

# Data analysis, research and publication software for oceanographic databases.

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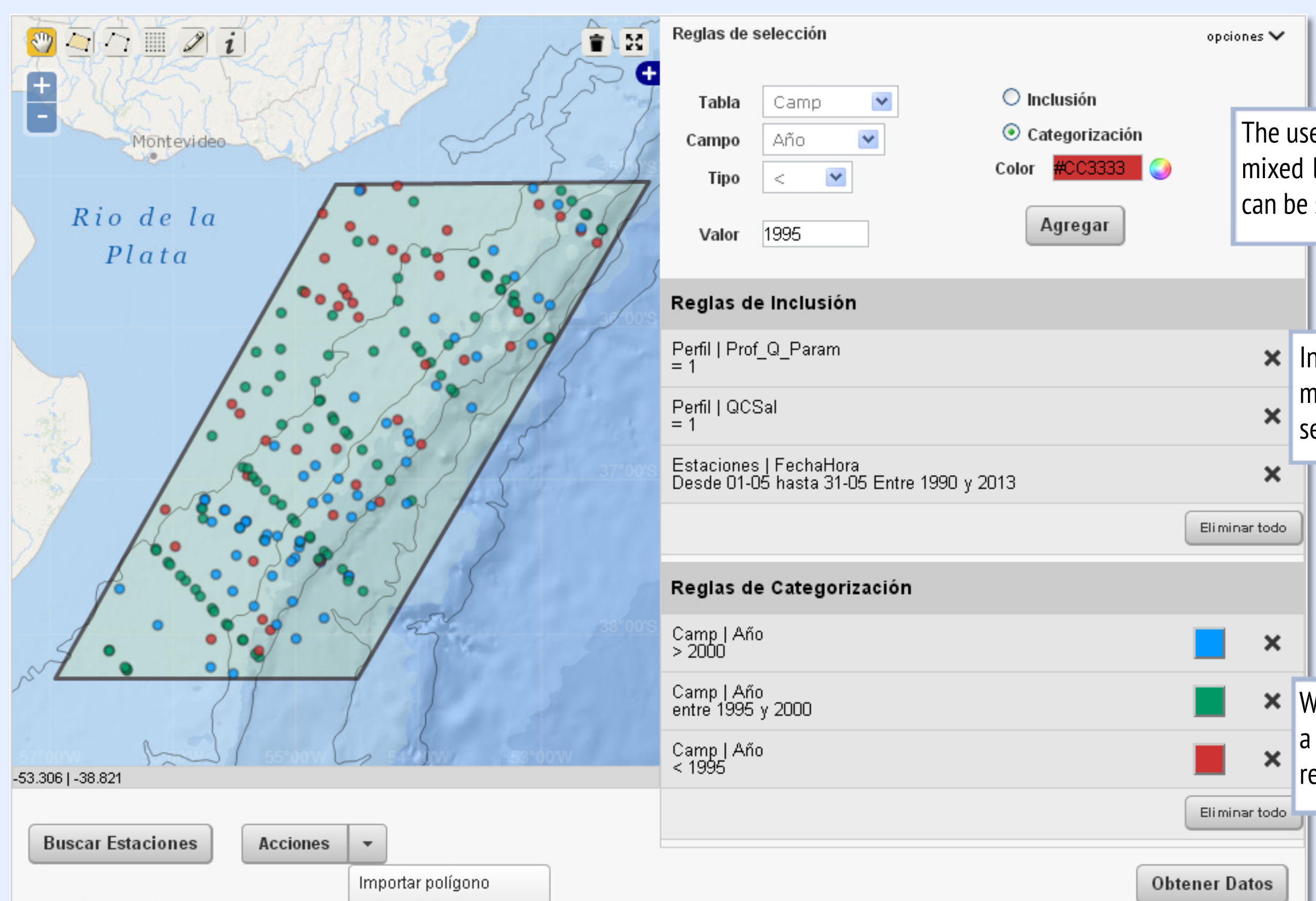
## Introduction

Albatross provides interactive and visual elements for easy data access and analysis through multiple selection and plotting tools. Its direct connection to a database allows reading access to all the information gathered by INIDEP since 1977. The INIDEP Regional Oceanographic Database (BaRDO) contains nowadays 30680 quality controlled oceanographic stations.

With multiple selection tools, the software lets the researchers dynamically work with geographical areas without preparing data previously. Users can collect and organize all the map areas, graphic products and exported data in different sets. In addition, they can upload those sets to a public website for further editing and publication.

## Selection Tools

The map provides polygonal, linear and grid selection tools. The polygonal selection tool allows the user to freely draw an area as well as entering the area coordinates manually in order to retrieve stations.



The user can optionally include in the stations information, the mixed layer and Simpson parameter calculations. Mixed layer can be solved with gradient or difference methods.

Inclusion filters define conditions that the station must have in order to be returned as part of the selected set with any of the selection tools.

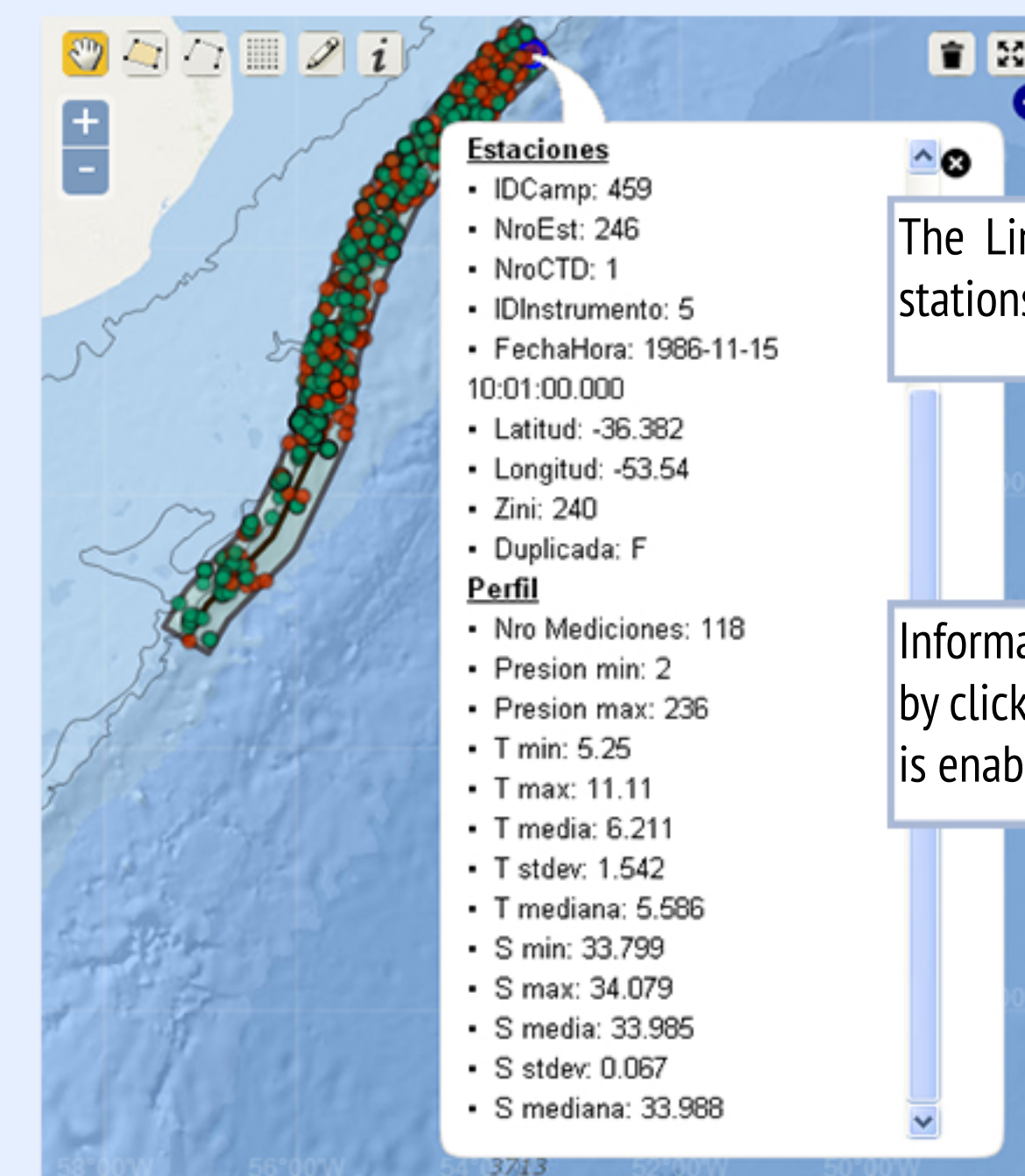
With the categorization filters the user can define a color and a condition used to distinguish the retrieved stations.

The "Obtain Data" button gets detailed information from the retrieved stations taking into account the filters the user could have defined previously.

The stations header and profile information can be exported as a CSV file that also contains calculated statistics. The user can generate graphic products from this selection.

Get a quick preview of the stations under a selected area by clicking the "Search Stations" button.

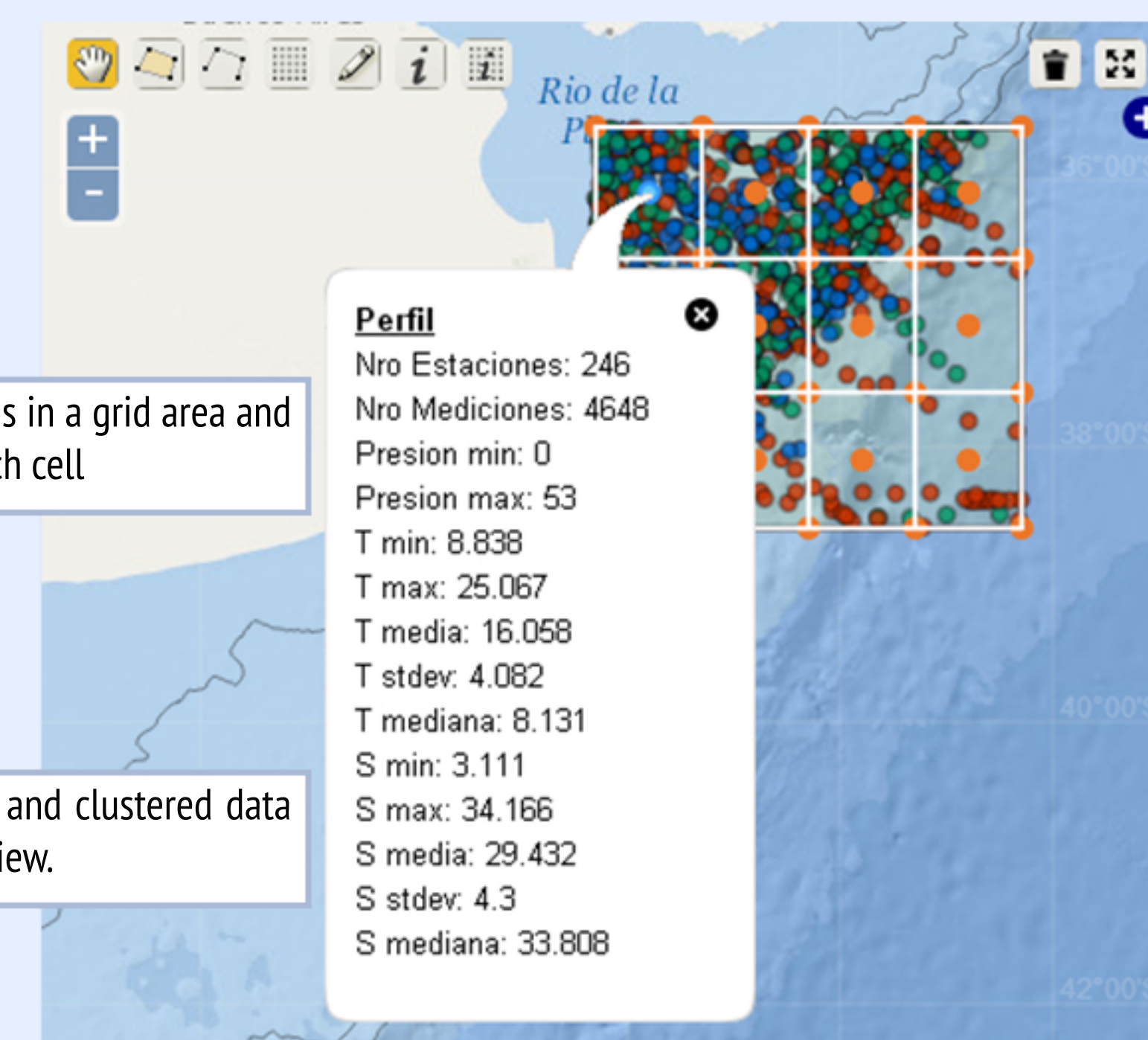
## Line Tool



The Line tool lets the user draw a path and get the stations located within a distance previously set.

Information from retrieved stations is shown in a popup by clicking on each point drawn on the map. This feature is enabled for all the selection tools

## Grid Tool

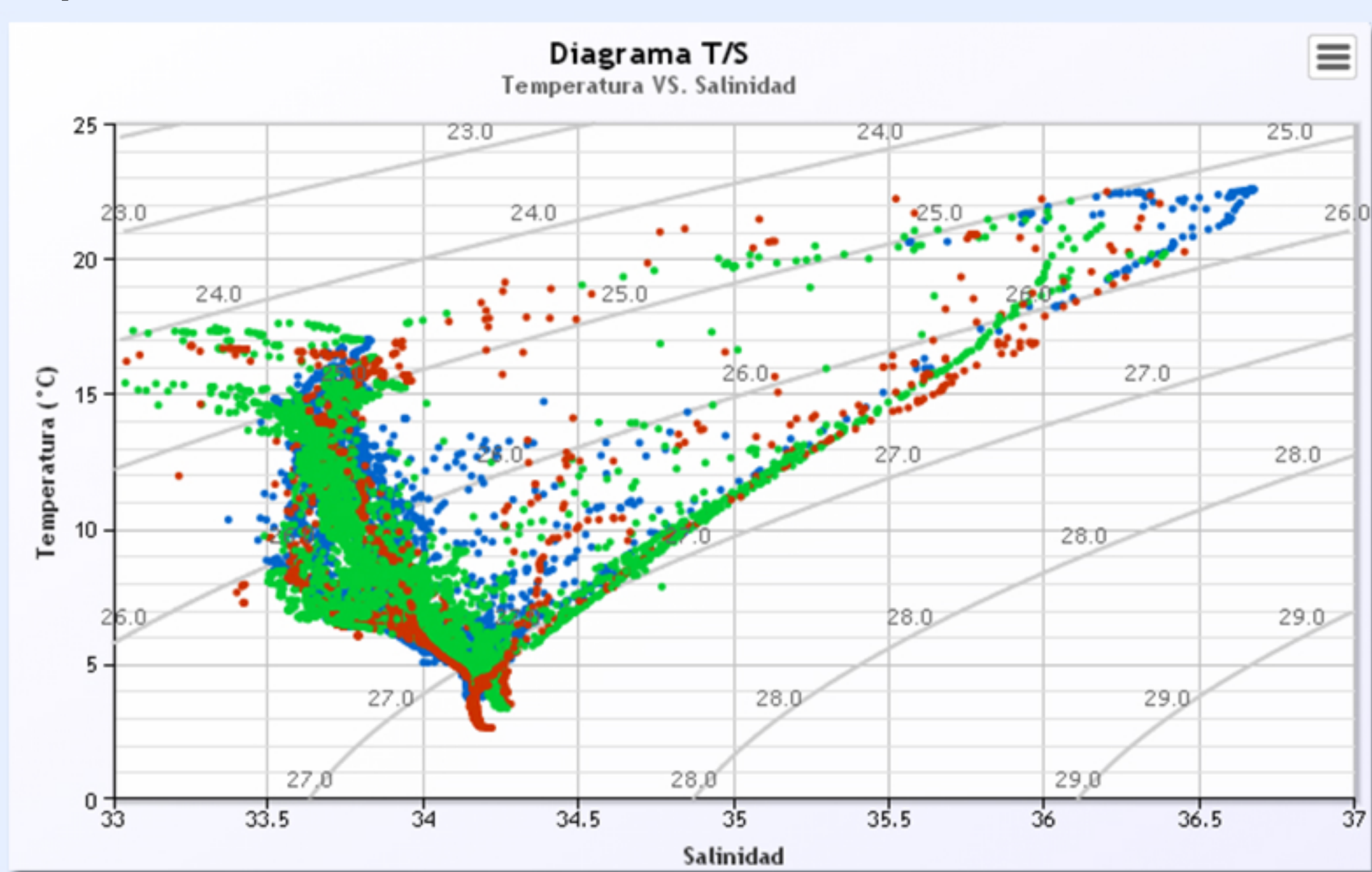


The Grid tool will retrieve stations in a grid area and calculate clustered results for each cell

The user can access to statistics and clustered data for every cell center on the grid view.

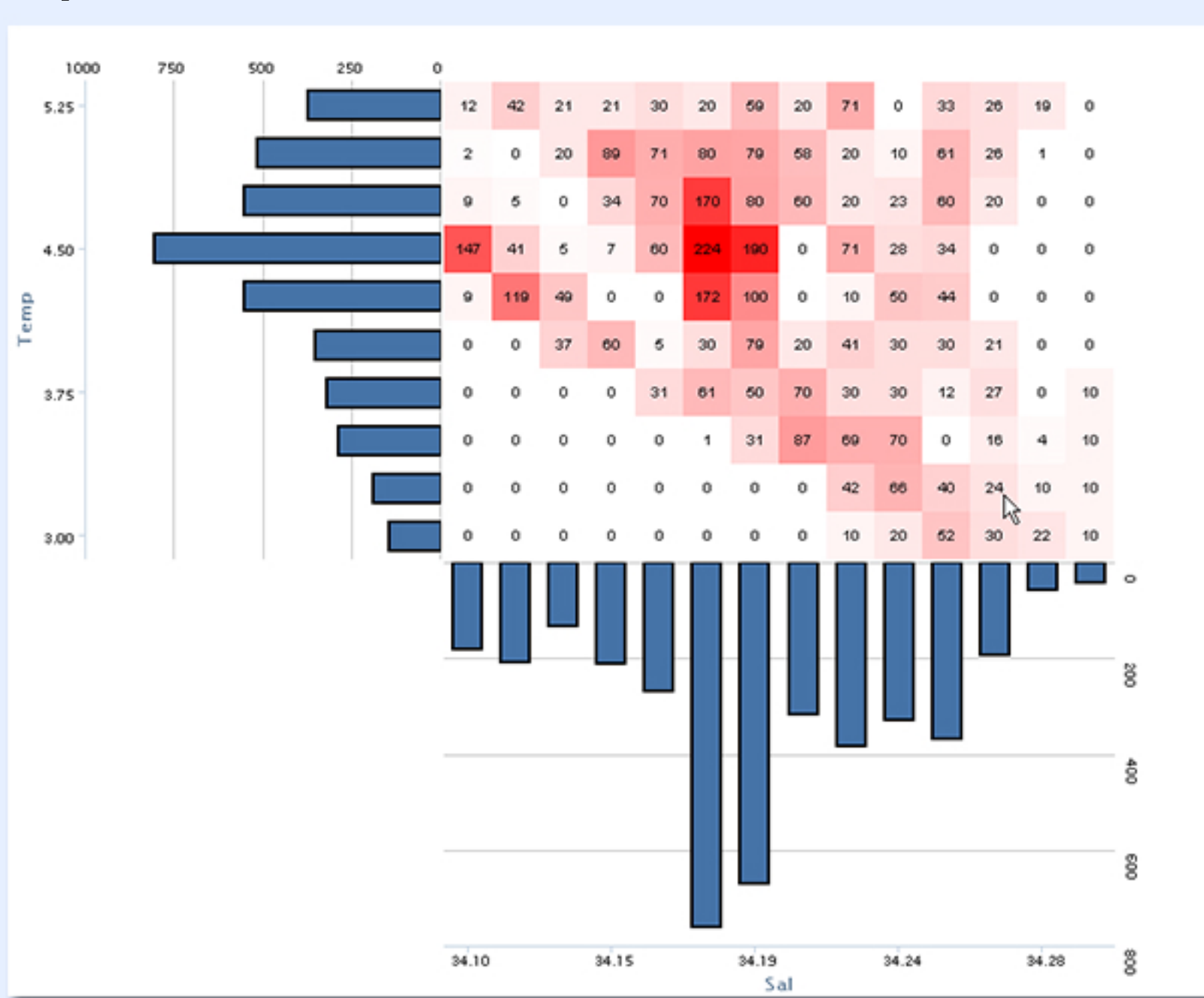
## Graphic Products

### T/S Plot



Every plot can be exported to PNG or SVG formats, and also can be printed or downloaded as a PDF file.

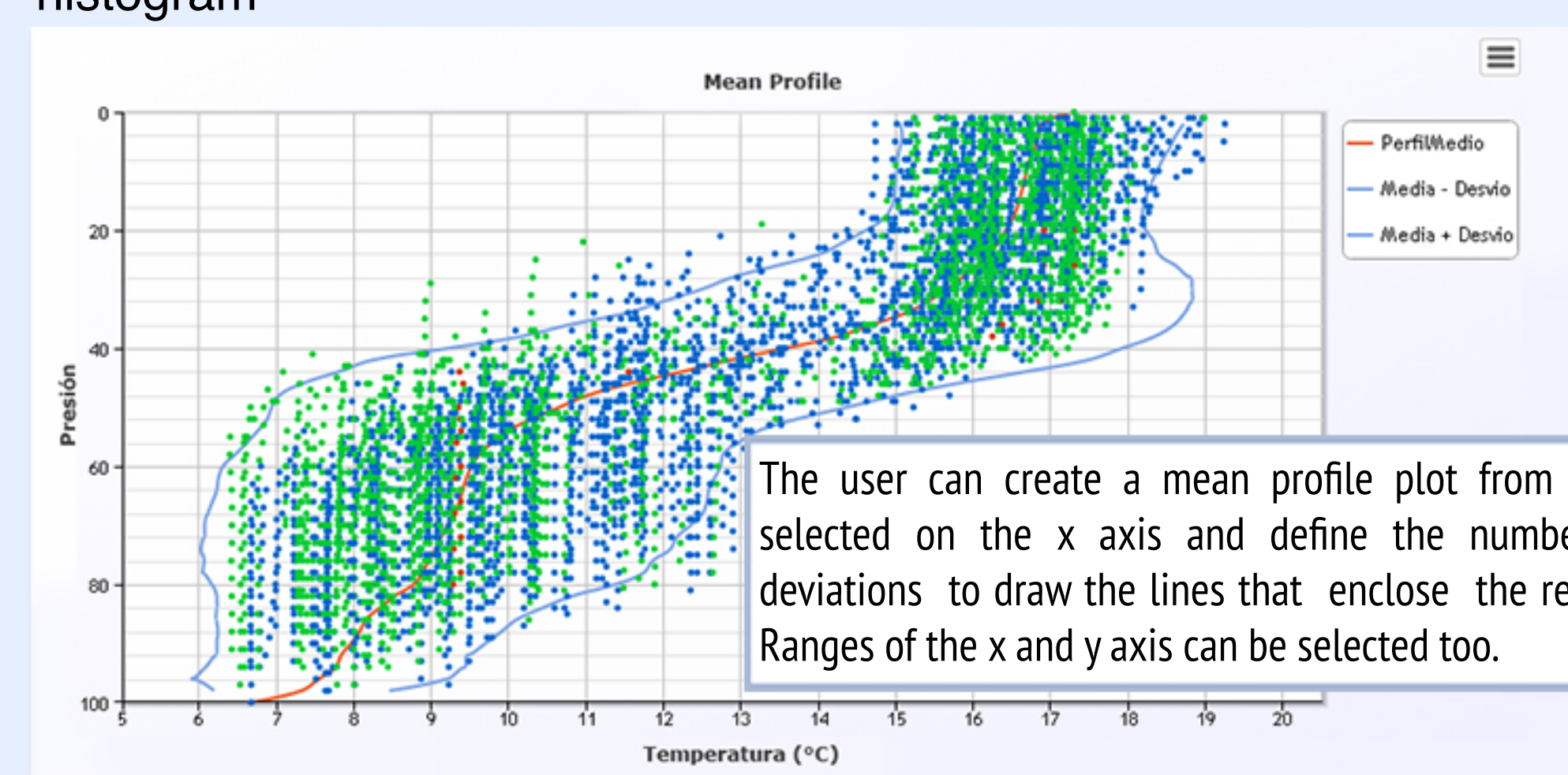
### T/S Volumetric Plot



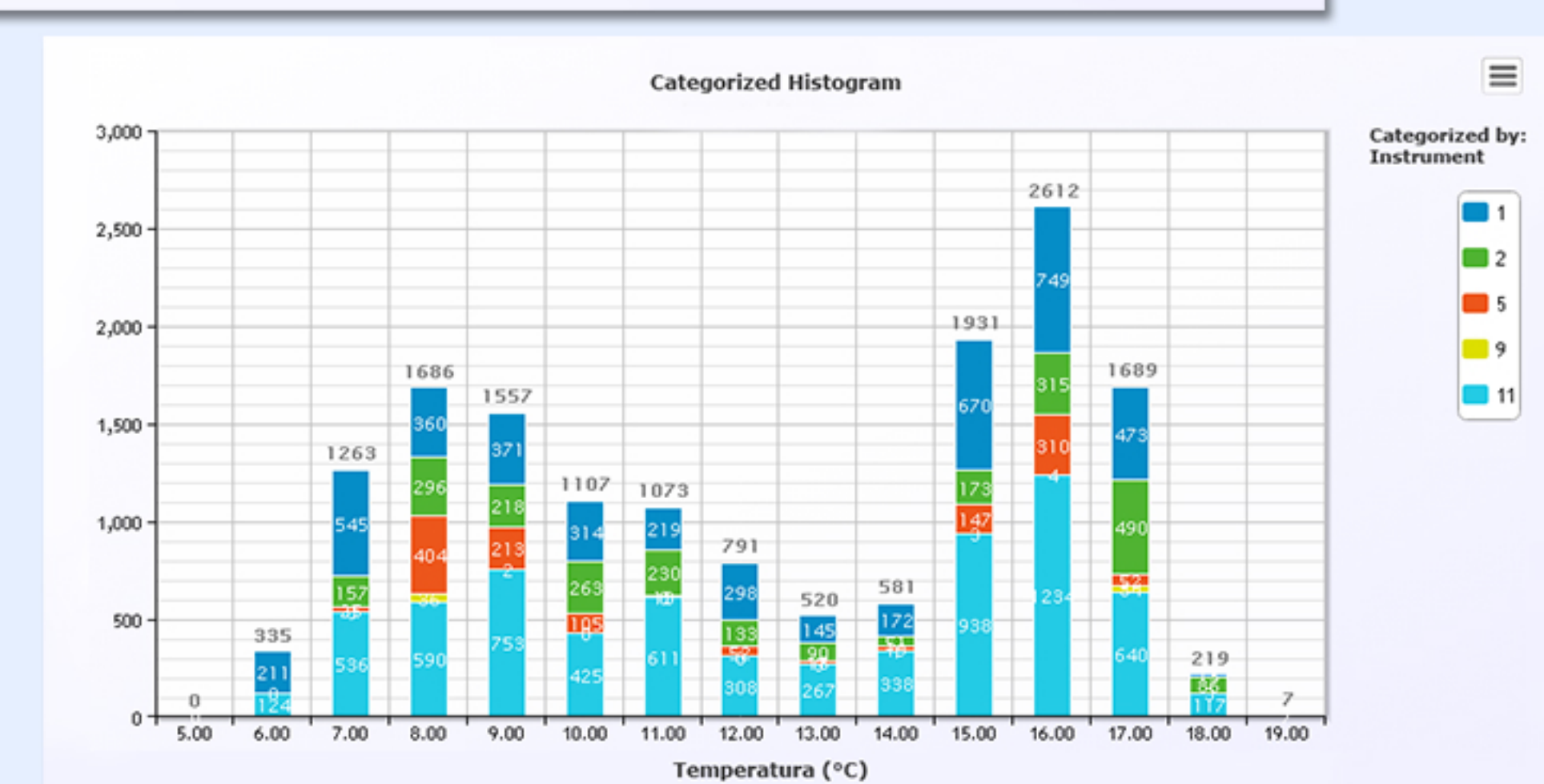
From salinity and temperature ranges Albatross generates a HeatMap that shows the thickness of the layer in meters. In addition each variable has an associated histogram that counts every heat for each cell in the heat map.

### X/Y Plot

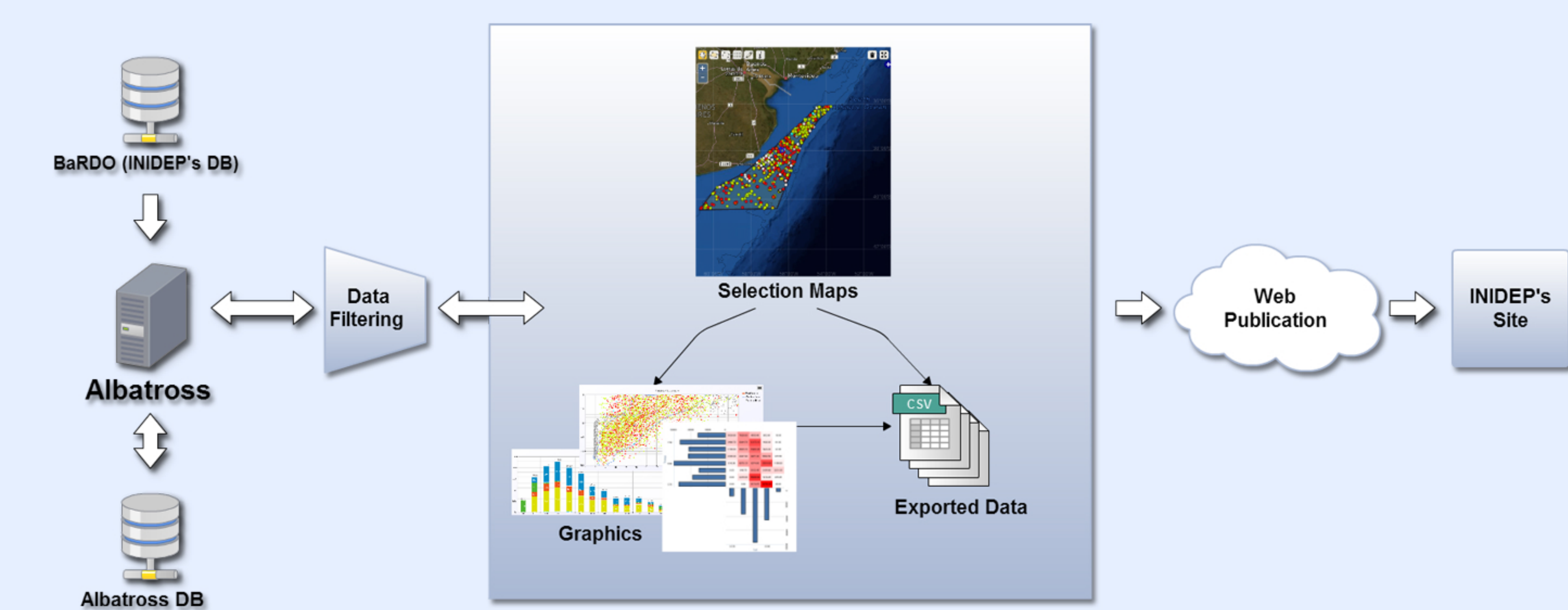
Any of the variables available in the selection can be used to create an X/Y plot. There are four possible plot types: scatter, linear, histogram and categorized histogram



The user can create a mean profile plot from the parameter selected on the x axis and define the number of standard deviations to draw the lines that enclose the records included. Ranges of the x and y axis can be selected too.



## Albatross Architecture



## Technologies

Albatross has been developed using the following tools:



## Acknowledgment

The present work is the result of research and technological development by Juan Gabriel Arroqui, Joaquín Alejo Gatti and Santiago José Trigo in their final graduation project in Informatics Engineering in the Facultad de Ingeniería de Universidad FASTA.

The project is conducted within the mutual cooperation agreement between the Facultad de Ingeniería de Universidad FASTA and the INIDEP (Institute for Research and Fishery Development), both located in Mar del Plata, Argentina.

Technical leading of Albatross is performed by Dr. Gustavo Meschino, Electronics Engineer, Professor of Decision Support Systems and Computational Intelligence at Universidad FASTA and the project's functional direction is exercised by Lic. Ana Baldoni, Lic. Graciela Molinari and Lic. Raúl Guerrero, physical oceanographers at INIDEP