Discoverer Quality Control Report

WOCE Cruise: P__18S/00

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Introduction:

The data referenced in this report were collected from the research vessel Discoverer (call sign WTEA) SEAS Meteorological Package (data acquired from A. Dickson at the NOAA Pacific Marine Environmental Laboratory) for WOCE. The original hard copy data were digitized and then converted to a standard format. The data were then pre-processed using an automated data checking program. A visual inspection of the data was then completed by a data quality analyst who reviewed, modified, and added appropriate quality control (QC) flags to the data. Details of the WOCE QC can be found in Smith et al. (1996). This report summarizes the flags for the Discoverer data set, including flags added by both the pre-processor and the analyst.

Statistical Information:

The data from the Discoverer were expected to include observations taken every 10 minutes. The cruise began on January 31, 1994 and ended April 27, 1994. Time (TIME), latitude (LAT), longitude (LON), wind direction (DIR), wind speed (SPD), atmospheric pressure (P), and sea temperature (TS) were quality controlled. A total of 75,250 values were reviewed and checked and 1,954 flags were added resulting in 2.70% of the data being flagged. Table 1 details the distribution of flags and inlcudes the percentages flagged for each variable.

Table 1: Frequency of Flags assigned fo Each Variable and Flag Type

Variable	Unreal Movement	>4 s.d.from Climatolog-ical Mean	Interesting Data	Spike	Total Number of Flags	Percent of Records Flagged
TIME	0	0	0	0	0	0.00
LAT	7	0	0	0	7	0.07
LON	7	0	0	3	10	0.09
SPD	0	0	0	0	0	0.00
DIR	0	357	2	0	359	3.34
P	0	689	2	11	702	6.53
TS	0	874	2	0	876	8.15
Total	14	1,920	6	14	1,954	2.70
Percent of Total Data Flagged	0.02	2.55	0.00	0.02	2.70	

Summary:

As can be seen by the summary, the data are in very good condition. With 94.5% of the flags being the pre-screener added cautionary flag "G", data greater than 4 standard deviations from the climatological mean, only 0.15% of the remaining data were flagged. There was a period of extremely low atmospheric pressure accounted for most of the "G" flags added to pressure. This period is defined by the pressure not rising above 996mb from 1730 on 2/24 to 2000 on 3/6, bottoming out at 954.6mb at 2250 on 3/2. Much of the wind speed data during this time was also flagged as "G" for being higher than normal. The wind speed data during the

period were typically between 10 and 20 m/s while climatology is at 10 m/s for the same period. The lowest pressures and highest corresponding wind speeds were flagged with the "I", interesting feature, flag. This situation is indicative of low pressure systems that populate the higher southern latitudes through which the ship is travelling.

Unlike atmospheric pressure and wind speed, the "G" flags added to sea temperature were not added because the data were significantly out of range. Rather there is very little deviation from climatology to define a standard deviation for sea temperature. So if a sea temperature observation was off by only 2 degrees, it may still be 4 standard deviations from climatology, and be flagged accordingly. This situation was not atypical for this data set.

The only other problem with the data is 7 "F", unreal movement, flags added to both latitude and longitude. There is no explanation given for and no data to dispute the flags, so the analyst has chosen to retain these "F" flags.

Final Notes:

Virtually all the data in this set is good data. The analyst recommends using this set and foresees no additional problems.

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.