Vickers AWS Data Quality Control Report

Jesse Enloe and Shawn R. Smith

World Ocean Circulation Experiment

Surface Meteorological Data Assembly Center

Center for Ocean Atmospheric Prediction Studies

Florida State University

August 20, 2001

Report WOCEMET 99-01

Version 2.0

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 designators. 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 August 20, 2001 WOCEMET combined the designators for the lines P__13N/00 and P__13S/00 to be referenced as P__13_/00. 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 P__13N/00 and P__13S/00 are now combined together under P__13_/00.

Introduction:

This report summarizes the quality of surface meteorological data collected by the research vessel *Vickers* (identifier: WTEC) automated weather system (AWS) during two WOCE cruises beginning 4 August 1992 and ending 21 October 1992. The data were provided to the Florida State University Data Assembly Center (DAC) in electronic format by J. Bullister and B. Taft and 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 (DQE) reviews the data and current flags, whereby flags are added, removed, or modified according to the judgement of the DQE and other DAC personnel. Details of the WOCE quality control procedures can be found in Smith et al. (1996). The data quality control report summaries the flags for the *Vickers* AWS surface meteorological data, including those added by both the preprocessor and the DQE.

Statistical Information:

The *Vickers* AWS data are expected to include observations taken every hour on both of the WOCE cruises. Values for the following variables were collected:

Time	(TIME)
Latitude	(LAT)
Longitude	(LON)
Earth Relative Wind Direction	(DIR)
Earth Relative Wind Speed	(SPD)
Sea Temperature	(TS)
Atmospheric Pressure	(P)
Air Temperature	(T)
Wet Bulb Temperature	(TW)

Details of the cruises are listed in Table 1 and include cruise dates, number of records, number of values, number of flags, and total percentage of data flagged. A total of 9,648 values are evaluated with 43 flags added by both the preprocessor and the DQE resulting in a total of 0.45% of the values being flagged.

Table 1: Statistical Cruise Information

CTC	Dates	Number of	Number of	Number of	Number

		Records	Values	Flags	Flagged
P__13N/00	08/04/92 – 09/9/92	633	5,697	34	0.60
P__13S/00	09/26/92 – 10/21/92	439	3,951	9	0.23

Summary:

The AWS data from the *Vickers* proves to be of excellent quality. No major problems were found in the data. The distribution of flags for each variable is detailed in Table 2.

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

Variable	**B**	**D**	**F**	**S**	**Total Number of Flags**	**Percentage of Variable Flagged**
TIME					0	0.00
LAT			3	3	6	0.56
LON			3	8	11	1.03
DIR	1				1	0.09
SPD					0	0.00
TS				5	5	0.47
P				1	1	0.09
T		7		5	12	1.12
TW		7			7	0.65
Total Number of Flags	1	14	6	22	43	
Percentage of All Values Flagged	0.01	0.15	0.06	0.23	0.45	

The preprocessor originally assessed four land flags to the *Vickers'* position data. Three of the land flags were changed to S flags by the DQE after determining these position data did not make physical sense given the rest of the cruise track. The cruise track also brought the vessel through a passage in the Aleutian Islands which was too small to be resolved in the land mask used by the preprocessor. The fourth land flag was subsequently removed. All corresponding data flagged F and L were determined as good data and the flags were removed. See Smith et al. (1996) for detailed information on flagging procedures and definitions.

Four F flags applied by the preprocessor were changed to S flags by the DQE as the position data was radically different form the course's trend. All corresponding data flagged F were determined as good data and the flags were removed.

Five spikes were applied to sea temperature. In four of the cases the sea temperature fluctuated more than 4 degrees Celsius in an hour's time and then back to its previous temperature, which is physically unrealistic. A G flag given by the preprocessor was changed to an S flag by the DQE for the same reason.

For the temperature data, a total of four D flags, originally given by the preprocessor, were replaced as spike flags. The corresponding D flags on the dewpoint were removed because the dewpoint values were determined to be good. Another spike was placed on a temperature value that dropped and rose eight degrees Celsius in two hours.
A spike was assessed to the pressure data for a pressure reading indicating a drop and rise of over five millibars in two hours.

A bounds flag (B) was assessed by the preprocessor on the earth relative wind direction, as it recorded a wind direction value of greater than 360 degrees.

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 32306-2840