UK Hourly Weather data - Columns in the WH table

Table Description - Columns in the WH table - How to start filtering the rows of data out Additional Notes

The surface observation data are in a simple ASCII format.

Table Description:

This entity contains SYNOPs and METARs measured during the hour ending at the stated date and time. The identifier is climatological station number, DCNN or WMO station number, or ICAO-id. It also contains sunshine duration measured during the hour ending at the specified time. Hourly sunshine is reported using Metform 3445, and the value is reported as "hour beginning". The MIDAS ingestion software makes the necessary transformation so that the observations are stored at "hour ending", consistent with other hourly data.

Columns in the WH table (104 parameters from 2010, 102 parameters before 2010):

For the convenience of users, the 104 WH file column headers are available for download in Excel or as a comma separated text file

PK	Attribute	Description / Units / Precision
*	ob_time	Date and time of observation
*	id	
*	id_type	Identifier type
*	met_domain_name	Message type
*	version_num	Observation version number - **Use the row with '1'**, as this has been quality checked by the Met Office
	src_id	Unique source identifier or station site number
	rec_st_ind	State indicator for the record**
	wind_speed_unit_id	Wind speed unit code
	src_opr_type	Source operation type code : • 1- Manual observation with significant weather reported (sig weather classed at codes 04-99) • 2- Manual observation with no significant weather reported • 3- Manual observation with weather included but not observed throughout the whole period (usually reported at 0600hrs when obs have been automatic overnight but observer just come on duty at 0530hrs) • 4- Automatic observation weather omitted (due to malfunction) • 5- Automatic observation at site with weather sensor installed but no significant weather reported • 6 -Automatic observation with no weather sensor installed. • 7 - Automatic observation from site with weather sensor installed and weather reported
	wind_direction	Wind direction from which the wind blows, measured in Degrees (true). The entry for an east wind is 090, that for a south wind is 180 and so on clockwise. Note that zero values in both wind speec and wind direction fields indicate that there

		was no wind blowing at the time of observation. More
	wind_speed	Wind speed knots. Wind mast elevations from selected stations are available here (MIDAS users only).
	prst_wx_id	Present weather code - definition **Important Note:** Check the src_opr_type value to determine the type of observation amade (Manual or Automatic). When there is a 1 in the src_opr_type column this is a manual observation where the present weather has been included and reported using WMO table 4677. If there is a 7 in the src_opr_type column then this is an automatic observation reported using code from WMO table 4680.
	past_wx_id_1	Past weather code #1 - This is a number between 0-9 which details what the weather has been like in the last 6 hours for observations at 00, 06, 12, 1800 UTC, the last 3 hours for observations at 03, 09, 15, 2100 UTC and the previous hour at any other times. The past weather is only recorded when a manual observation is done at the station. definition
	past_wx_id_2	Past weather code #2 - Same principle as above but is used to cover two codes or just one code occurring throughout the appropriate period. If more than 2 codes apply for the period then the 2 highest are used. So for example if it rained for a whole hour at the 1000 UTC ob then the code would be 66. If there was rain and drizzle during the period it would be 65 and if cloud was covering more than half the sky during the period it would be 22. The past weather is always coded as two digits which are separated into id_1 and id_2 in MIDAS. definition
	cld_ttl_amt_id	Total cloud amount code - definition oktas
	low_cld_type_id	Low cloud type code - definition
	med_cld_type_id	Medium cloud type code - definition
	hi_cld_type_id	High cloud type code - definition
	cld_base_amt_id	Cloud base amount code - definition
	cld_base_ht	Cloud base height decametres
	visibility	Visibility decametres
	msl_pressure	Mean sea level air pressure Unit=1 hpa to the nearest 0.1 hpa Precision aneroid barometers are now in general use for measuring pressure and a correction for altitude is applied to obtain the value at mean sea level (MSL). Please see additional notes below.
	cld_amt_id_1	Layer cloud amount code #1 - definition
	cloud_type_id_1	Cloud type code #1 - definition
	cld_base_ht_id_1	Cloud base height code #1 decametres
	cld_amt_id_2	Layer cloud amount code #2 - definition
	cloud_type_id_2	Cloud type code #2 - definition
	cld_base_ht_id_2	Cloud base height code #2 decametres
	cld_amt_id_3	Layer cloud amount code #3 - definition

	cloud_type_id_3	Cloud type code #3 - definition
	cld_base_ht_id_3	Cloud base height code #3 decametres
	cld_amt_id_4	Layer cloud amount code #4 - definition
	cloud_type_id_4	Cloud type code #4 - definition
	cld_base_ht_id_4	Cloud base height code #4 decametres
	vert_vsby	Vertical visibility decametres
	air_temperature	Air temperature Unit=1 deg C to the nearest 0.1 deg C
	dewpoint	Dewpoint temperature - is the temperature to which the air must be cooled to produce saturation with respect to water at its existing atmospheric pressure and humidity - more... Unit=1 deg C to the nearest 0.1 deg C
	wetb_temp	Wet bulb temperature - is the lowest temperature that can be obtained by evaporating water into the air. It measures the humidity of the air - more... Unit=1 deg C to the nearest 0.1 deg C
	stn_pres	Station air pressure Atmospheric pressure as measured at the station level. Correction for altitude is not applied. Unit=1 hpa to the nearest 0.1 hpa. Please see Additional notes below.
	alt_pres	Altimeter pressure Unit=1 hpa to the nearest 0.1 hpa. Please see Additional notes below.
	ground_state_id	Ground state code
	q10mnt_mxgst_spd	10 minute maximum gust speed knots
	cavok_flag	cavok flag
	cs_hr_sun_dur	Campbell-Stokes hour sunshine duration - This gives the hourly readings taken from the old Campbell Stokes Recorder
	wmo_hr_sun_dur	This gives the readings from the newer automatic sun sensor which has now replaced the Campbell Stokes Recorder. See list of UK stations recording sun hour data
	wind_direction_q	QC code - wind direction**
	wind_speed_q	QC code - wind speed**
	prst_wx_id_q	QC code - present weather code**
	past_wx_id_1_q	QC code - past weather code #1**
	past_wx_id_2_q	QC code - past weather code #2**
	cld_ttl_amt_id_q	QC code - cloud total amount**
	low_cld_type_id_q	QC code - low cloud type code**
	med_cld_type_id_q	QC code - medium cloud type code**
	hi_cld_type_id_q	QC code - high cloud type code**
	cld_base_amt_id_q	QC code - cloud base amount**
	cld_base_ht_q	QC code - cloud base height**
	visibility_q	QC code - visibility**
	msl_pressure_q	QC code - msl pressure**
	air_temperature_q	QC code - air temperature**
	dewpoint_q	QC code - dewpoint**
	wetb_temp_q	QC code - wet bulb**
	ground_state_id_q	QC code - ground state code**
	cld_amt_id_1_q	QC code - layer cloud amount #1**

	cloud_type_id_1_q	QC code - cloud type code #1**
	cld_base_ht_id_1_q	QC code - cloud base ht code #1**
	cld_amt_id_2_q	QC code - layer cloud amount #2**
	cloud_type_id_2_q	QC code - cloud type code #2**
	cld_base_ht_id_2_q	QC code - cloud base ht code #2**
	cld_amt_id_3_q	QC code - layer cloud amount #3**
	cloud_type_id_3_q	QC code - cloud type code #3**
	cld_base_ht_id_3_q	QC code - cloud base ht code #3**
	cld_amt_id_4_q	QC code - layer cloud amount #4**
	cloud_type_id_4_q	QC code - cloud type code #4**
	cld_base_ht_id_4_q	QC code - cloud base ht code #4**
	vert_vsby_q	QC code - vertical visibility**
	stn_pres_q	QC code - station pressure**
	alt_pres_q	QC code - altimeter pressure**
	q10mnt_mxgst_spd_q	QC code - 10 min max gust speed**
	cs_hr_sun_dur_q	
	wmo_hr_sun_dur_q	
	meto_stmp_time	Met Office receipt stamp time
	midas_stmp_etime	Elapsed time to storage in MIDAS minutes
	wind_direction_j	Descriptor - wind direction**
	wind_speed_j	Descriptor - wind speed**
	prst_wx_id_j	Descriptor - present weather**
	past_wx_id_1_j	Descriptor - past weather #1**
	past_wx_id_2_j	Descriptor - past weather #2**
	cld_amt_id_j	Descriptor - cloud total amt**
	cld_ht_j	Descriptor - cloud base ht**
	visibility_j	Descriptor - visibility**
	msl_pressure_j	Descriptor - msl pressure**
	air_temperature_j	Descriptor - air temperature**
	dewpoint_j	Descriptor - dewpoint**
	wetb_temp_j	Descriptor - wet bulb**
	vert_vsby_j	Descriptor - vertical vis**
	stn_pres_j	Descriptor - station pressure**
	alt_pres_j	Descriptor - altimeter press**
	q10mnt_mxgst_spd_j	Descriptor - 10 min max gust**
	rltv_hum	Calculated relative humidity
	rltv_hum_j	Descriptor - relative humidity**
	snow_depth	Snow depth cm
	snow_depth_q	QC code - snow depth**
	drv_hr_sun_dur (only in files from 2010 onwards)	Derived hourly sunshine duration This value is calculated using the MMS global radiation minute values which are each entered into a formula which determines whether each minute is 'sunshine'. An hourly sunshine value between 0 and 1 is then given based on the number of sunshine minutes. For example: 30 sunshine minutes - 30/60 = 0.5 hours; 20 sunshine minutes - 20/60 = 0.3333 hours (rounded to 0.3 hours). This is NOT to be confused or compared with the WMO hourly sunshine duration found in the daily weather table. This is calculated from the sunshine sensor directly and is not linked to the

		global radiation value like the derived figure. Both however do give a value between 0 and 1 and are in increments of 0.1
	drv_hr_sun_dur_q (Only in files from 2010 onwards)	QC code - derived hourly sunshine duration**

** Details available to registered users only.

More information about the Met Office surface data is available in the documentation provided by the Met Office.

How to start filtering the rows of data out:

1. As the data arrive at the Met Office it undergoes quality control to check that the data are correct and consistent with the surrounding data points. Whether the process has occured or not is indicated by the **version number** (1 is the one to use as indicated in the table above).

2. To show the progress of the data through the quality control the various variables will have an associated **_q value** (e.g. air_temperature_q). This _q value will have different values for each record (see details in table above).

3. While the Met Office MIDAS system overwrites the existing entry in their database the BADC's MIDAS entries do not as the BADC takes snapshots of the the MIDAS database from time to time leading to duplicate entries occuring in our archive. If duplicate records are found, check the associated meto_stmp_time to determine which record is the most recent one - this is the one to use and the other(s) can be ignored.

Additional notes

About Pressure:

All the data that appears in MIDAS is based on readings taken at the station.
All METAR observations are taken at airfields around the country and only record altimeter pressure.
All SYNOP readings taken record the actual station pressure through an automatic pressure sensor and then the MSL pressure is automatically derived from this reading (this is calculated based on the air temperature and station elevation).
If a station has both METAR and SYNOP observations then the altimeter pressure is included in the SYNOP reading within MIDAS giving all three pressure elements.

If a pressure reading does not appear in MIDAS then the Met Office do not perform any calculations to fill in the gaps. The only time that the Met Office would fill in any missing values is if a site was having maintenance done and was put in test mode which means the values are not ingested into MIDAS automatically. If this happened the Met Office would call up the exact readings and then these would be entered in. Also if the Met Office had one value missing and values either side of it then an estimate is sometimes made.

The Met Office do not have equations that they use to calculate pressure fields that are blank in relation to those pressure values recorded in MIDAS.