# Meteor IMMT Data Quality Control Report

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## *INTRODUCTION:*

This report summarizes the quality of surface meteorological data collected by the research vessel *Meteor* (identifier: DBBH) during two cruises completed in 1998. The data were provided to the Florida State University Data Assembly Center (DAC) in IMMT electronic format by V. Wagner (DWD-Germany) and 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 *Meteor* meteorological data, including those added by both the preprocessor and the DQE.

## *DATA VARIABLES:*

The *Meteor* data are expected to include hourly observations on these cruises. Values for the following variables were collected:

| | |
|---|---|
| Time | (TIME) |
| Latitude | (LAT) |
| Longitude | (LON) |
| Earth Relative Wind Speed | (SPD) |
| Earth Relative Wind Direction | (DIR) |
| Sea Temperature | (TS) |
| Atmospheric Pressure | (P) |
| Air Temperature | (T) |
| Wet Bulb Temperature | (TW) |
| Dew Point Temperature | (TD) |
| Present Weather* | *(WX) |
| Total Cloud Amount* | *(TCA) |
| Low/Middle Cloud Amount* | *(LMCA) |
| Cloud Base Height* | *(ZCL) |
| Low Cloud Type* | *(LCT) |
| Middle Cloud Type* | *(MCT) |
| High Cloud Type* | *(HCT) |

*Denotes coded data variables that were not visually inspected by the DQE. These variables are very difficult to quality control since there is no true way to verify the data objectively. An automated screening program verified the valid range for the data.

## *1998 FLAG SUMMARY*

### *Statistical Information:*

Details of each 1998 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 13,560 values were evaluated with one flag added by the DQE resulting in a total of 0.01% 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 |
|---|---|---|---|---|---|
| AR_15_/10 | 04/17/98 – 05/15/98 | 661 | 6,610 | 0 | 0.00 |
| AR_26_/04 | 06/16/98 – 07/14/98 | 695 | 6,950 | 1 | 0.01 |

***Summary:***

The 1998 IMMT data from the *Meteor* proves to be of excellent quality with 0.01% of the reported values flagged for potential problems. The distribution of flags for each variable is detailed in Table 2.

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

| Variable | S | Total Number of Flags | Percentage of Variable Flagged |
|---|---|---|---|
| **TIME** | | 0 | 0.00 |
| **LAT** | | 0 | 0.00 |
| **LON** | | 0 | 0.00 |
| **SPD** | 1 | 1 | 0.01 |
| **DIR** | | 0 | 0.00 |
| **TS** | | 0 | 0.00 |
| **P** | | 0 | 0.00 |
| **T** | | 0 | 0.00 |
| **TW** | | 0 | 0.00 |
| **TD** | | 0 | 0.00 |
| **Total Number Of Flags** | 1 | 1 | |
| **Percent Of All Values Flagged** | 0.01 | 0.01 | |

<u>*Spikes*</u>:

One isolated spike occurred in sea temperature (TS) as the data dropped from approximately 21 degrees Celsius to zero in one hour. The following hour, the TS returned to approximately 21 degrees Celsius.

<u>*Final Discussion*</u>:

The *Meteor* 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.