Heincke AWS Data Quality Control Report (1992)

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Introduction:

This report summarizes the quality of surface meteorological data collected by the Heincke (identifier: DBCK) automated weather system during two WOCE cruises made in 1992. The data were provided to the Florida State University Data Assembly Center (DAC) in electronic format by H. - Ch. John of the Zoology Institute and Museum. 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 then 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 Heincke AWS data and explains reasons why these flags were assigned.

Statistical Information:

The Heincke AWS data are expected to include observations taken every thirty minutes on each of the WOCE cruises. Values for the following variables were collected:

Time	(TIME)
Latitude	(LAT)
Longitude	(LON)
Platform Course (GPS)	(PL_CRS)
Platform Speed (GPS)	(PL_SPD)
Platform Speed (doppler speed log)	(PL_SPD2)
Earth Relative Wind Direction	(DIR)
Earth Relative Wind Speed	(SPD)
Sea Temperature	(TS)
Atmospheric Pressure	(P)
Air Temperature	(T)
Wet-bulb Temperature	(TW)
Dewpoint Temperature	(TD)

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 6,591 values are evaluated with 86 flags added by the preprocessor and Data Quality Evaluator for a total of 1.30 percent of the values being flagged.

Table 1: Statistical Cruise Information

CTC	Dates	Number of Records	Number of Values	Number of Flags	Percentage Flagged
AR_16_/09	1/21/92 - 1/29/92	374	4862	82	1.69
AR_16_/10	1/31/92 - 2/3/92	133	1729	4	0.23

Summary:

Most variables in the Heincke AWS data are of excellent quality. However, T, TW, and TD had a problem of frequent positive spikes of up to 5 degrees C on cruise AR_16_/09. Table 2 details all flags the distribution of flags among the variables and a thorough discussion of the flags immediately follows.

Table 2: Number of Flags and Percentage Flagged by Variable

Variable	B	G	S	Total Number of Flags	Percentage of Variable Flagged
PL_SPD2	20			20	3.94
SPD			1	1	0.20
T		3	39	42	8.28
TW			15	15	2.96
TD			8	8	1.58
Total number of Flags	20	3	63	86	1.30
Percentage of All Values Flagged	0.30	0.05	0.96	1.30	

Spikes in T, TW, and TD

The variables T and TW experience periodic positive spikes of up to 6 degrees C on cruise AR_16_/09. TD showed some negative spikes of the same magnitude. No physical explanation was available to verify these spikes as realistic, so they were assigned the "S" flag. Temperature seemed to be the most sensitive and received 39 "S" flags. TW and TD had fewer discernable spikes and were flagged less often. This problem was not apparent on cruise AR_16_/10.

Negative values for PL_SPD2

PL_SPD2 received 20 "B" flags for negative values when the ship was nearly stationary. These values were only a fraction of one meter per second in magnitude and are not unusual in doppler speed log data.

Climatology

The prescreener compares the values of SPD, TS, P, and T to a climatology (da Silva et al. 1994) and assigns the "G" flag for values outside of four standard deviations from the mean. T received three "G" flags during a relatively cold event on cruise AR_16_/09. The analyst believes these values are accurate, but the flags were left in place to call attention to the event.

Final Comments:

The Heincke AWS data is of excellent quality for most of the variables recorded. Values of T, TW, and TD flagged with an "S" are likely erroneous and should not be used.

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

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