Aurora Australis Data Quality Control Report

Cruise: P__11A/00

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Introduction:

This report summarizes the quality of surface meteorological data collected by the *Aurora Australis* (identifier: UNAA) data logging system during one WOCE cruise. The data were provided to the Florida State University Data Assembly Center (DAC) in electronic format by S. Rintoul of the Antarctic CRC, Australia. They were converted to standard DAC netCDF format. The data were then processed using an automated screening program which adds quality control flags to the data, highlighting potential problems. Finally, the Data Quality Evaluator reviews the data and current flags. Flags are added, modified, and deleted according to the judgement of the Data Quality Evaluator and other DAC personnel. An in depth description of the WOCE quality control procedures can be found in Smith et al. (1996). The data quality control report summarizes all flags for the *Aurora Australis* data and explains reasons why these flags were assigned.

Statistical Information:

The *Aurora Australis* data are expected to include observations taken every fifteen minutes on the WOCE cruise. Values for the following variables were collected:

Time	(TIME)
Latitude	(LAT)
Longitude	(LON)
Platform Heading	(PL_HD)
Platform Speed	(PL_SPD)
Earth Relative Wind Direction	(DIR)
Earth Relative Wind Speed	(SPD)
Sea Temperature	(TS)
Atmospheric Pressure	(P)
Air Temperature (port)	(T)
Air Temperature (starboard)	(T2)
Relative Humidity (port)	(RH)
Relative Humidity (starboard)	(RH2)

Details of each cruise including cruise dates, number of records, number of values, number of flags, and percentage flagged are listed in Table 1. A total of 43,693 values are evaluated with

Table 1: Statistical Cruise Information

CTC	Dates	Number of Records	Number of Values	Number of Flags	Percentage Flagged
P__11A/00	4/04/93 - 5/09/93	3,361	43,693	1,153	2.64

1,153 flags added by the preprocessor and Data Quality Evaluator for a total of 2.64 percent of the values being flagged.

Summary:

The data from the *Aurora Australis* are of very good quality considering the weather conditions to which the instruments were exposed. This cruise was made during the southern hemisphere winter in high southern latitudes, an area known for harsh winter cyclones and high winds. The extreme conditions likely caused instrument and/or electronic failures, resulting in a large number of missing values (30 percent of all values). Also, the extreme weather caused SPD, TS, P, T and T2 to have many values which lie outside of plus or minus four standard deviations from a climatology. Table 2 details all flags that were assigned to each variable and a discussion of the flags immediately follows.

Climatology

The prescreener compares the values of SPD, TS, P, T, and T2 to a climatology (da Silva et al. 1994) and assigns the "G" flag for values outside of four standard deviations from the mean. SPD, TS, P, T, and T2 all received "G" flags. The flagged data were gathered when the research vessel was located near the coast of Antarctica, an area of highly variable weather and a questionable climatology. In all cases, the analyst believes that the data represent accurate values. The "G" flags were left in place simply to call attention to relatively extreme events.

Table 2: Number of Flags and Percentage Flagged by Variable

Variable	G	I	Total Number of Flags	Percentage of Variable Flagged
TIME			0	0.00
LAT			0	0.00
LON			0	0.00
PL_HD			0	0.00
PL_SPD			0	0.00
DIR			0	0.00
SPD	171	2	173	5.15
TS	255		255	7.59
P	105	5	110	3.27
T	345		345	10.26
T2	270		270	8.00
RH			0	0.00
RH2	0		0	0.00
Total number of Flags	1146	7	1153	
Percentage of All Values Flagged	2.62	0.02	2.64	

Interesting Features

The analyst assigned two “I” flags to wind speed and five “I” flags to atmospheric pressure for interesting features. These flags were placed at the relative maxima during periods of unusually high wind speeds and at the relative minima during periods of unusually low pressure.

Final Comments:

The data which are present are of very high quality and should prove reliable for the user. The and “G” and “I” flags should not present a problem in using these data.

References:

da Silva, A. M., C. C. Young and S. Levitus, 1994: *Atlas of Surface Marine Data 1994, Volume 1: Algorithms and Procedures*. NOAA Atlas Series. In preparation.

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 32301