

RESEARCH VESSEL SURVEY REPORT

RV CEFAS ENDEAVOUR
Survey: C END 06 - 2019.

STAFF:

Name	Role
Dave Pearce	SIC
Marc Whybrow	2IC
Eric Fitton	Moorings
Oliver Twigge	Moorings
Paul Nelson	Chems

Name	Role
Andy Bodle	Chems
Bryan Goodsir-Thompson	Moorings
Lois Elvin	Observer
Francesco Pallottino	Student

DURATION: 13th May to 17th May 2019

LOCATION: North Sea

AIMS:

1. Recover MiniLander and Waverider, carry out multibeam survey and collect water samples at Vattenfall Vanguard (C7311B – 0.5 day).
2. Recover MiniLander, Waverider and guard buoys, carry out multibeam survey and collect water samples at Vattenfall Boreas (C7645B – 0.5 day).
3. Service SmartBuoys at Dowsing, Warp and West Gabbard2. (SLA25G – 2 days).
4. Service Waveriders at Dowsing and West Gabbard2 (C6029A – 1 day).
5. Service Noise Landers at Dowsing and Warp (SLA20A – 0.5 day).
6. Collection of a zooplankton sample at West Gabbard.
7. Underway nutrient sampling using FerryBox water sampler.
8. Underway CTD and surface UEA water samples.
9. CTD water sample at the off Lowestoft site.

NARRATIVE:

Times in GMT

Monday 13th May 2019

The RV Cefas Endeavour sailed at 03:36hrs, with the pilot disembarking at 04:07. We then started to head towards the first survey site – Vattenfall Vanguard. It was realised that a cable needed wasn't onboard. Communication with ashore were had and a plan put into place to pickup the missing cable. FRB1 deployed to pickup the missing cable at 07:17hrs and back onboard at 07:56hrs. Underway to first survey site – Vattenfall Vanguard.

Survey brief took place at 08:15hrs, then followed by an abandon ship drill at 10:00hrs

Toolbox talks took place at 11:00hrs, which we went through the order of work, RA's and PPE. CTD deployed at 11:32hrs (52° 58.9008N - 02° 30.6948E), sea state – calm, wind speed – light airs, wind direction – variable, CTD recovered at 11:47hrs. Samples collected 2x salinity's from the bottom and 1 Suspended Particulate Matter (SPM) from the bottom, middle and top. Vanguard Waverider hooked in at 12:11hrs (52° 58.5631N - 02° 30.9679E), recovered onto deck at 12:13hrs.

PAM transponder deployed and fired, we received a response saying the acoustic release line had been released, but the bufs were not seen, likely to be jammed. Decided to move towards the clump weight bufs and recover this way.

Vanguard MiniLander clump weight bufs hooked in at 13:03hrs, clump weight position 52° 58.4763N - 02° 31.0919E at 13:09, recovered on deck at 13:12hrs, MiniLander position 52° 58.5115 - 02° 31.1397E. recovered on deck at 13:26hrs. Sea state – calm, wind speed – light airs, wind direction – variable.

Now heading towards the 2nd Vattenfall site (Boreas) where we will do a toolbox talk and collect a CTD, recover the Waverider, MiniLander, 2 GuardBuoy and then completing this site with the multibeam. Toolbox talk completed, arrived on station and deployed the CTD 15:54hrs (53° 10.5824N - 02° 58.6364E), Sea state – calm, wind speed – light airs, wind direction – variable, CTD recovered at 16:07hrs. Samples collected 2x salinity's from the bottom and 1 Suspended Particulate Matter (SPM) from the bottom, middle and top. PAM transponder deployed and fired at 16:28hrs and bufs appeared.

Boreas MiniLander hooked at position 53° 10.6281N - 02° 58.7021E at 17:00hrs, recovered on deck at 17:06hrs. Clumps position 53° 10.5897N - 02° 58.7057E at 17:17hrs, recovered on deck at 17:18hrs. Boreas Waverider hooked at position 53° 10.6127N - 02° 59.3333E at 17:37hrs, recovered on deck at 17:38hrs, clump weight position 53° 10.6263N - 02° 59.3522E at 17:47hrs. Moved to the Boreas GuardBuoy 1, where we hooked on at 17:59hrs at position 53° 10.7195N - 02° 59.3711E, clump onboard at 18:06hrs at position 53° 10.752N - 02° 59.369E.

Next moved to the Boreas GuardBuoy 2, where we hooked on at 18:26hrs at position 53° 10.7168N - 02° 58.8233E, clump onboard at 18:32hrs at position 53° 10.7154N - 02° 58.8235E. Sea state – calm, wind speed – light airs, wind direction – variable, throughout the day. Next, we moved onto the Multibeam on the Boreas site. Mini CTD for the calibration of the Multibeam deployed at 18:54hrs.

Multibeam survey commenced at 19:21hrs, where we ran 9 lines in a North/South-South/North direction. Finished the Multibeam survey at 21:20hrs.

Overnight we will head towards the Dowsing site and after head back to the Vattenfall Vanguard area, where we will finish the site with the Multibeam.

Tuesday 14th May 2019

Toolbox talk took place on the bridge, going over the rest of the survey regarding the equipment involved.

Pre CTD deployment at the Dowsing at 07:31hrs (53° 32.1103N - 01° 3.2454E) CTD recovered at 07:39hrs. Samples collected – Top – Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter

(SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

Dowsing Waverider hooked at position 53° 31.9349N - 01° 3.2020E at 08:03hrs and recovered on deck at 08:05hrs.

Clump weight position 53° 31.9162N - 01° 3.2253E at 08:15hrs, recovered on deck at 08:31hrs.

Next to recover was the Dowsing Noise Lander, PAM transponder deployed and fired, and buffs appeared at 08:57hrs.

Dowsing Noise Lander hooked on the recovery line at 09:17hrs, position 53° 31.7563N - 01° 3.1349E, recovered on deck at 09:32hrs. Clump position at 09:43hrs – 53° 31.7572N - 01° 3.2223E, recovered on deck at 09:44hrs.

Dowsing SmartBuoy hooked at 10:11hrs, position 53° 31.6981N - 01° 3.4500E. Recovered on deck at 10:14hrs. Clump position at 10:18hrs – 53° 31.6942N – 01° 3.4528E, recovered on deck at 10:19hrs.

All recovery's complete, moved onto the deployments of the Waverider and Noise Lander.

Waverider deployed at 11:00hrs, position 53° 31.8746N - 01° 3.2766E, clump weight released at 11:05hrs, position 53° 31.9112N - 01° 3.2332E.

Noise Lander deployed and on the bottom at 11:52hrs, position 53° 31.7207N - 01° 3.2208E, clump weight released and on the bottom at 12:12hrs, position 53° 31.7536N - 01° 3.3195E

Sea state – calm, wind speed – light airs, wind direction – variable, throughout the day.

Dowsing survey area complete at 13:16hrs. Will make our way back to the Vattenfall Vanguard site to complete the area with the Multibeam. During the transit down, we will collect hourly water samples from the FerryBox system.

3 Continuous surface Flow sample stations collected – 13:31hrs at 53° 21.144N - 01° 21.499E, 14:27hrs at 53° 12.809N - 01° 36.692E, 15:27hrs at 53° 4.841N - 01° 55.345E. All collecting Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

Arrived at the Vattenfall Vanguard survey area at 18:20hrs, we started with a Mini CTD for the calibration of the Multibeam deployed at 17:34hrs. Multibeam survey commenced at 17:49hrs, where we ran 10 lines in a North/South-South/North direction. Finished Multibeam survey at 19:49hrs. On a couple of the lines we had to steer around the Guard Buoy, but 100% coverage of the area was collected.

Overnight we will head towards the West Gabbard site to service the SmartBuoy and Waverider. We will then also collect a Zooplankton sample.

Wednesday 15th May 2019

Pre CTD deployment at West Gabbard2, 07:13hrs (51° 57.1783N - 02° 6.7795E), CTD recovered at 07:25hrs. Samples collected, Top – Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM), Phytoplankton. Bottom - Salinity, Chlorophyll, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM)

West Gabbard2 SmartBuoy hooked at 07:47hrs – 51° 57.2257N - 02° 6.373E, recovered on deck at 07:49hrs. Clump weight position 51° 57.2369N - 02° 6.6398E at 07:52hrs, recovered on deck at 07:56hrs.

West Gabbard2 Waverider hooked at 08:14hrs – 51° 57.1147N - 02° 6.5131E , recovered on deck at 08:15hrs. Clump weight position 51° 57.1263N - 02° 6.5174E at 08:21hrs, recovered on deck at 09:09hrs. Took some time to get the clump back as we had picked up an old moorings and clump weight.

All recovery's complete.

West Gabbard2 SmartBuoy deployed at 09:28hrs – 51° 57.2595N - 02° 6.6592E, clump weight released at 09:31hrs position 51° 57.2444N - 02° 6.6508E.

West Gabbard2 Waverider deployed at 10:01hrs – 51° 57.1540N - 02° 6.5227E, clump weight released at 10:03hrs position 51° 57.1541N - 02° 6.5225E.

Post CTD deployment at 10:18hrs position 51° 57.4149N - 02° 6.8561E, recovered at 10:29hrs. Samples collected Top – Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM), Phytoplankton. Bottom - Salinity, Chlorophyll, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM)

West Gabbard Zooplankton ringnets deployed for the community composition analysis at 10:38hrs position 51° 57.8360N - 02° 6.9601E, recovered at 10:41hrs.

Sea state – calm, wind speed – light airs, wind direction – variable, throughout the day

West Gabbard survey site now complete, we will now head to the Warp, where we will service the SmartBuoy and Noise Lander.

Continuous surface Flow sample stations collected during the transit between West Gabbard and the Warp – 12:27hrs at 51° 50.353N - 01° 48.544E , 13:31hrs at 51° 48.942N - 01° 30.730E, 14:28hrs at 51° 41.9920N - 01° 18.7263E, 15:26hrs at 51° 33.11467N - 01° 5.3677E. All collecting Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

Arrived at the Warp and started with the Pre CTD deployment at 15:54hrs – 51° 31.9375N - 01° 3.0500E, recovered on deck at 16:00hrs. Samples collected Top – Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM). Bottom - Salinity, Chlorophyll, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

Warp SmartBuoy hooked at 16:32hrs – 51° 31.9852N - 01° 2.8768, Recovered on deck at 16:34hrs, clump weight position 51° 31.9906N - 01° 2.8838E at 16:36hrs, recovered on deck at 16:38hrs.

Warp Noise Lander clump weight hooked at 16:57hrs – 51° 31.9735N - 01° 2.7188E, recovered on deck at 16:59hrs, Noise Lander position 51° 31.9263N - 01° 2.7738E at 17:11hrs, recovered on deck at 17:13hrs.

All recovery's complete.

Warp Noise Lander deployed at 17:33hrs – 51° 31.9450N - 01° 2.8302E, clump weight released at 17:49hrs – 51° 32.0083N - 01° 2.7484E.

Warp SmartBuoy deployed at 18:02hrs – 51° 32.0097N - 01° 2.9229E, clump weight released at 18:03hrs – 51° 32.0102N - 01° 2.9237E.

Post CTD deployment at 18:17hrs – 51° 31.9173N - 01° 2.9815E, recovered on deck at 18:24hrs. Samples collected Top – Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM). Bottom - Salinity, Chlorophyll, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM). All deployments completed with Sea state – calm, wind speed – light airs, wind direction – variable, throughout the day.

Will sit on anchor overnight collecting hourly surface water samples from the FerryBox up in till midnight. Samples collected – 20:31hrs at 51° 31.607N - 01° 2.022, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), 21:26hrs at 51° 31.629N - 01° 2.007E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM). 22:30hrs at 51° 31.633N – 01° 2.012, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), 21:26hrs at 51° 31.629N - 01° 2.007E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

We had a call about one of our Waveriders off Hastings being hit and been taken off location. Still to decide if we will go to recover.

Thursday 16th May 2019

The call was made to transit to the Hastings Waverider, so the anchor was raised at 04:00hrs and we got underway.

Continuous surface Flow sample collected during the transit between the Warp and Hastings. Samples collected, 07:26hrs at 51° 6.6683N - 01° 26.876E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM), 08:27hrs at 50° 58.5781N - 01° 12.0864E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM), 09:28hrs at 50° 50.8893N - 0° 57.981E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

Arrived at the Hastings Waverider site at 11:05hrs and spotted the Waverider. Hooked in at 10:18hrs – 50° 46.9876N - 00° 50.9380E, recovered onboard at 10:20hrs. Clump weight position 50° 46.9770N - 00° 50.9130E at 10:27hrs, recovered onboard at 10:37hrs.

Recovery complete.

Hastings Waverider deployed at 11:29hrs – 50° 44.7624N - 00° 45.2247E, clump weight released at 11:32hrs – 50° 44.7736N - 00° 45.2427E

Hastings deployment complete.

Will transit back to the West Gabbard site to collect extra water samples.

Continuous surface Flow sample collected during the transit between Hastings and West Gabbard. Samples collected, 14:59hrs at 51° 8.099N - 01° 30.521E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), 16:57 at 51° 24.899N - 01° 46.509E, Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM).

Arrived at West Gabbard and the CTD was deployed at 20:53hrs – 51° 94.442N - 02° 11.376E. Samples collected – Top – Salinity, Chlorophyll x3, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM). Bottom - Salinity, Chlorophyll, Nutrients, Suspended Particulate Matter (SPM), Dissolved Oxygen x3 (DO₂), Dissolved Organic Carbon (DOC) and Fluorescent Dissolved Organic Matter (FDOM).

Now proceed to the UEA water sample off Lowestoft.

Friday 17th May 2019

Transited to the UEA water sample site just off Lowestoft, CTD deployed at 05:25hrs – 52° 28.4799N - 01° 59.3272E, recovered on deck at 05:32hrs.
Survey C END 6 - 2019 complete.

Pilot boarded at 06:23hrs and we were alongside and fast at 06:54hrs.

Thanks for the team and the P&O crew onboard for making the survey very successful.

Marc Whybrow
2IC (Second in Charge)
17th May 2019

DISTRIBUTION:

BODC
POMS
RV Ops Manager