

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT, ENGLAND

1993 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA CRUISE 9(a)/93

(PROVISIONAL: Not to be quoted without prior reference to the author)

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DURATION :

Part (a) 14 - 29 September (COSEDS)

LOCALITY :

Part (a) Eastern Irish Sea, North Channel

AIMS :

1. To calibrate the FSI ICTD (high precision deep water) and FSI MCTD (self recording) in a variety of conditions (AE0504A0 and AE0207A0).
2. To conduct an intercomparison of the portable Jabsco pump and the ships clean saltwater supply for long lived U/Th and Cs radionuclides (95060000 and AE0114A0).
3. To reoccupy the TH19 anchor station site at the entrance to Morecambe Bay (54° 01.15' N, 03° 32.41' W) to compare spring and neaps tidal resuspension using the Tetrapod, Quadrapod and hourly CTD casts for $^{238}\text{U}/^{234}\text{Th}$ disequilibrium studies (AE0207A0; AE0118A0).
4. To test the new Benthic Acoustic Stress Sensor (BASS) on the Tetrapod (AE0207A0).
5. To test deploy the Minipod and new C-T-MOBS logger (if available) (AE0207A0).
6. To collect sediment samples from the Lune Deep and conduct an anchor station in Lancaster sound, Morecambe Bay for calibration of the Morecambe Bay Model (AE0127B0) if time permits.
7. To deploy 3 current meters in the North Channel as part of the North Channel exchanges STA and conduct a CTD section along the line of moorings (AE0128B0).

8. To deploy the Tetrapod, Quadrapod and guard buoys for a long deployment at TH19, off Morecambe Bay. To be recovered on Cirolana 11/93 early in December (AE0207A0)
9. To conduct a sediment survey from the Isle of Man to Liverpool Bay for long lived natural radionuclides (AE0118A0)- if time permits.

ADDITIONAL AIM:

13. To undertake a Sidescan Survey of the Barrow - in - Furness dredge disposal site (AE0201C0).

NARRATIVE

RV Cirolana sailed from Lowestoft at 2000h on the 14th September and made a fast passage down the Channel. A CTD station was completed west of the Isles of Scilly to calibrate the FSI CTD sensors and to obtain water samples to test for possible contamination of the continuous water supply. On reaching the main experiment site at TH19 (west of Morecambe Bay) on the 17th a sidescan survey was undertaken. The Tetrapod with the new BASS acoustic current meter and the Quadrapod were then deployed and a 24 hour anchor station conducted over the 17/18th.

The weather deteriorated over the 19th and the Tetrapod and Quadrapod were left in the water. The weather moderated overnight allowing the Tetrapod and Quadrapod to be successfully recovered on the morning of the 20th. After an unsuccessful attempt to pickup some essential gear from Whitehaven, a sidescan survey along the tracks of the TV Sledge Tows conducted on R.V. Valdivia (3/9/93 to 13/9/93) was undertaken.

On the 21st the gear from Whitehaven was picked up and Cirolana sailed for the North Channel. Three current meter moorings were deployed during the afternoon and a CTD section conducted during the evening. A sediment survey for long lived radionuclides along transects between the Lancashire coast, Isle of Man and Anglesey was started on the 22nd. The Tetrapod and Quadrapod were deployed for the second anchor station on the morning of the 23rd and hourly CTD's taken over the 23rd/24th. The Tetrapod and Quadrapod were recovered without damage on the afternoon of the 24th. Sediment samples were taken from the Lune Deep (Morecambe Bay) on the morning of the 25th and the remainder of the long lived radionuclides sediment stations were completed in the morning. A sidescan survey of the Barrow - in - Furness dredge disposal site was undertaken in the late afternoon.

The Tetrapod and Quadrapod were laid for the long deployment on the morning of the 26th and a repeat of the sidescan survey around the site (TH 19) was conducted. Three guard buoys were then laid around the site and Cirolana subsequently sailed for Lowestoft. A further water sample was collected en route to compare Cs concentrations in surface water samples from the ships continuous seawater supply and a portable Jabsco pump.

Cirolana docked in Lowestoft at 0800 on the 29th.

RESULTS

1. The FSI ICTD and MCTD were calibrated in a variety of conditions.
2. An intercomparison of the portable Jabsco pump and the ships clean saltwater supply was undertaken at three stations, on entering the Irish Sea, in the Irish sea and on leaving.
3. Two anchor stations (Tetrapod, Quadrapod and hourly CTD casts) were undertaken at TH19 to compare springs and neaps tidal resuspension. Figure 1 shows the difference in Tidal elevation over the deployments with a spring tidal range of 8.8m and a neaps range of 4.4m. Figure 2 shows the significant wave height over the deployments. The springs deployment (dep 87) has greater wave activity than the neaps deployment (dep 88)

Fig. 1 - Tidal Ranges for Deployment 87 and 88 - Morecambe Bay

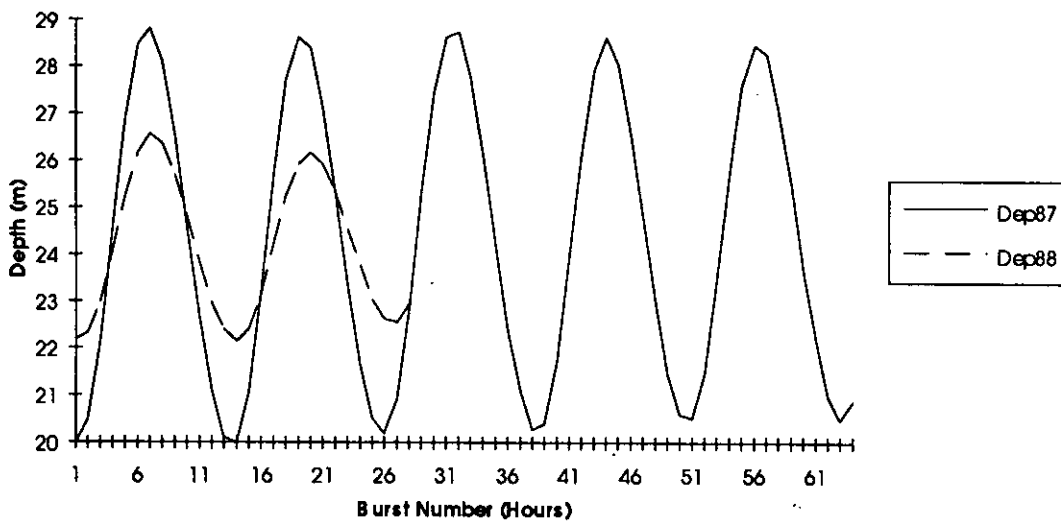


Fig. 2 - Significant Wave Height Deployments 87 and 88 - Morecambe Bay

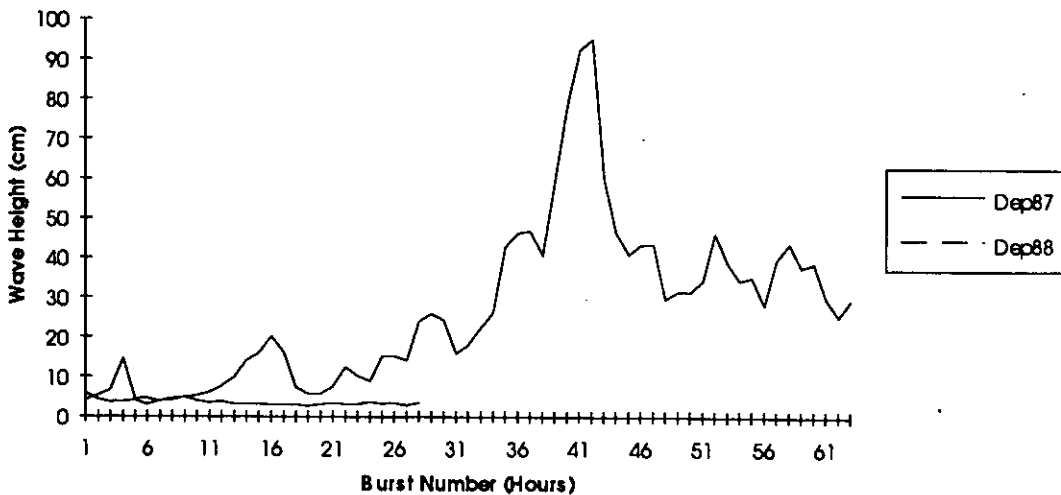
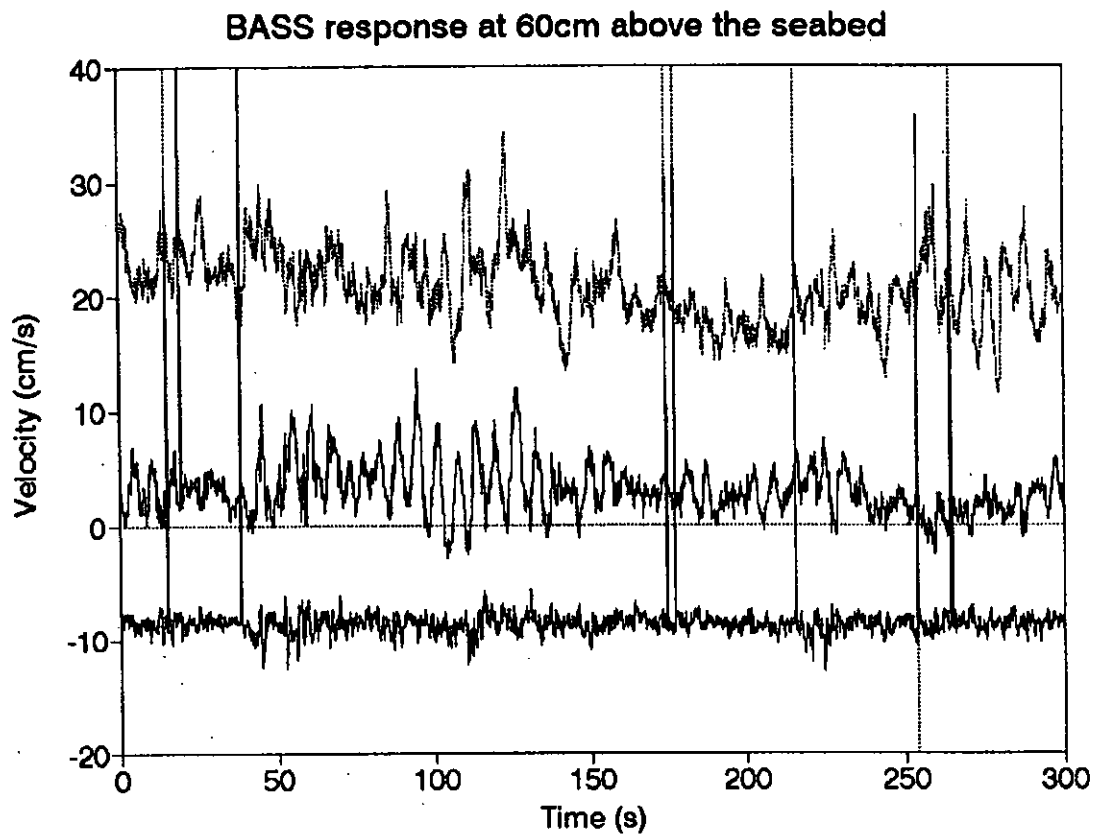


Fig 3.



4. The new BASS on the Tetrapod was successfully tested. Results obtained (Fig. 3) at a sampling frequency of 10 Hz show tidal, wave and turbulent variation in the 3 velocity components u,v and w. Occasional spikes in the record are to full range and are therefore easy to detect. A zero offset test was conducted with carrageenan (an industrial jelly). The BASS was mounted on the Tetrapod for the long deployment.
5. The Minipod and C-T-MOBS logger were not tested as they were not available.
6. Sediment samples were collected from the Lune Deep for calibration of the Morecambe Bay Model. Time constraints precluded any Lancaster Sound anchor station.
7. Three current meter moorings were deployed in the North Channel (to be serviced by RV Challenger in late October and recovered by RV Cirolana 11/93 in December). A CTD section was undertaken across the North Channel along the line of moorings coinciding with a similar section by RV Challenger slightly to the north.
8. The Tetrapod and Quadrapod were deployed for a long deployment at TH19 to be recovered on Cirolana 11/93.
9. Twenty sites in the Eastern Irish Sea were sampled for long lived radionuclides.

J M Rees
(Scientist-in-Charge)
28th Sept. 1993

SEEN IN DRAFT :

Master
Senior Fishing Skipper

INITIALLED : PGS

DISTRIBUTION

Basic List +
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