Aranda AWS Data Quality Control Report

Cruises: AR_18_/02
AR_18_/04

Daniel M. Gilmore and Shawn Smith

World Ocean Circulation Experiment(WOCE)

Surface Meteorological Data Assembly Center

Center for Ocean Atmospheric Prediction Studies

The Florida State University

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Introduction:

The data referenced in this report were collected from the research vessel Aranda (call sign: OHLV; Data source: Finnish Institute of Marine Research/J Launiainen) automated weather station(AWS) for 2 different WOCE cruises. The data were recieved in electronic format and converted to a standard FSU format. Then they were preprocessed using an automated data checking program. Next a visual inspection was completed by a Data Quality Evaluator who reviewed, modified and added appropriate quality control (QC) flags to the data. Details of the WOCE QC can be found in Smith et al (1996). The data quality control report summarizes the flags for the Aranda AWS data, including those added by both the preprocessor and the analyst.

Statistical Information:

The data set from the Aranda was expected to include observations taken every hours from 2 cruises. The start and end dates, the number of records and values and the number and percentage of flags added is given in table 1.

Table 1: List of dates and number of records for each cruise.

CTC	Dates	Number of Records	Number of Values	Number of Flags	Percentage Flagged
AR_18_/02	08/23/93 - 09/11/93	427	4270	330	7.73
AR_18_/04	09/11/93 - 09/24/93	299	2990	198	7.27

Time (TIME), latitude (LAT), longitude (LON), earth relative wind direction (DIR), earth relative wind speed (SPD), sea temperature (TS), atmospheric pressure (P), atmospheric temperature (T), relative humidity (RH), and global radiation (RAD) were quality controlled. A total of 7260 values were added with 528 flags added resulting in 7.27 percent of the data being flagged. The distribution of flags for each variable sorted by flag type is detailed in table 2.

Table 2: Number of Flags and Percentage Flagged for Each Variable

Variable	**B**	**F**	**G**	**I**	**K**	**T**	**Number of Flags**	**Percentage of Data Flagged**
TIME						2	2	0.28
LAT		2					2	0.28
LON		2					2	0.28
DIR							0	0.00
SPD				2			2	0.28
TS							0	0.00
P							0	0.00
T			2				2	0.28
RH					453		453	62.40
RAD	65						65	8.95
Totals:	65	4	2	2	453	2	528	7.27
Percentage of Flags Added	0.90	0.06	0.30	0.30	6.24	0.30	7.27	

Summary:

These data are in very good condition with only one major problem. Relative humidity observations tend to be at 100% for continuous periods of time, often many days. This could be a result of the ship sailing through fog during these periods. This could also be a result of the sensor being less reliable at low temperatures or malfunctioning in some way. Thus these data points were flagged with the “K” flag. No metadata regarding this problem was available to the analyst at the time of this writing.

The only other notable problem is with the RAD data. What seems to be an instrument calibration problem caused some of the observations to be less than 0.0 W/m^2. These observations were flagged by the prescreener with the “B” flag. The flags were left as an indication of this problem.

No other problems exist with this data set. However, the DQE noted 2 interesting data points. Both of the “I” flags were assigned to SPD for peaks in periods of extraordinarily high wind speed during the AR_18_/04 cruise. Each period lasts for a day or more, with the first event peaking at 20.5m/s on 9/20 at 1800 and the second event at 21.5m/s on 9/22 at 1500. Pressure data does not indicate the presence of major storms. Nor does climatology indicate that these wind speeds are typical. One explanation is that these are katabatic winds from the coast of Iceland. Temperature and humidity data offer inconclusive support for this explanation. No other data is available to support additional theories.

Final Note:

As stated above, these data are in very good condition. If the user is careful with the RH data and the RAD data, this set should present no problems.

References:

Smith, S.R., C. Harvey, and D.M. Legler, 1996: *Handbook of Quality Control Procedures and Methods for Surface Meteorology Data.* WOCE Report No. 141/96, Report WOCEMET 96-1, Center for Ocean Atmospheric Prediction Studies, Florida State University, Tallahassee, FL 32310.