Modular Information Content for Ocean Data Systems

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Two Lessons from History:
1. In 1995, a paper was published that showed significant differences between the fall-rate equations for XBTs given by the manufacturers and measurements in the ocean.
2. In the mid 2000's, we learned that a particular model of a pressure sensor on profiling floats was providing erroneous values.

Consequences:
1. Up until 1995, data management systems may or may not have recorded the type of XBT. The consequence is that there are significant uncertainties in unidentified XBT records.
2. Details of the pressure sensor were recorded with each profiling float. This allowed identification of the suspect records and in some cases, corrections could be made.

Today:
Increasingly information about instruments, sampling methods, processing methods, etc., is recognized as important to preserve. Many data systems now preserve such information, sometimes within the data structures, sometimes in related files. There is no standardization to this.

Present developments:
David Berry of the NOC (UK) leads a JCOMM Task Team to modularize and standardize metadata content in real-time data reporting. Modules have such forms as follows. Join the Task Team.

Ship Information:	**Location Information:**	**Salinity Profile Information**
Unique data ID	Lat, Long	Salinity & conductivity at pressure/depth
Ship ID	Date and time	Methods of measurement
Ship call sign	Water depth	Averaging period
Height of deck above load line	Uncertainty in position	Uncertainty
	Quality flags	Quality flags

ODV Implementation:
This is an implementation that integrates data and metadata within a widely used application. It has to deal with different metadata storage, formats, information content. It preserves processing history. It is an important step in regularizing the storage, exposure to users, and management of metadata.

## *Extended Metadata and Data History Support in ODV*
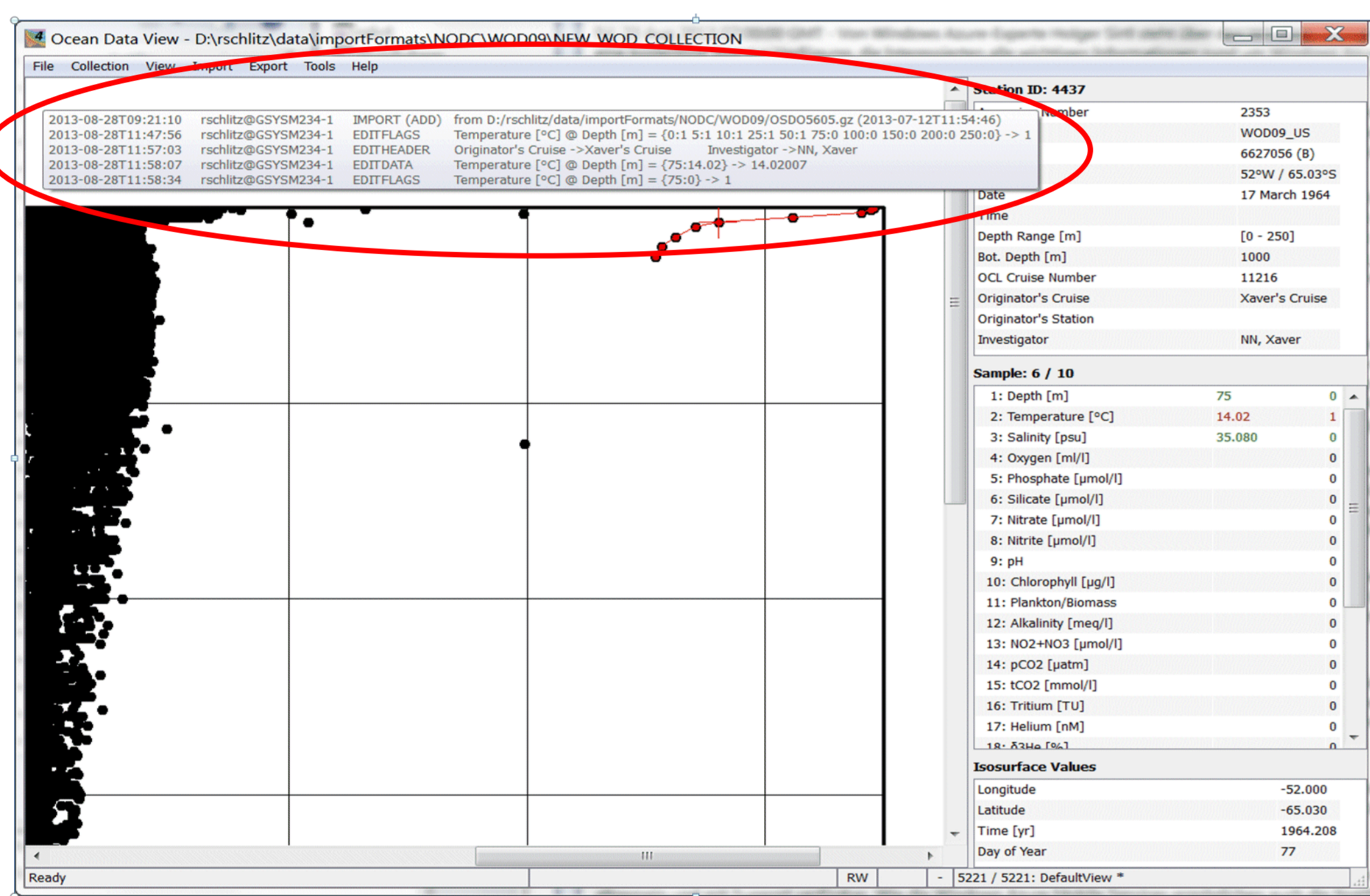
1

The new ODV 4.6.0 (to be released fall 2013) provides efficient support for strings of arbitrary length, thereby enabling per-station history records as well as extended sets of meta variables.

ODV collections now maintain per-station history records. All import and data edit actions are remembered in the history of the given station (see figure 1). History information is maintained when exporting data to collection or ODV spreadsheet files.

In addition, the new SeaDataNet, World Ocean Database, WOCE, and Sea-Bird importers now provide many more meta variables, as shown in figures 2-5. Some meta values are clickable and open ancillary documents, such as cruise reports, descriptions of sampling, calibration and measurement methods, or descriptions of the data processing.

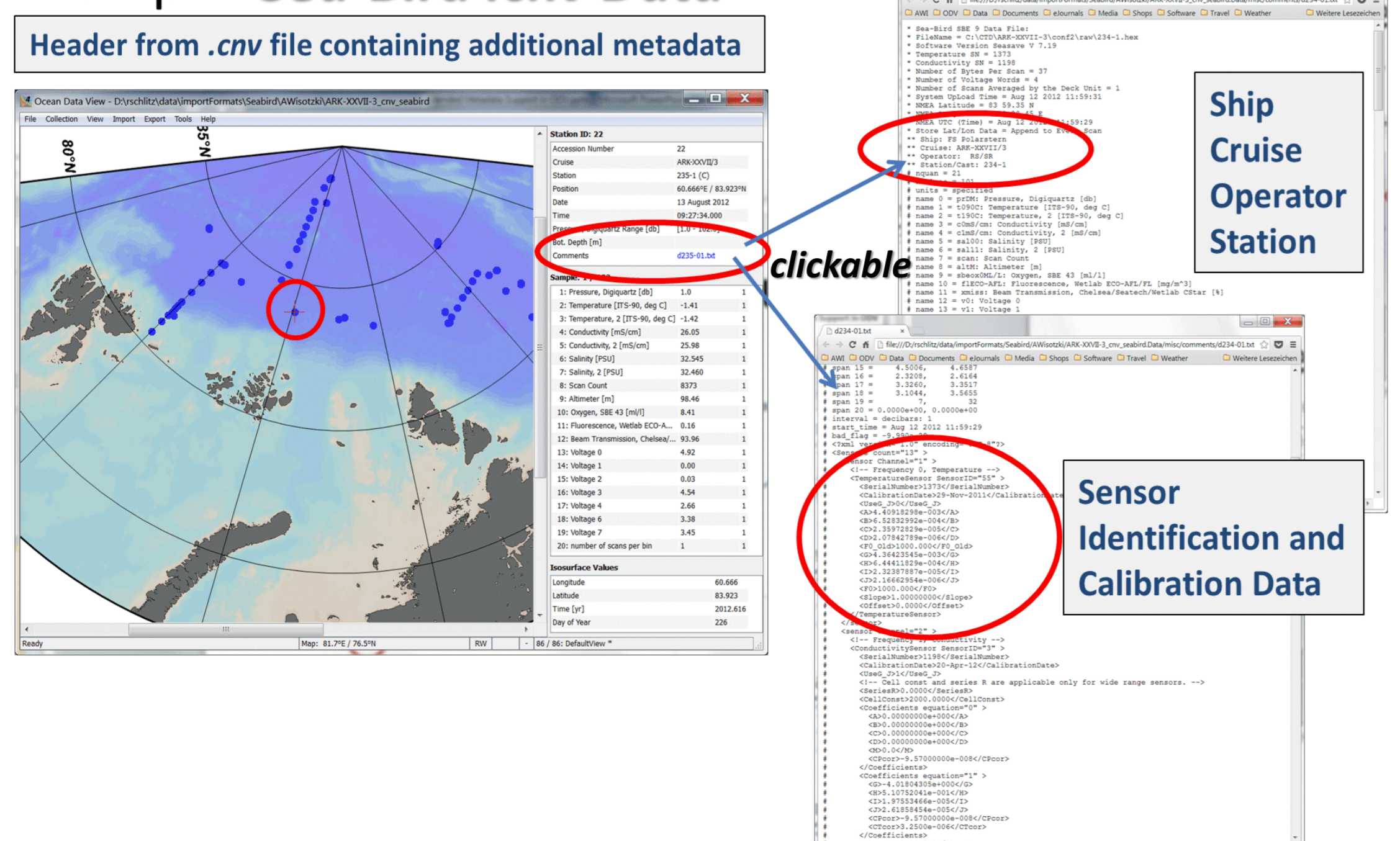Example: **CCHDO Data (courtesy J. Swift and S. Diggs)**
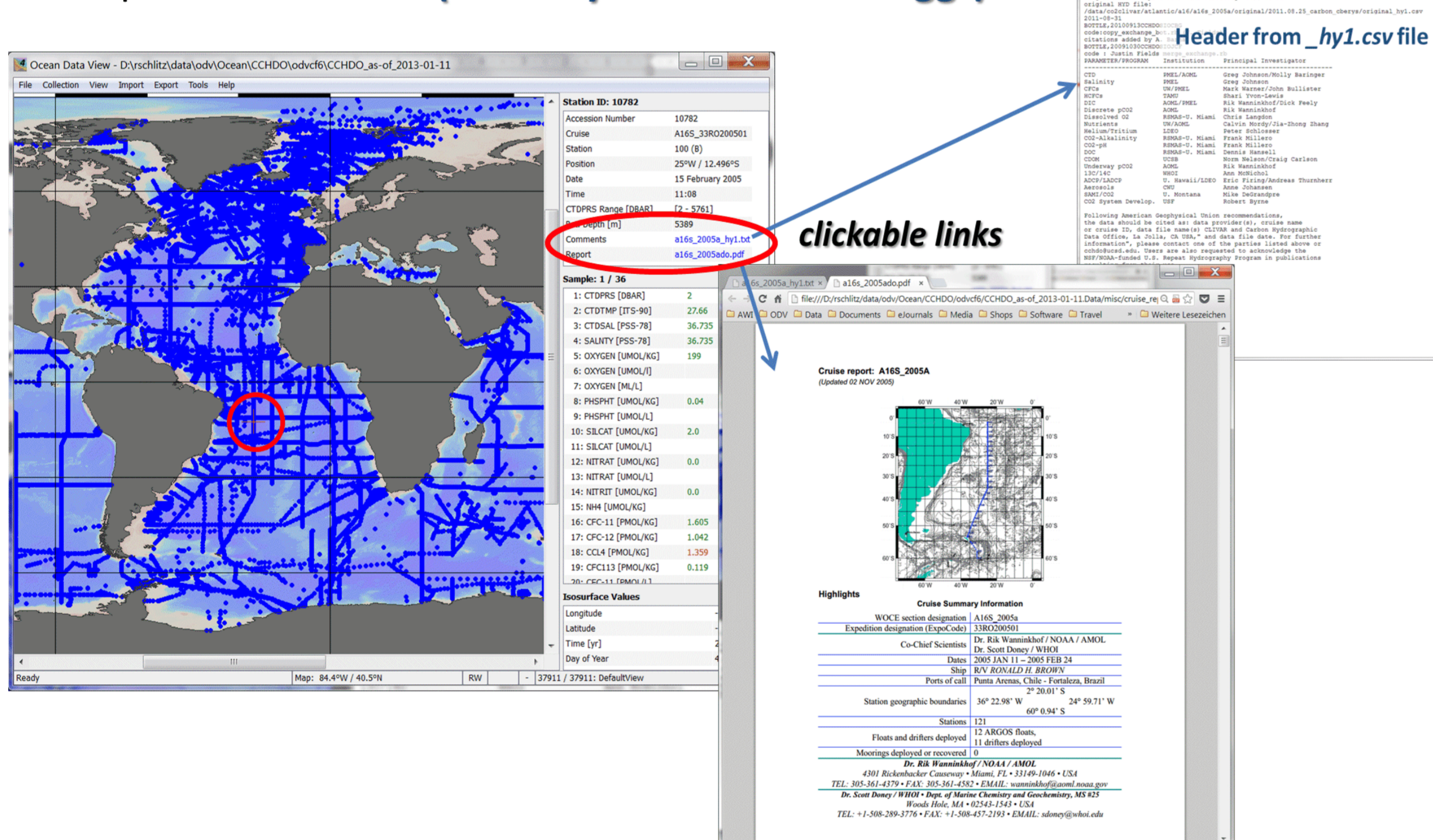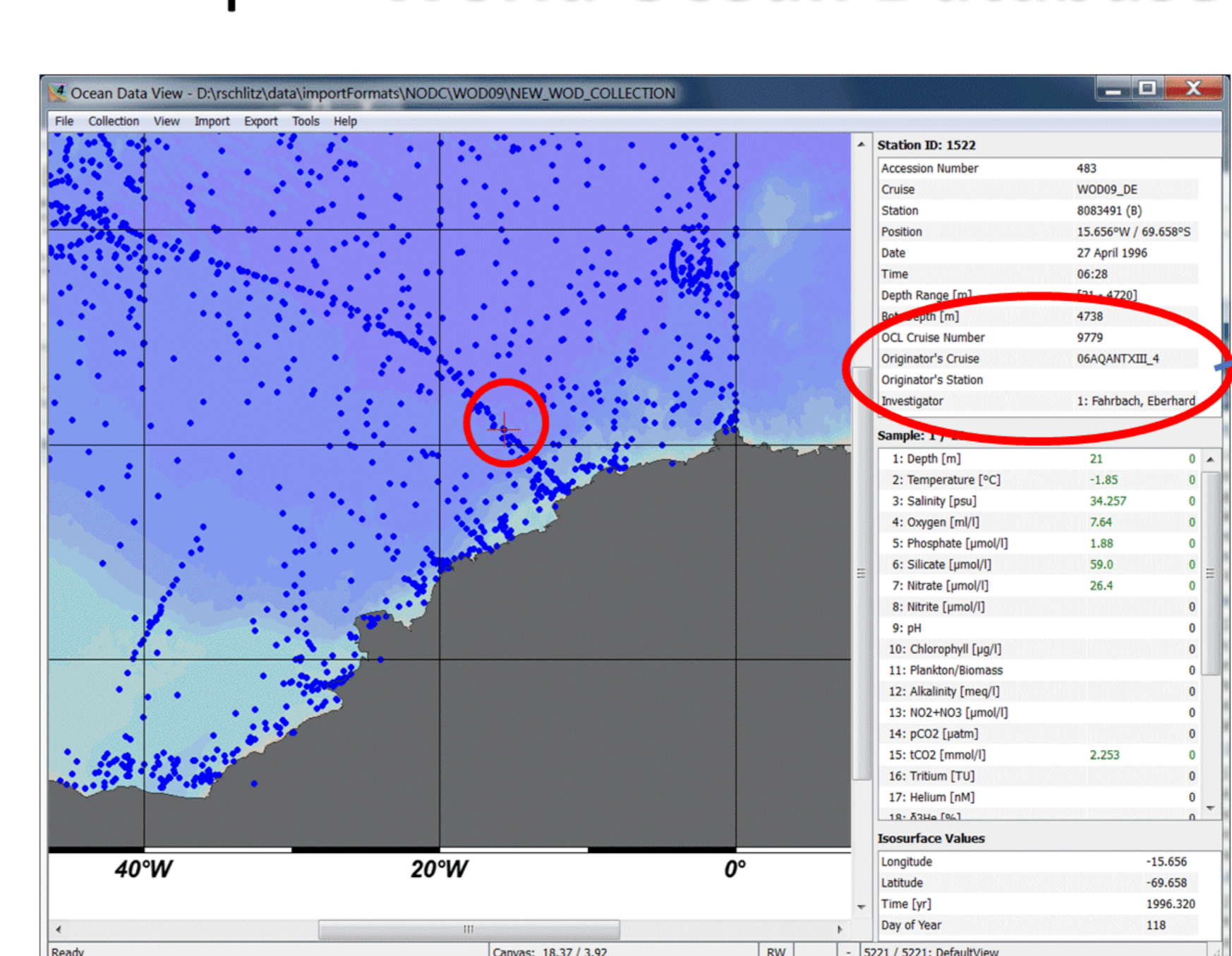

2

Example: *SeaDataNet Data*
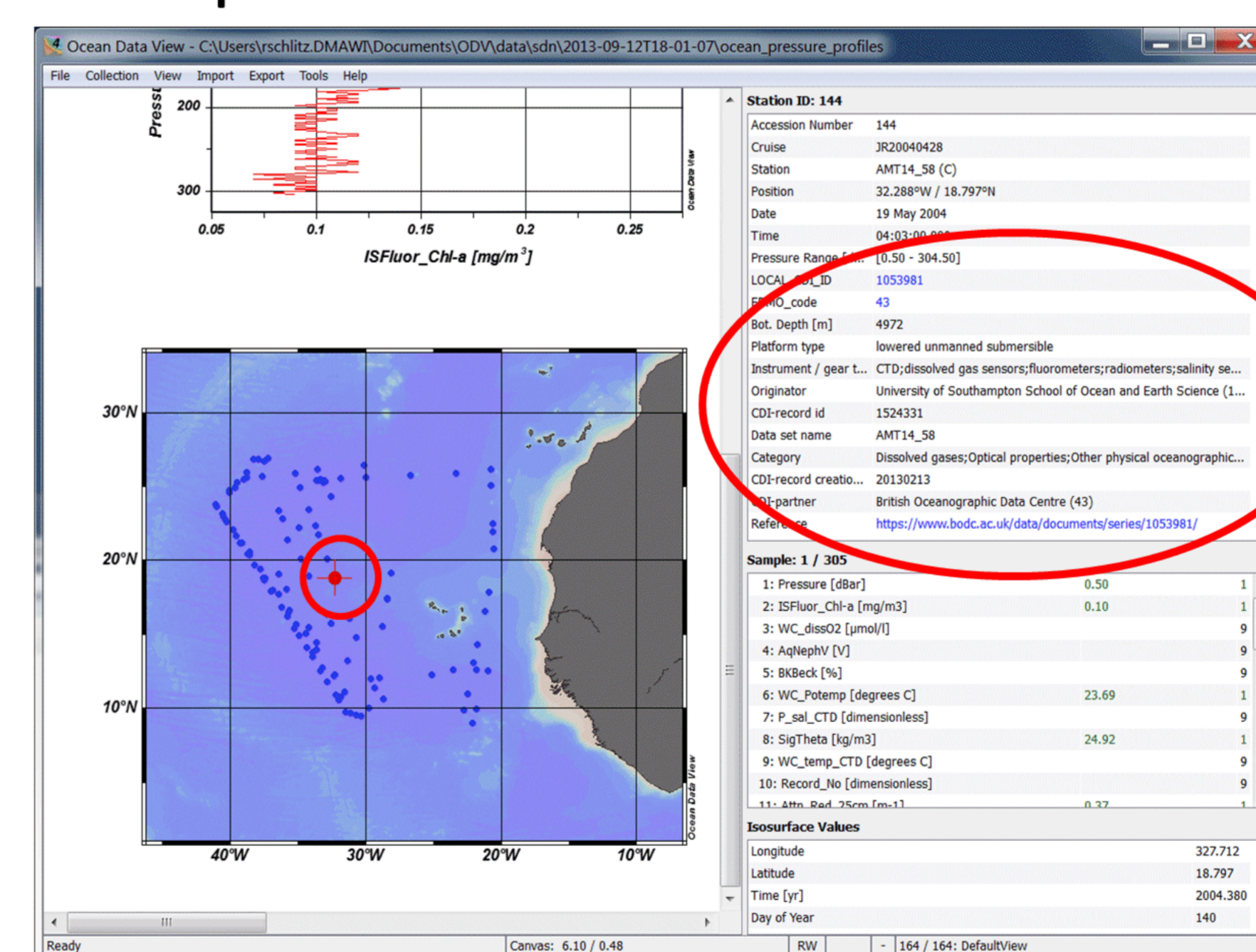
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Example: *Sea-Bird .cnv Data*

4

Example: *World Ocean Database*

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