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CHARTER CRUISE AND FIELD REPORT

HV "Seol Mara" - Loch Sunart

7-13 July 1989

Personnel

W R Turrell	HSO (in-charge)
R Payne	HSO
R D Adams	SO
A Naha	HSO (7-8 July)

Objectives

1. To initiate and test dye tracing techniques using the Chelsea Instruments Aquatracka fluorometer and the DECCA trisponder system.
2. To test measurement techniques using recording current meters to obtain vertical profiles of current and current shear.
3. To deploy 2 Aanderaa current meters, one near-surface and one near bed, in the upper basin of Loch Sunart.
4. If time permits to conduct a rapid axial survey of the loch with the STD12 CTD.

Narrative

On arrival at Loch Sunart on 7 July the mobile laboratory was set up. The "Seol Mara" arrived on the morning of the 8th and the current meters were deployed. As the acoustic release failed its predeployment tests the bottom current meter was deployed from the surface mooring. The trisponder system was set up with the help of A Naha. The first dye release was performed on the 9th and the method of release modified in the light of this experience. Further dye releases were successfully performed on the 10th and 11th. Some problems were encountered with the siting of the trisponder valves in order to provide continual navigational coverage in the long thin loch. The axial run out of the loch was performed on the 12th as the "Seol Mara" steamed back to Oban. The scientific staff disembarked at Loch Aline.

Results

Dye patches were tracked for ~5 hours on 2 days and are being analysed now. The surveys are of sufficient quality to give first estimates of diffusion coefficients. It is obvious that horizontal dispersion resulting from vertical current shear induced by surface wind stress is of primary importance. Unfortunately the electromagnetic current meters necessary for the accurate measurement of the vertical shear in small absolute currents were not available. Two such current meters have been borrowed from Anton Edwards (SEBA) for the August experiments. Initial results indicate a horizontal diffusion coefficient of  $0.03-0.05 \text{ m}^2 \text{ s}^{-1}$ .

W R Turrell

15 August 1989