

## Flags of QC level 1

Code	Description <sup>1</sup>	Applies to	Recommended use
	correct value/value not checked (data source 29)	all Parameters	
<b>0</b>	value not checked (data sources 10 and 29)	all Parameters	
<b>1</b>	correct value (data sources 10 and 29)	all Parameters	
<b>2</b>	suspect value (data sources 10 and 29)	all Parameters	
<b>3</b>	erroneous value, a corrected value may follow <sup>2</sup> (data source 10)	all Parameters	suppress
<b>4</b>	corrected value (original value was wrong, data source 10 and 29)	all Parameters	
<b>5</b>	calculated value (original value was missing, data source 10), added value (data source 29)	all Parameters	
<b>6-8</b>	DWD Quality flags 6 - 8, meaning not yet clear	all Parameters?	
<b>9</b>	missing value	all Parameters	
<b>A</b>	Humidity values set to 'missing' at pressure levels < 200 hPa or at temperatures < -57 °C	U, T <sub>d</sub>	
<b>B</b>	Set to missing according for d < 0 or d > 360	d, F	
<b>C</b>	Excessive inversion test Excessive wind shear test	T d, F	suppress
<b>D</b>	Superadiabatic gradients	T	
<b>E</b>	Vertical interpolated value using ln(p) as vertical coordinate The original value was either missing or considered as gross error during visual inspection	T, U, d, F	
<b>e</b>	Vertical consistency violated but the value was considered as correct during visual inspection	T, U, d, F	
<b>F</b>	Recalculated value or extrapolated value (e.g. 1000 hPa) or value replaced after comparison of reported heights with those recomputed from significant levels or all levels in vertical high resolution soundings.	H, P	
<b>f</b>	Suspect according to hydrostatic check (only for data source 29) Recalculated from height using standard atmosphere (data source 32)	H, T, P P	
<b>G</b>	not used (?)		
<b>H</b>	Geopotential in surface level replaced by station height from station meta data	H	
<b>I</b>	Recalculated dew point or relative humidity.	T <sub>d</sub> , U	
<b>J</b>	Inconsistency between temperature and dew point	T <sub>d</sub>	
<b>K</b>	Temporal inconsistency	all Parameters	suppress
<b>L</b>	Value outside wide (climatological) limits	P,T, T <sub>d</sub> ,F	suppress
<b>M</b>	Value outside narrow (climatological) limits	P,T, T <sub>d</sub> ,F	
<b>N</b>	Value suspect in qc but was considered as correct	all Parameters	
<b>O</b>	Corrected ground level pressure	P	
<b>P</b>	Estimated and inserted manually to assure further calculations	all Parameters	
<b>Q</b>	Inconsistency between wind direction and wind speed (erroneous)	D, F	suppress
<b>R</b>	Inconsistency between wind direction and wind speed (suspicious)	F	
<b>S</b>			
<b>T</b>			
<b>U</b>			
<b>V</b>			
<b>W</b>	Interpolated value using time as vertical coordinate	T, U, d, F	
<b>X</b>			
<b>Y</b>	Suspect due to time-height test	Time, H	suppress <sup>3</sup>
<b>Z</b>	Suspect due to hydrostatic test	H, P	
<b>z</b>	Suspect due to hydrostatic test (native from data source 31)	all Parameters	suppress

Tab. 1: Flags of QC level 1

## Level type

Code	Description
00	No special level type
01	Surface level
02	Significant level for temperature and/or humidity
03	Tropopause (overrides 02)
04	Significant level for wind
05	Maximum wind level (overrides 05)
06	Significant level for temperature and/or humidity and wind
07	maximum wind level and significant level for temperature and/or humidity
08	Tropopause and wind maximum level
10	mandatory level
11	surface level and mandatory level
12	level satisfies requirements for selection as mandatory level and as significant level <sup>4</sup>
13	level satisfies requirements for selection as tropopause and as mandatory level
14	same as 12 but only for significant wind levels <sup>5</sup>
15	level satisfies requirements for selection as maximum wind level and mandatory level
18	level satisfies requirements for selection as tropopause, as maximum wind level and mandatory level
20	interpolated (generated) mandatory <sup>6</sup> pressure level
21	interpolated (generated) mandatory pressure level other than mandatory levels according to TEMP Code
23	special Wind level (NCDC level type 43)
81	first header
82	second header
83	third header

*Tab. 2: Level Type. The mandatory levels mentioned in level types 10 to 18 satisfy the requirements of TEMP Code (WMO, 1995).*

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<sup>1</sup> Chapter numbers refer to Aschwanden et al. (1996).

<sup>2</sup> If a corrected value was present in the original data, only those were taken for CALRAS. The situation of a erroneous value followed by an corrected one should not be present.

<sup>3</sup> For calculation of pressure and interpolation.

<sup>4</sup> For data from NCDC no distinction between the different types of significant levels (temperature and/or humidity, wind). For data from DWD this applies only to significant temperature and/or humidity levels.

<sup>5</sup> Applies only for data from DWD.

<sup>6</sup> Originates from NCDC 'TDF63 Documentation for NCDC Upper air digital files'. The meaning of this term is not really clear. In CALRAS this level type was also used for interpolated pressure levels other than mandatory levels according to the TEMP Code.