of NOC nutrient sensors were running continuously for nitrate and phosphate from the Ferrybox flow through.

Weather conditions were excellent throughout the survey with sea height of 0.5 m and slight swell. The Endeavour returned to port in Lowestoft on the morning of the 13th May.