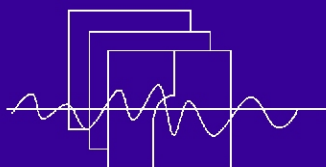


## Tentative plans for 2005



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The arrival of the new year always brings with it the new concepts and plans of the data centre. 2005 promises to be an exciting one (have we ever had a dull moment?)

There is definitely a spirit of optimism within the "SADCO Team". Firstly, we are coming to grips with issues that have concerned us in the past, namely data quality and quality control in the VOS and Marine data sets. This issue presents Part II of the editing programme which deals with subsurface profile checking (Part I was included in the Newsletter of December 2004, and dealt with

the station position and time checking).

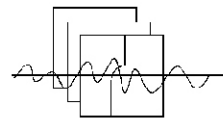
Secondly, we plan to expand the Data Centre's horizons during 2005 with the introduction of a new initiative to collate marine biodiversity data for southern Africa.

Thirdly, we also believe that, in terms of marine data management, SADCO has a role to play in the large marine ecosystem programmes off the southern African west and east coasts. This is a longer-term goal that will be pursued further during the following years.



*The SADCO Team l.t.r. Louise, Marten, Ursula,  
Sharifa and Mario wishes all of you a prosperous 2005!*





## SADCO's control of the quality of marine data (Part 2)

(Part 1 was presented in the Newsletter of December 2004, and dealt mainly with the checking of the surface parameters of hydrographic stations, as well as the position and date/time. The present article deals with checking subsurface profiles).

The most commonly employed method to check vertical profiles is to compare a particular profile with other profiles in the area. Some insight into the local oceanographic characteristics is required, because profiles are never completely identical. In addition, historic data would tend to have quite a wide scatter. A data centre can only be expected to identify and highlight particularly obvious errors, since most (all) errors should have been identified and corrected during the initial processing before submission by the data donor.

The methods employed by SADCO include the following checks:

Recorded depth must increase/decrease consistently. This check is applied during the loading of data, and eliminates cases where the profiling instrument “yo-yo's” due to rolling of the vessel.

- Individual profiles of T, S and O<sub>2</sub> are compared with envelope profiles derived by the World Ocean Atlas (2001) in 5° x 5° blocks. Only an annual value is used, since seasonal profiles in data-scarce areas tend to be somewhat fragmented.
- Assemblies of profiles from a particular cruise are compared with the envelopes indicated above. This allows insight into the mutual variability of profiles as well.

- A parameter value is compared with the values immediately shallower and deeper, and if it differs more than a certain amount, is classified as a “spike”.
- The gradient (= change with depth) of a parameter is determined, and if above a certain threshold, is flagged for inspection.
- A T/S diagram of the station can be plotted to check for outliers.

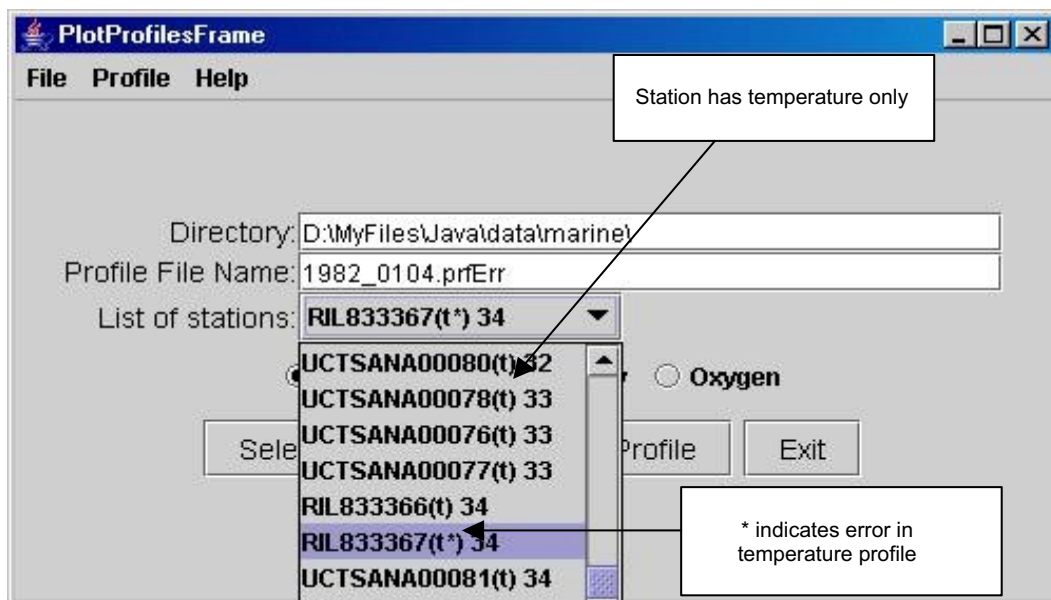
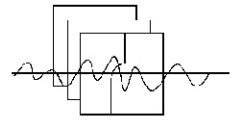
These checks are listed in *IOC (Intergovernmental Oceanographic Commission) manual for data quality control (GTSP Real-time quality control Manual, Manuals and guides 22, Unesco 1990)*.

### Examples of the checks

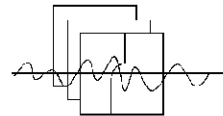
The checking software produces the following files:

- Indications of which stations and which values exceeded the T, S or O<sub>2</sub> envelope
- Which stations contained spikes
- Which stations contained possible gradient errors

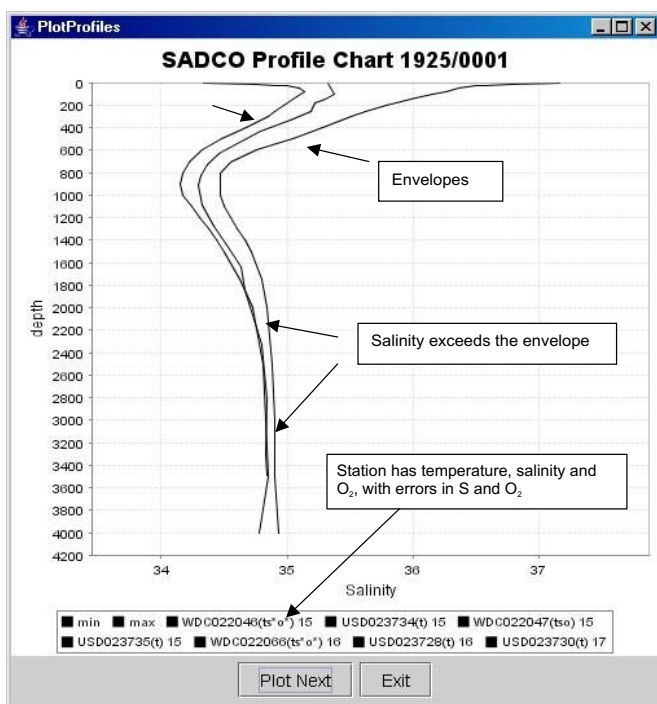
Examples of the plots that can be produced, are shown on the following pages.



**Figure 1** After running the software on a selected series of stations, the output of the checking is placed in a directory that lists the station name, all the parameters encountered (temperature, salinity, ...) as well as if an error was encountered in any of the profiles. Stations can be selected from this directory, for graphic display.

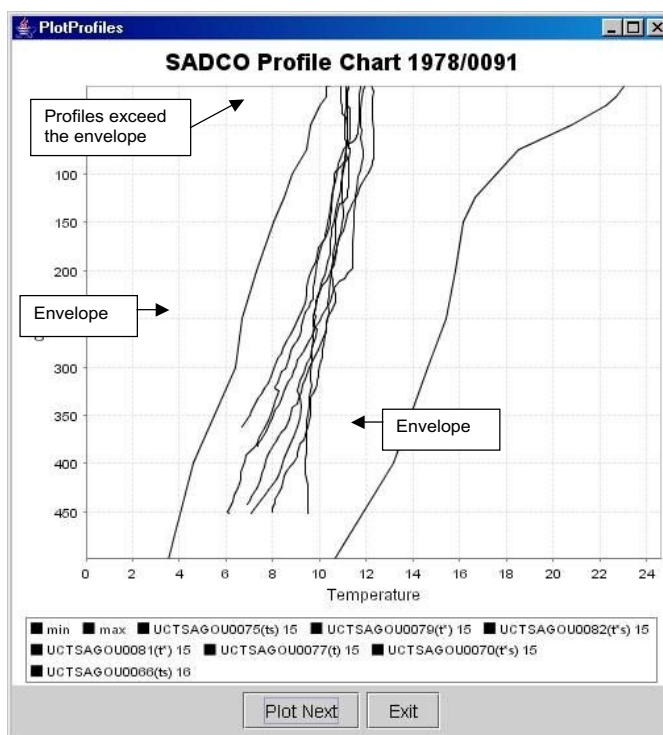


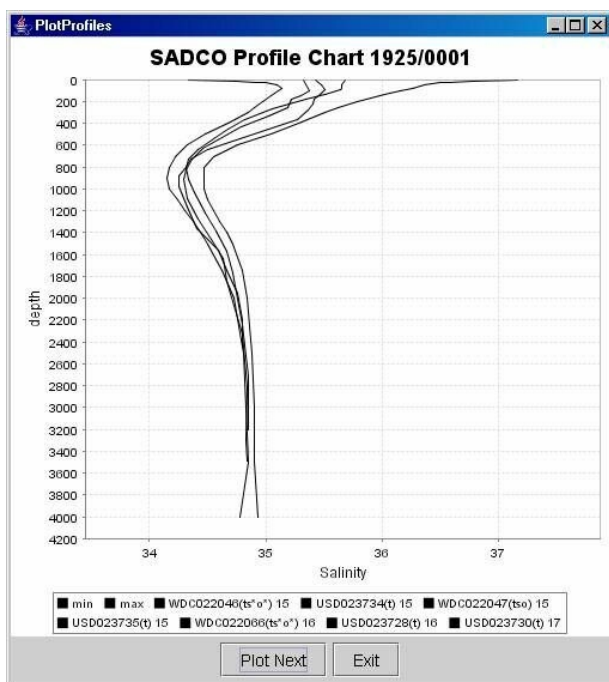
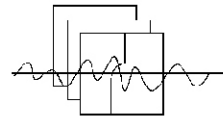
## SADCO's control of the quality of marine data (Part 2)



**Figure 2** Typical plot of a single salinity profile, with the envelope. A station can be plotted whether erroneous or not. The envelope is applicable to the 5°x5° block in which the station was located, and is an annual value (seasonal values were often too fragmented to be useful). In the box at the bottom, the station (first in list) is identified as having temperature, salinity and oxygen data, and the salinity and oxygen profiles have values falling outside the envelope (marked with an \*). The “Plot next” button allows stations to be added to the plot, for intercomparison between stations. Plots onscreen are in colour.

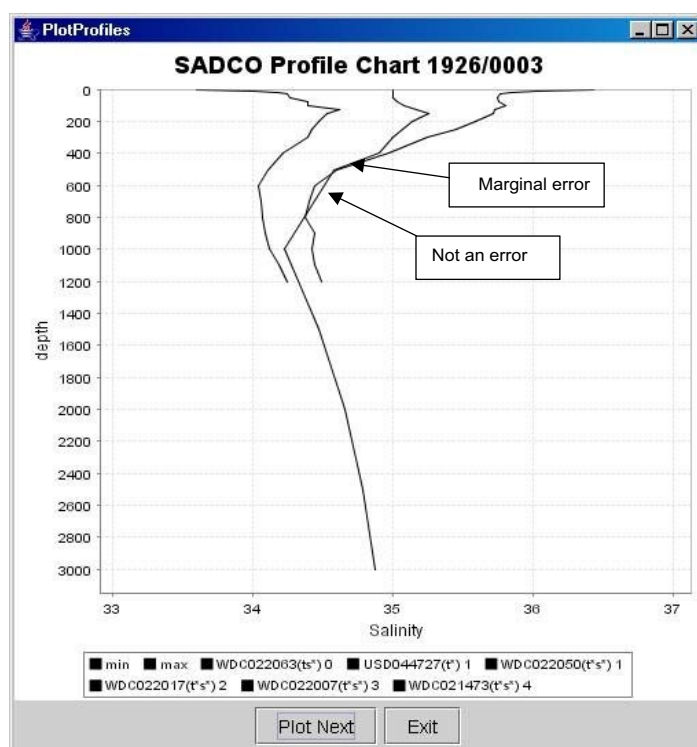
**Figure 3** Temperature profiles from a number of stations, the surface values of some have fallen outside the envelope. The shape of the envelope close to the surface suggests that the envelope itself may be erroneous, and this will have to be amended. Because the envelope is “annual”, the individual profiles may appear to be located toward lower or higher temperatures.

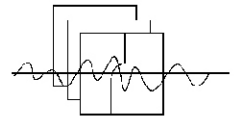




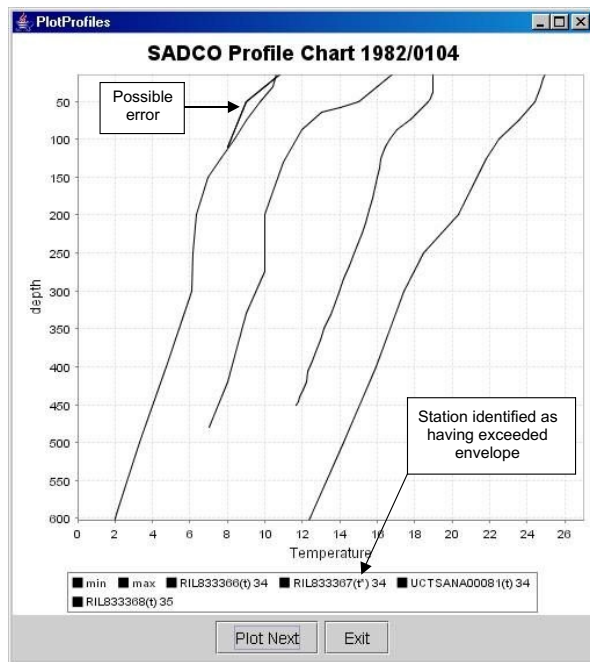
**Figure 4** Example of multiple salinity profiles, within the upper and lower envelopes.

**Figure 5** Plot of a salinity profile with a marginal error. Due to interpolation on the graph, the exceedance of the envelope at 600 m is not an error.



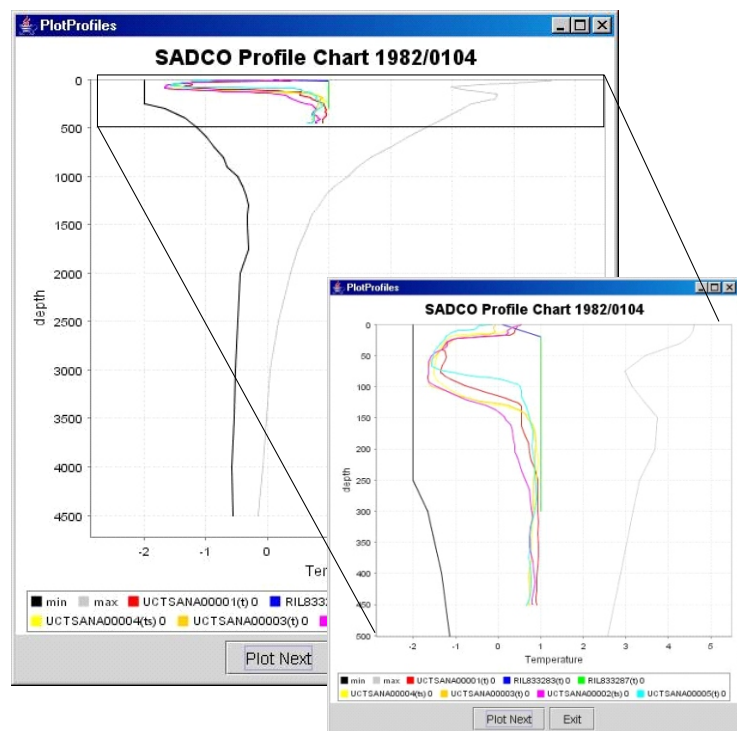


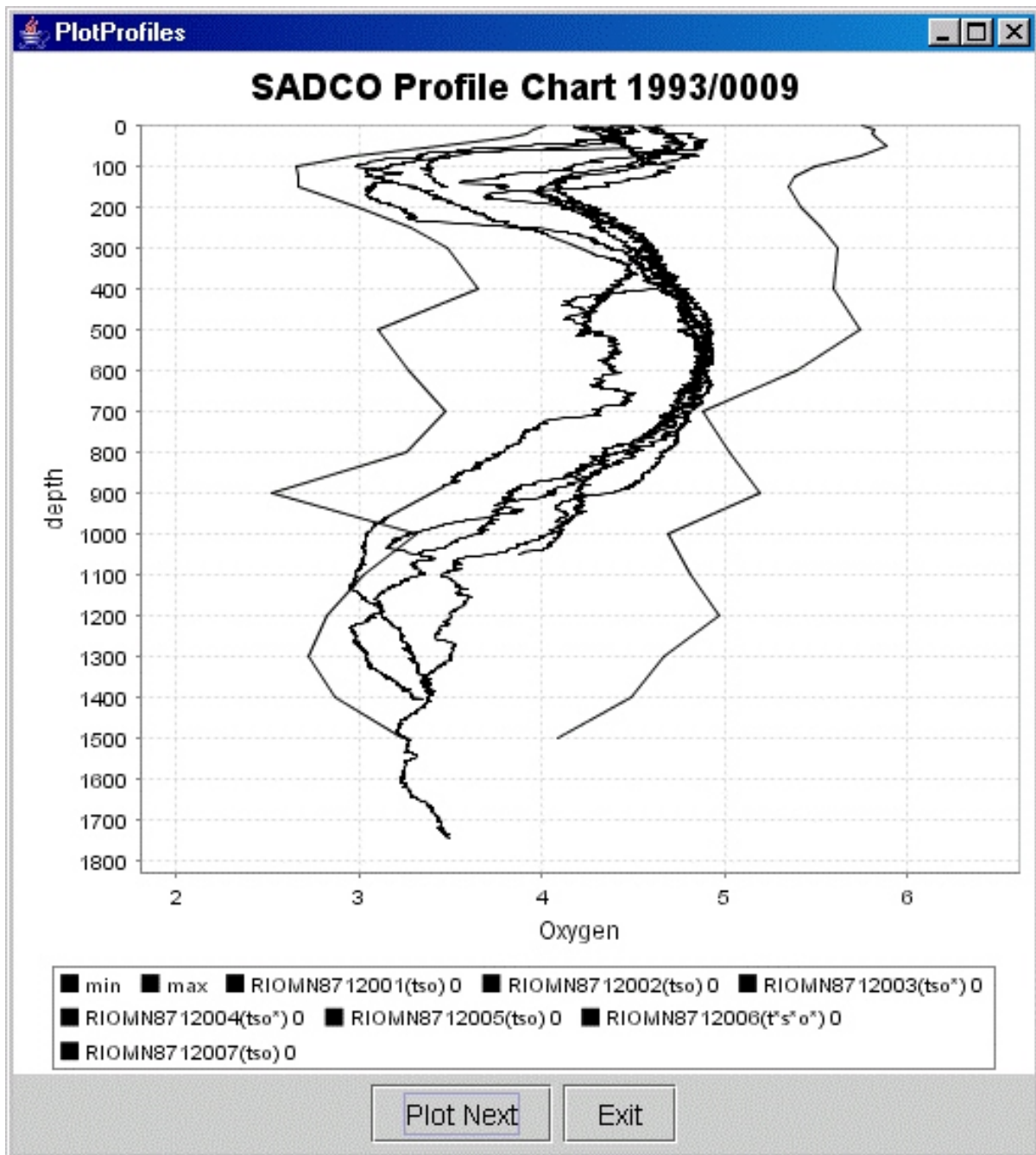
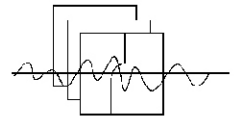
## SADCO's control of the quality of marine data (Part 2)



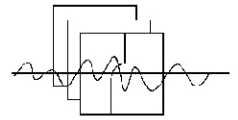
**Figure 6** Three temperature profiles, one of which lies outside the envelope.

**Figure 7** Plotting allows the operator to enlarge sections for better inspection. The station with a rather anomalous temperature profile has only 3 values, thus missing the temperature minima between 0 and 150m.

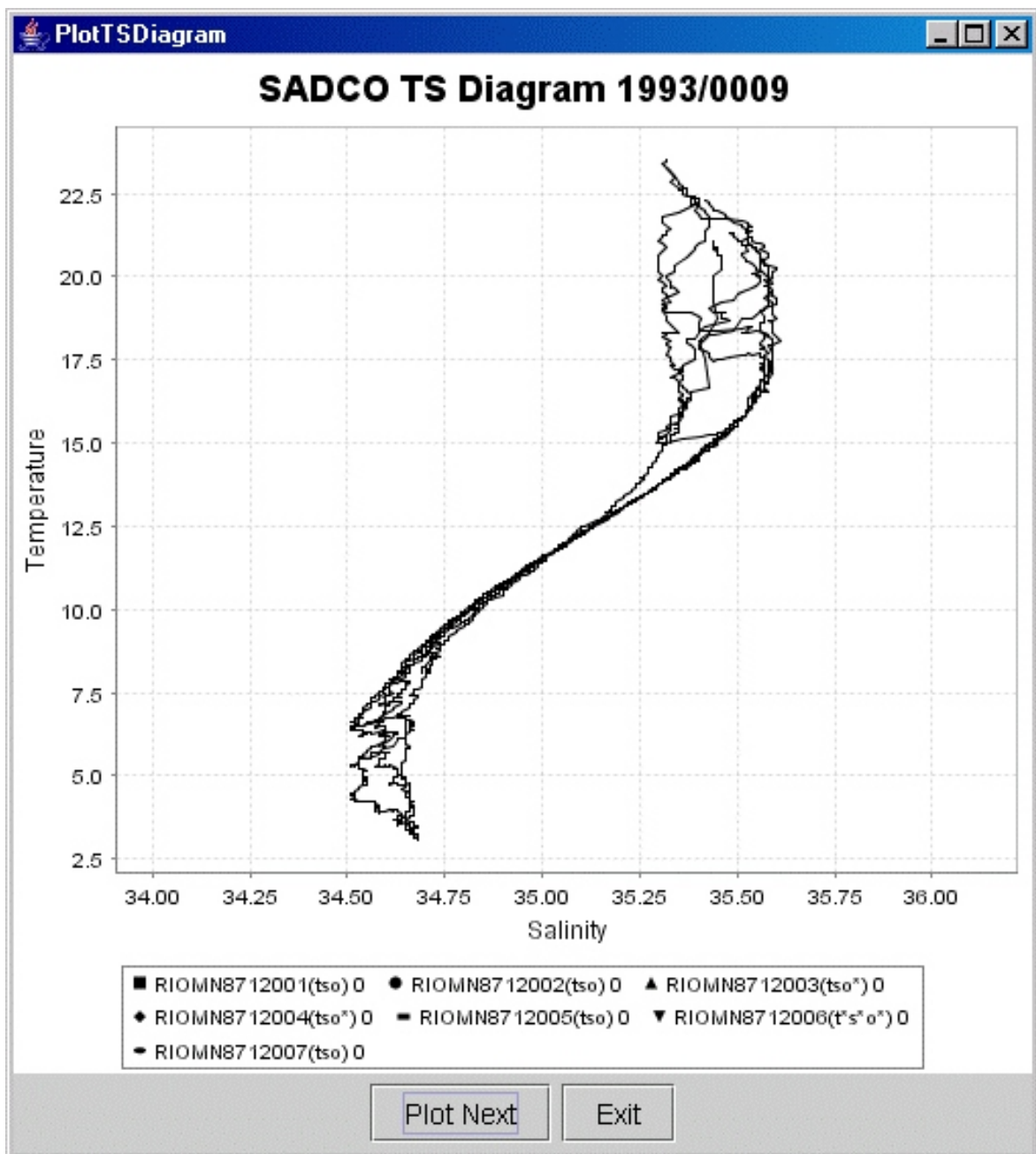




**Figure 8** Example plots for O<sub>2</sub>. Note that the envelope is quite jagged, causing some profile values to lie outside the limits. This suggests that the envelope should be amended, rather than the data.



## SADCO's control of the quality of marine data (Part 2)



*Figure 9* T/S diagram with a number of T/S profiles. No envelopes are included in the graph.