Shoyo Bridge Data Quality Control Report

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Addendum:

Member's 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 added the PR_27_/02 WOCE designator as a cross-reference to the WOCE designator P__02W/00. The two designators share all of the same cruise information and data.

INTRODUCTION

This report summarizes the quality of surface meteorological data collected by the research vessel *Shoyo* (identifier: JCOD) during four cruises completed in 1993, 1994 and 1996. The data provided to the Florida State University Data Assembly Center (DAC) by H. Yoritaka (JODC) included digitized bridge observations. These data were converted to standard DAC netCDF format. The data were then processed using an automated screening program, which added quality control flags to the data, highlighting potential problems. Finally, the Data Quality Evaluator (DQE) reviewed the data and current flags, whereby flags were added, removed, or modified according to the judgment of the DQE and other DAC personnel. Details of the quality control procedures can be found in Smith et al. (1994). The data quality control report summarizes the flags for the *Shoyo* meteorological data, including those added by the WOCEMET preprocessor, and the DQE.

DATA VARIABLES

The *Shoyo* data includes observations taken in hourly intervals or as provided by the JCOD. Values for the following variables were collected:

Time	(TIME)
Latitude	(LAT)
Longitude	(LON)
Earth Relative Wind Direction	(DIR)
Earth Relative Wind Speed	(SPD)
Atmospheric Pressure	(P)
Air Temperature	(T)
Sea Temperature	(TS)
Relative Humidity	(RH)
Total Cloud Amount	(TCA)

FLAG SUMMARY

Statistical Information:

Details of the 1993, 1994, and 1996 cruises are listed in Table 1 and include the cruise dates, number of records, number of values, number of flags, and total percentage of data flagged. A total of 4,500 values were evaluated with 14 flags added by both the preprocessor and the DQE resulting in 0.31% of the values being flagged.

Table 1: Statistical Cruise Information

Cruise Identifier	Cruise Dates	Number of Records	Number of Values	Number of Flags	Percent Flagged
P__02E/00	10/14/93 – 12/19/93	351	3,159	11	0.35
P__02W/00	11/01/94 – 11/13/94	48	432	0	0.00
P__08N/01	07/12/96 – 07/29/96	71	639	3	0.47
P__08N/02	10/25/96 – 11/01/96	30	270	0	0.00

Summary:

The bridge data from the *Shoyo* proves to be of excellent quality with 0.31% of the reported values flagged for potential problems. The distribution of flags for each variable are detailed in Table 2.

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

Variable	F	G	S	Total Number of Flags	Percentage of Variable Flagged
TIME				0	0.00
LAT	6			6	1.20
LON	6			6	1.20
DIR				0	0.00
SPD		1		1	0.20
P				0	0.00
T				0	0.00
TS				0	0.00
RH			1	1	0.20
Total Number of Flags	12	1	1	14	
Percent of All Values Flagged	0.27	0.02	0.02	0.31	

F-flags:

Latitude (LAT) and longitude (LON) were assessed a total of 12 F-flags by the preprocessor during the P__02E/00 cruise. These F-flags show that the platform speed computed by the preprocessor exceeds the realistic speed (15 ms^{-1}). This may have been caused by uncertainties or truncation error in the navigation data.

G-flags:

Earth relative wind speed (SPD) was assessed 1 G-flag by the preprocessor during the P__02E/00 cruise, in which data was taken every four hours. The flagged value was approximately 15 ms^{-1} higher than the climatological value. Data on the P__02E/00 cruise did not contain enough information to accurately determine if this extreme value was representative of the meteorological events on board the P__02E/00 cruise, but it was left in place to highlight an extreme wind speed. The G-flag emphasizes values that are greater than four standard deviations from the climatological mean (da Silva et al. 1994).

Spikes:

An isolated spike occurred on relative humidity (RH). Spikes may arise with bridge data when recorded values are written down or digitized incorrectly. This individual point was assigned the S-flag.

FINAL DISCUSSION

The *Shoyo* data were found to be very reliable, although ship relative data were not available to assess these meteorological variables for specific problems such as, flow distortion and ship heating.

REFERENCES

Smith, S.R., C. Harvey, and D.M. Legler, 1994: *Handbook of Quality Control Procedures and Methods for Surface Meteorology Data*. Report No. 141/96, Report MET 96-1, Center for Ocean-Atmospheric Prediction Studies Florida State University, Tallahassee FL 32306-2840

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.