Aurora Australis Data Quality Control Report
Cruises: SR_03_/02
SR_03_/03
S__04_/04
SR_03_/05

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Addendum

Members of the WOCE Hydrographic Project Office (WHPO) and WOCEMET met at the 13th Data Products Committee (DPC) meeting in College Station, TX to discuss reconciliation of the WOCE cruise line deisgnators. This was done in anticipation of the future release of version 3 of the WOCE global data set, and resulted in changes to several WOCE cruise line designations.

On May 11, 2001 WOCEMET updated the data provider from S. Rintoul to N. Bindoff for the cruises SR_03_/03 and SR_03_/05.

During the DPC meeting, WOCMET determined that the cruise line previously designated as PR_12_/01 will be referenced as SR_03_/02. The cruise previously designated as PR_12_/05 will be referenced as SR_03_/05. Also, the cruises previously desginated as PR_12_/02 and I_08A/01 will be referenced as SR_03_/03.

WOCEMET removed the WOCE designation for the cruises S__04_/04 and SR_03_/04. The quality control information for this data has been left in this report for the user, but please note that the lines previously known as S__04_/04 and SR_03_/04 are NOT WOCE cruise lines.

Introduction;

The data referenced in this report were collected from the research vessel Aurora Australis (call sign: UNAA; contact: S. Rintoul) Data Logging System from each of 4 different cruises for WOCE. The original data were converted to a standard format and then preprocessed using an automated data checking program. A visual inspection was then completed by a data quality evaluator (DQE) who reviewed, modified, and added appropriate quality control flags to the data. Details of the WOCE QC can be found in Smith et al. (1996). This report summarizes flags for the Aurora Australis data including flags added by both the preprocessor and the DQE.

Statistical Information:

The data from the Aurora Australis were expected to in include observations every 15 minutes from 4 cruises. The Cruise Track Code (CTC), the begin and end dates, the number of records, values, and flags, and the percentage of non-Z flags for each cruise are given in table 1. 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), port dry-air temperature (T), starboard dry-air temperature (T2), port relative humidity (RH), and starboard relative humidity (RH2) were quality controlled. A total of 265265 values were checked, and 4415 flags were added resulting in 1.66

percent of the data being flagged. Table 2 summarizes the flag distribution including percentages flagged for each variable sorted by type.

Table 1: Record Data for Aurora Australis WOCE Cruises

CTC	Dates	Number of Records	Number of Values	Number of Flags	Percent Flagged
SR_03_/02	03/11/93 - 05/02/93	5562	72306	1383	1.91
SR_03_/03	01/01/94 - 03/02/94	5573	72449	394	0.54
S__04_/04	12/13/94 - 02/02/95	4828	62764	88	0.14
SR_03_/05	07/12/95 - 09/03/95	4442	57746	2550	4.42

Summary:

Due to the high southern latitude of the vessel, interesting features occurred throughout this data set. Compared with their relative climatological mean, atmospheric pressure and air temperature were exceptionally low, and wind speed was extremely high for all the cruises. This was signified by the numerous “G”, data >4 s.d. from climatological mean, and “B”, data out of bounds, flags for those variables. These extreme conditions are not unexpected, however, as most of the observations were taken between Tasmania and the Antarctic coastline. This region, often called the roaring forties, is well known for strong cyclones, high winds, and hazardous navigation.

Table 2: Frequency of Flags Assigned for Each Variable

Variable	Data out of Bounds	Unreal Move-ment	4 s.d. from Climatology	Interesting Data	Spike	Total Number of Flags	Percentage of Variables Flagged
LAT						1	0.00
LON		1				1	0.00
DIR		1			1	1	0.00
SPD			534	5		539	2.64
TS			442		8	450	2.21
P	94		887	14	1	996	4.88
T			1141			1141	5.59
T2			1047			1047	5.13
RH			108			108	0.53
RH2			131			131	0.64
Totals:	94	2	4290	19	10	4415	1.66
Percentage of flags used	0.04	0.00	1.62	0.01	0.00	1.66	

For the entire data set, the lowest atmospheric pressure was 932.5 mb at 15:07on 8/25/95 during cruise SR_03_/05. The highest wind speed was 31 m/s at 20:07 on 2/22/94 during cruise SR_03_/03. These, plus any other significantly low pressures or high wind speeds were flagged with an “I”.

The only problem with the data set is that a significant portion of the data are missing. This is probably due to instrument failure after the system had been exposed to the extreme conditions detailed above for extended periods of time. Under the DAC QC system, missing data values are valid and are flagged with a “Z”, good data. This may bias statistics for these files. Table 3 summarizes missing data information for each file.

Table 3: Summary of Missing Data for Analyzed Variables

File	Number of Values	Number of Missing Values	Percent of Data Missing
UNAA.930311014v100.nc	13120	1097	8.36
UNAA.930325010v100.nc	8890	1671	18.80
UNAA.930402008v100.nc	6730	2815	41.83
UNAA.930404014v100.nc	13440	1613	12.01
UNAA.930418014v100.nc	13440	1176	8.75
UNAA.940101014v100.nc	13110	1510	11.52
UNAA.940115014v100.nc	13440	261	1.94
UNAA.940129014v100.nc	13360	684	5.12
UNAA.940212014v100.nc	12900	999	7.74
UNAA.940226004v100.nc	2920	2039	69.83
UNAA.941213014v100.nc	13180	4168	31.62
UNAA.941227014v100.nc	13430	2979	22.18
UNAA.950110014v100.nc	13350	3462	25.93
UNAA.950124009v100.nc	8320	3541	42.56
UNAA.950712014v100.nc	12780	2880	22.54
UNAA.950731014v100.nc	13330	2436	18.27
UNAA.950814014v100.nc	13440	0	0.00
UNAA.950828006v100.nc	4870	1	0.02

Final Note:

These data were in excellent condition. The user should be wary of using UNAA.940226004v100.nc as over 60% of the data is missing. It is the analysts opinion that even with the missing data, no problems should occur with its use.

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.