

11 - 29 April, 1982 : Gibraltar to Abidjan.

(a) Main Objectives.

The cruise continued a study of the physical processes in the frontal convergence of North and South Atlantic Central Waters off N. W. Africa. The main objectives were as follows :-

(1) Recovery of three current meters, moorings deployed from R.R.S. Shackleton in early November 1981 at  $22^{\circ}\text{N}$ ,  $18^{\circ}\text{W}$ .

(2) BATFISH and CTD surveys in the NACW/SACW front.

Additional projects were :

(1) Water sampling for chemical speciation studies,

(2) Underway atmospheric dust sampling.

(b) Geographical Area.

The main area of operations was planned to be centred on  $22^{\circ}\text{N}$ ,  $18^{\circ}\text{W}$ . In the event however the Moroccan Authorities did not give permission for the survey in the vicinity of the moorings. An alternative area was found with similar frontal characteristics near  $20^{\circ}\text{N}$ ,  $20^{\circ}\text{W}$  and subsequent work was carried out there. See accompanying cruise tracks.

(c) Weather

Weather conditions were generally good and no time was lost.

(d) Conduct of cruise.

The effect of restrictions placed upon sampling by Morocco, at the last moment, was severe because the programme could not be carried out in the area chosen from previous studies. We did however successfully recover the three moorings (18 current meters) which had been in operation for 5½ months, and then sailed west to beyond the 200 mile limit. The water samples for chemical speciation were obtained before turning south to  $20^{\circ}30'\text{W}$ . BATFISH was first deployed at 1212, 18.4.82 at  $20^{\circ}31.12'\text{N}$ ,  $20^{\circ}35.37'\text{W}$  but was lost about one hour later. There was no usable data from it. The towing cable had parted and an examination of the recovered cable end showed extensive corrosion in the strain armouring. Visual scrutiny of the sheath is not possible because of the plastic covering associated with the fairing.

The loss of the instrument greatly reduced our ability to make an effective spatial survey of the frontal zone in the time available. Instead we had to resort to CTD dips. The strategy adopted was to survey for frontal activity and then to carry out a "YO-YO" CTD series to investigate the characteristic interleaving. This procedure proved fairly satisfactory and 102 lowerings to 600 m were made in the remaining 5 days before turning southwards towards Abidjan.

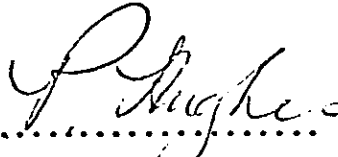
Underway atmospheric dust sampling with the high volume pump apparatus and the suspended dust nets was carried out whenever conditions were favourable.

(e) Equipment performance.

- (1) Batfish : see above
- (2) CTD and multisampler : satisfactory
- (3) P.E.S. : satisfactory
- (4) Thermosalinograph : lack of sensitivity on conductivity channel limits its usefulness.
- (5) Current meter moorings : undoubtedly a success. All equipment recovered although three current meters had shed their rotors. One of the moorings had suffered from colonisation by goosenecked barnacles which must have interfered with sensor operation. All tape transports had worked satisfactorily.
- (6) Computer : operation satisfactory but unable to exploit it to the full because of the loss of BATFISH. The current meter tapes were all written to  $\frac{1}{2}$ " magtape on board.

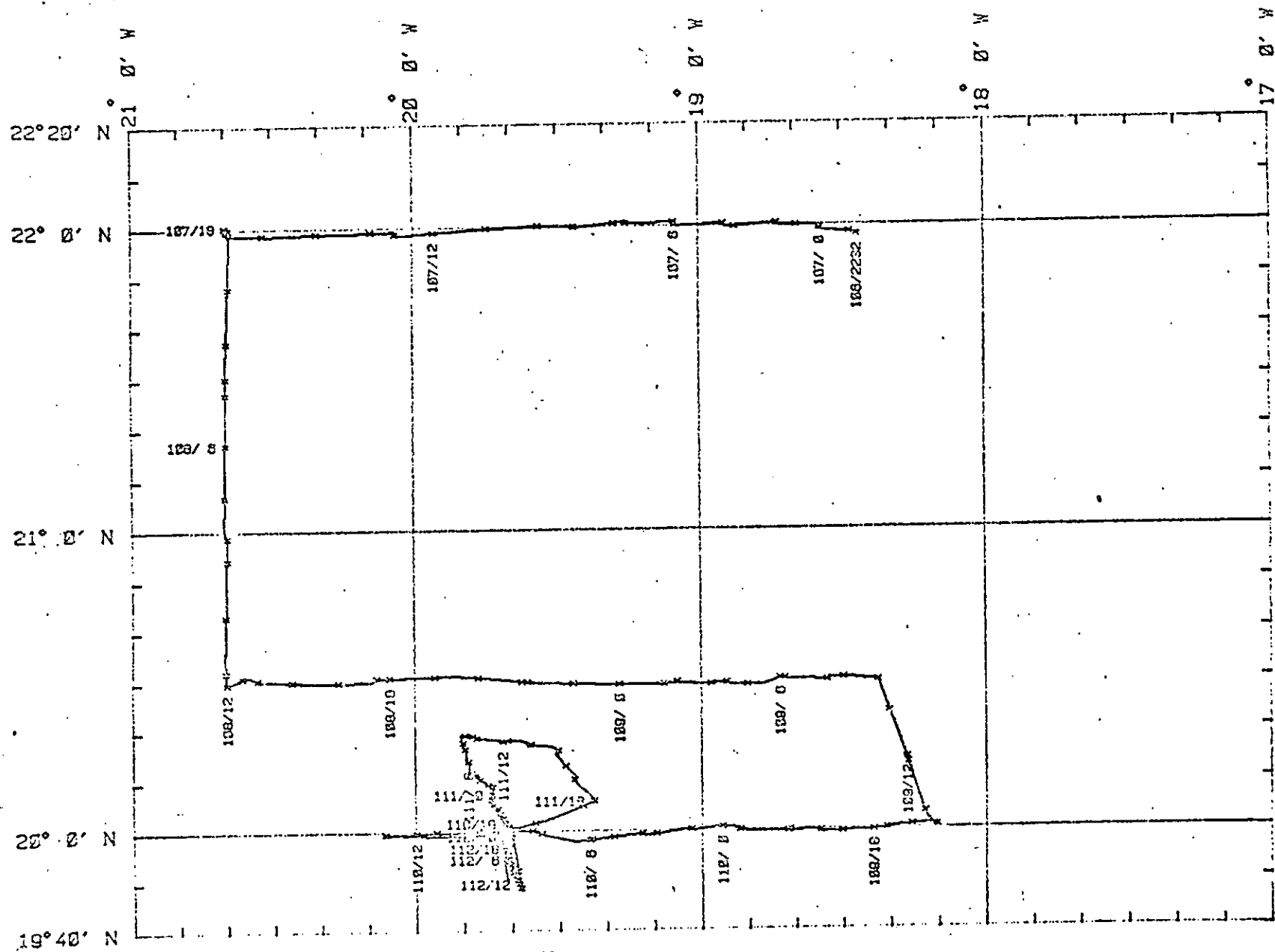
(f) Acknowledgements.

I would like to say how much I appreciate the dedication of the Captain and crew of R.R.S. Discovery and the members of staff from R.V.S. Barry and I.O.S. Wormley in support of the project.

  
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Dr. P. Hughes  
Principal Scientist

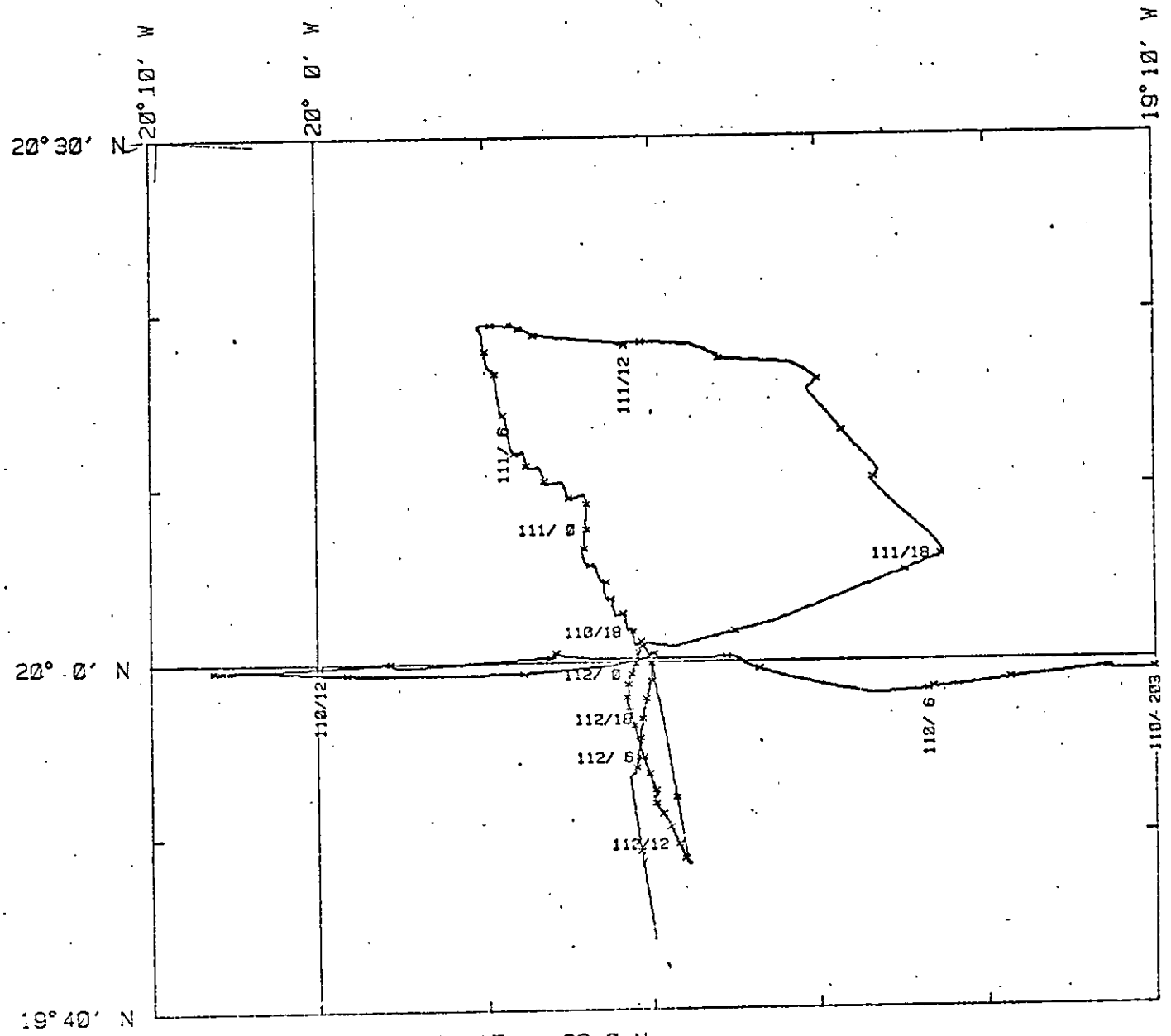
7th May, 1982.

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MERCATOR 1: 1500000 AT 22.0 N  
 START: 100/2230 STOP: UNSET FILE: 23

DISCOVERY 127



MERCATOR 1: 500000 AT 22.0 N  
 START, 110/200 STOP, UNSET FILE: 23

DISCOVERY 127