

THE USE OF THE BATHYSONDE BISSETT-BERMAN 9060 (Abstract)

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The STD BISSETT-BERMAN Model 9060 is a self contained salinity / temperature / depth graphic recorder. Depth is sensed by a pressure transducer, temperature by a platinum resistance thermometer. Conductivity is sensed and transformed in salinity by mean of an automatic compensation for the effect of temperature and pressure changes. The measured data is continuously recorded by an X1X2Y plotter. During several cruises of R.V. Coriolis, the STD Bissett-Berman has been used with hydrographic casts or alone. The examination of several records and the comparison with data of hydrographic casts has permitted to know what kind of work can be provided. Especially due to the trembling, the practical limits of accuracy have been reduced from those given by the manufacturer, to the following values : 0.05 gr/lit for salinity, 0.1°C for temperature, 5m for depth. For instance, the salinity track is almost unreadable, if not false, in the very extremes when they are sharp and near a large temperature gradient.

The meridian distribution of salinity across the equator in the western Pacific is complex, because in the undercurrent, there is a mixing of high salinity water mass of southern origin, and a low salinity water mass from northern hemisphere. The salinity distribution drawn from STD records gives more details than the distribution obtained by classical sampling (reversing bottles). The laminae structure of such a mixing is suggested by the vertical profiles of temperature and salinity. In classical hydrological analysis of water masses (TS diagram) a continuous record, even if false in absolute value, can be very helpful to determine the shape of a TS curve : more realistic values are obtained for graphic interpolation. About dynamic computations, the choice of few characteristic points in the first hundreds meters permits to obtain rapidly a very good estimation of dynamic height.

In conclusion, it has appeared that short period time studies cannot be undertaken because of the practical way the bathysonde has to be manipulated, neither the actual studies of microstructure in mixing regions, except the temperature inversions which are very well observed. But the main interest of this apparatus is to be found in its use for hydrological surveys during biological cruises when only little time is left to physical observations.

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