



Rolling Deck to Repository (R2R): Quality Assessment of CTD Profile Data

RVTEC Meeting
February 11-15, 2013
Palisades, NY

Authors: Carolina Nobre, Cynthia L. Chandler, Andrew R. Maffei, and Bob Arko, Woods Hole Oceanographic Institution

<http://www.rvdata.us/>

rvdata.us

Abstract

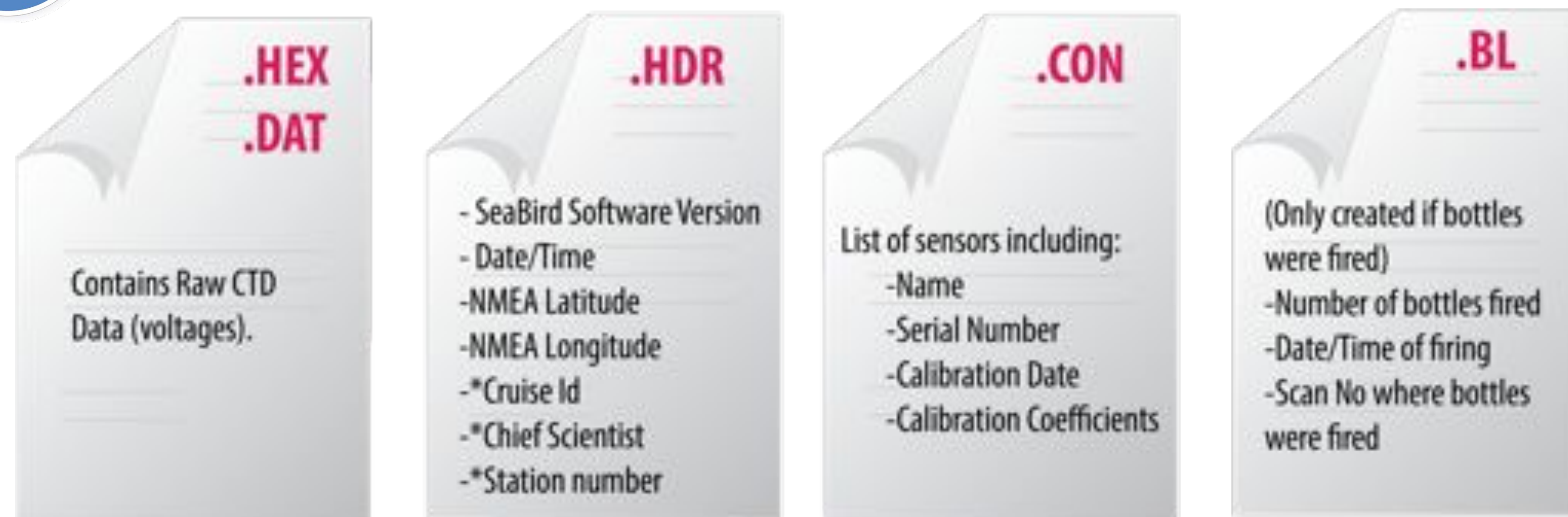
Goal:

Provide a set of scripts for the fleet.rvdata.us server to assess the quality of a given CTD data set collected during a research cruise. The scripts will generate an xml report as their primary output, which will score the CTD data according to a pre-determined list of quality assessment criteria. This xml report will be read by other quality assessment software on the R2R site to do things like display a dashboard that provides users with quality assessment information.

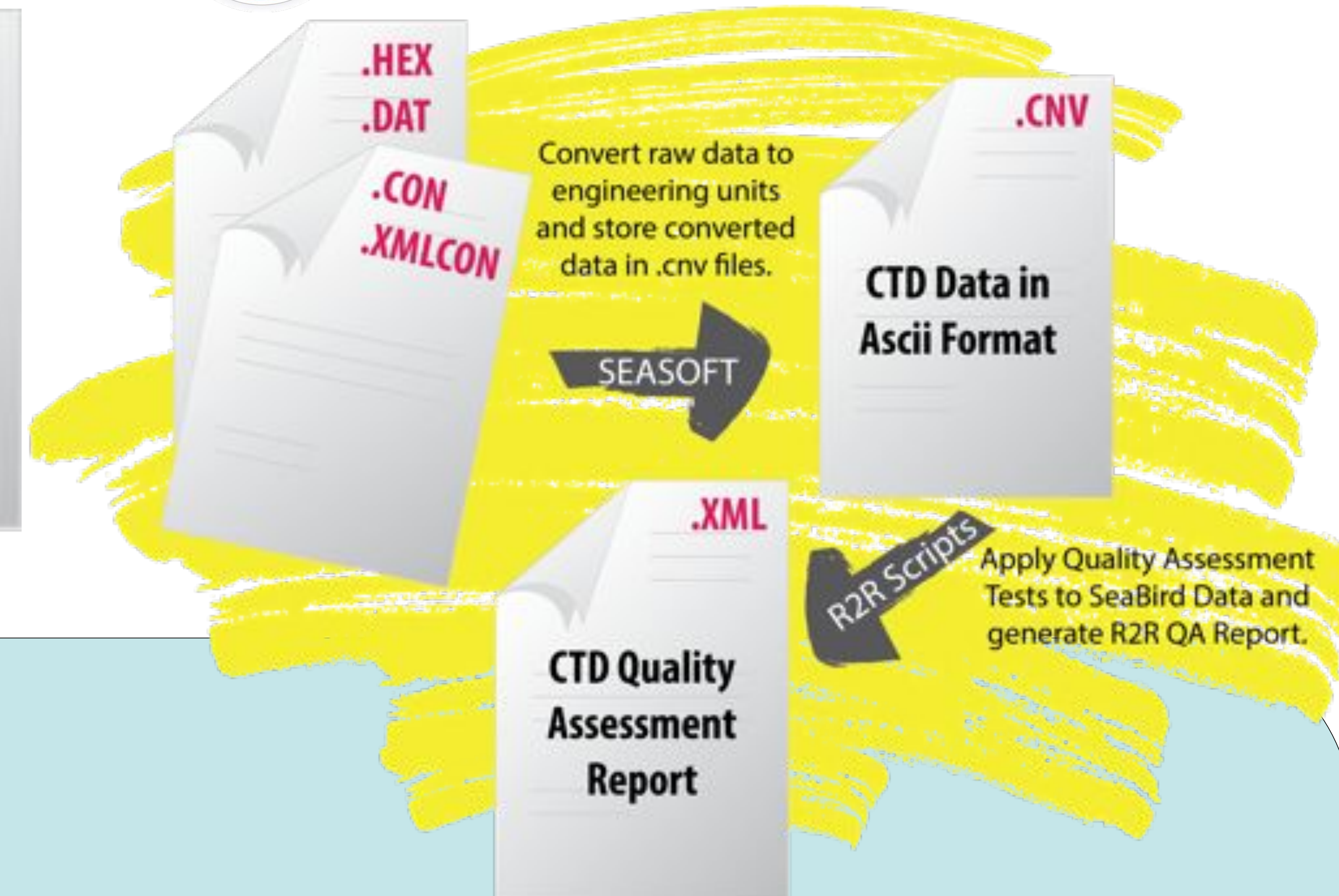
Steps:

- 1) The shipboard data distribution arrives at the rvdata facility and software is used to split the distribution into file sets for each of the underway instrument types that R2R supports. The set of files for an underway instrument is called a "file set". Currently, all ships use the SeaBird 911plus CTD, processing software, and auxiliary files provided by Seabird.
- 2) An expert in CTD data regularly visits the fleet.rvdata.us site and checks a list of cruises that require their CTD data to be assessed. A suite of CTD quality assessment routines are then run on those data and monitors the error and other output to verify scripts have executed properly.
- 3) Once the QA scripts are run on the CTD file set, an XML report is generated with ratings for each parameter of interest. Each parameter can receive a rating of good, average, or poor, represented by a shape (circle, triangle, square) and color (green, yellow, red). The criteria which determine how a given parameter is rated are specified in the QA scripts and can be adjusted to make allowances for extenuating circumstances. The XML file will be placed in a directory structure specified in R2R procedures.

1 Extracting Information from Raw SeaBird Files



2 Creating ASCII CTD Files



3 Quality Assessment Tests

➤ Range Test

Test that all measurements/values fall within established upper and lower limits (manufactured specs for sensor)

➤ Excessive Gradient Test

Evaluate difference between 3 successive measurements of a parameter and check that results is less than the maximum allowable change defined for a specific time interval.

➤ Outlier Test

Check for data values more than M times the standard deviation away from a mean series.

➤ Spike Test

Evaluate the difference between sequential measurements to evaluate spikes in the data.

➤ Constant Value Test

Evaluate a value that does not change more than the resolution of the sensor over a period of several observations.

➤ Gap Test

Max time interval over which no data are reported.

➤ Min Pressure Test

Test for minimum pressure for all casts.

➤ SeaBird File Extent Type Text

Test for presence/absence of standard SeaBird file types.

It Takes a Team

Students
Technicians
Researchers
Data Managers



The Rolling Deck to Repository Project acknowledges support from the National Science Foundation (NSF) Oceanographic Instrumentation and Technical Services (OITS) Program.

Rolling Deck
to Repository
R2R