List of Quality Control Flags (18 November 1997)

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The quality control flags are single alphabetic characters that indicate the quality for each specific data value. Only those variables with a *qcindex* have flag values (the *qcindex* is an integer pointer to the flag for a selected variable). The flags are:

Flag	Definition
A	Original data had unknown units. The units shown were determined using a climatology or some other method.
B	Original data were out of the range bounds outlined (Table 1).
C	Time data are not sequential or date/time not valid.
D	Data failed T>=Tw>=Td test. In the free atmosphere, the value of the temperature is always greater than or equal to the wet-bulb temperature, which in turn is always greater than or equal to the dew point temperature.
E	Data failed resultant wind recomputation check. When the data set includes the platform's heading, course, and speed along with the platform relative wind speed and direction, a program recomputes the earth relative wind speed and direction and compares the computed values to the reported earth relative wind speed and direction. A failed test occurs when the wind direction difference is > 10 degrees or the wind speed difference is > 5 m/s.
F	Platform velocity unrealistic. Determined by analyzing latitude and longitude positions as well as reported platform speed data.
G	Data are greater than 4 standard deviations from the COADS climatological means (da Silva et al. 1994). The test is only applied to pressure, temperature, sea temperature, relative humidity, and wind speed data.
H	Discontinuity found in data
I	Interesting feature found in data. More specific information on the feature is contained in the data reports. Examples include: hurricanes passing station, sharp sea water temperature gradients, strong convective events, etc.
J	Data are of poor quality by visual inspection, DO NOT USE.
K	Data suspect/use with caution - this flag applies when the data look to have obvious errors, but no specific reason for the error can be determined.

L   Oceanographic platform passes over land or fixed platform moves dramatically.

M   Known instrument malfunction.

O   Original units differ from those listed in the *convers_units* variable attribute. See quality control report for details.

P   Position of platform or its movement are uncertain. Data should be used with caution.

Q   Questionable - data arrived at DAC already flagged as questionable/uncertain.

R   Replaced with an interpolated value. Often done prior to arrival at the DAC. Flag is used to note condition.

S   Spike in the data. Usually one or two sequential data values (sometimes up to 4 values) that are drastically out of the current data trend. Spikes occur for many reasons including power surges, typos, data logging problems, lightning strikes, etc.

T   Time duplicate

Z   Data passed evaluation.

Table 1: Range Bounds used in determining the use of flag B.

Variable	Lower Bound	Upper Bound	Units	Other
time	1-1-1980	12-31-1999		
latitude	-90	90	degrees	
longitude	0	359.99	degrees E	
platform heading	0	359.9	degrees	
platform course	0	359.9	degrees	
platform speed	0	15	m/s	research vessels
wind direction	0	360	degrees	
wind speed	0	40	m/s	

pressure	950	1050	mb	Sea level
air temperature	-10	40	° Celsius	
wet bulb temperature	-10	40	° Celsius	
dew point temperature	-10	40	° Celsius	
sea temperature	0	35	° Celsius	
relative humidity	0	100	percent	
specific humidity	0	48	g/kg	
rain rate	0	150	mm/hr	
radiation	0	1400	W/m^2	

Reference:

da Silva, A. M., C. C. Young, and S. Levitus, 1994: Atlas of Surface Marine Data, Volume 1: Algorithms and Procedures. NOAA Atlas Series. In press.