Vidal Gormaz Bridge Data Quality Control Report

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INTRODUCTION

This report summarizes the quality of surface meteorological data collected by the research vessel *Vidal Gormaz* (identifier: CCVG) during three cruises completed in 1996, 1997 and 1998. The data provided to the Florida State University Data Assembly Center (DAC) by R. Rojas (Chilean Navy) 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 *Vidal Gormaz* meteorological data, including those added by the WOCEMET preprocessor, and the DQE.

DATA VARIABLES

The *Vidal Gormaz* data includes observations taken every fifteen minutes, or as provided by the CCVG. Values for the following variables were collected:

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

1996 FLAG SUMMARY

Statistical Information:

Details of the 1996 cruise 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 2,196 values were evaluated with 40 flags added by both the preprocessor and the DQE resulting in 1.82% 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
SR_01_/12	11/30/96 – 12/04/96	244	2,196	40	1.82

Summary:

The 1996 bridge data from the *Vidal Gormaz* proves to be of excellent quality with 1.82% 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	G	S	Total Number of Flags	Percentage of Variable Flagged
TIME				0.00
LAT				0.00
LON				0.00
T		2	2	0.82
TS	34	1	35	14.34
RH		1	1	0.41
P				0.00
DIR		1	1	0.41
SPD		1	1	0.41
Total Number of Flags	34	6	40	
Percent of All Values Flagged	1.55	0.27	1.82	

<u>*G-flags*</u>:

Sea temperature (TS) was assessed 34 G-flags by the preprocessor during the SR_01_/12 cruise. The DQE felt these flagged values were realistic, as they were approximately three degrees Celsius lower than the climatological data value and were left in place to highlight extreme sea temperatures. The G-flags emphasize values that are greater than four standard deviations from the climatological mean (da Silva et al. 1994).

<u>*Spikes*</u>:

Isolated spikes occurred in a few of the variables. Spikes may arise with bridge data when recorded values are written down incorrectly. These individual points were assigned the S-flag.

1997 FLAG SUMMARY

Statistical Information:

Details of the 1997 cruise are listed in Table 3 and include the cruise dates, number of records, number of values, number of flags, and total percentage of data flagged. A total of 7,335 values were evaluated with 122 flags added by both the preprocessor and the DQE resulting in 1.66% of the values being flagged.

Table 3: Statistical Cruise Information

Cruise Identifier	Cruise Dates	Number of Records	Number of Values	Number of Flags	Percent Flagged
PR_14_/07	03/15/97 – 04/09/97	815	7,335	122	1.66

Summary:

The 1997 bridge data from the *Vidal Gormaz* proves to be of excellent quality with 1.66% of the reported values flagged for potential problems. The distribution of flags for each variable are detailed in Table 4.

Table 4: Number of Flags and Percentage Flagged for Each Variable

Variable	G	Total Number of Flags	Percentage of Variable Flagged
TIME			0.00
LAT			0.00
LON			0.00
T	2	2	0.25
TS	120	120	14.72
RH			0.00
P			0.00
DIR			0.00
SPD			0.00
Total Number of Flags	122	122	
Percent of All Values Flagged	1.66	1.66	

G-flags:

Note: During the PR_14_/07, the ship traversed south of 40 degrees South Latitude. In this region of the globe, little information is known about the climatology, as the data is sparse. Consequently, the G-flagged data values may be realistic, though extreme observations.

G-flags are assessed to values that are greater than four standard deviations from the climatological mean (da Silva et al. 1994). Air temperature (T) was assessed two G-flags by the preprocessor during the PR_14_/07 cruise. The DQE felt these flagged values were realistic, as they were approximately five degrees Celsius higher than the climatological data value and were left in place to highlight extreme air temperatures.

Sea temperature (TS) received 120 G-flags during the PR_14_/07 cruise. The flagged values were approximately two to four degrees Celsius lower than the climatological value. These flagged values were left in place to highlight extreme sea temperatures.

1998 FLAG SUMMARY

Statistical Information:

Details of the 1998 cruise are listed in Table 5 and include the cruise dates, number of records, number of values, number of flags, and total percentage of data flagged. A total of 1,422 values were evaluated and no flags were added by the preprocessor or the DQE resulting in 0.00% of the values being flagged.

Table 5: Statistical Cruise Information

Cruise Identifier	Cruise Dates	Number of Records	Number of Values	Number of Flags	Percent Flagged
SR_01_/14	12/10/98 – 12/13/98	158	1,422	0	0.00

Summary:

The 1998 bridge data from the *Vidal Gormaz* proves to be of excellent quality with 0.00% of the reported values flagged for potential problems.

FINAL DISCUSSION

The *Vidal Gormaz* 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

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