Key-entry Guide

Climsoft Version 3.0

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Contents

Introduction to Key-entry Guide

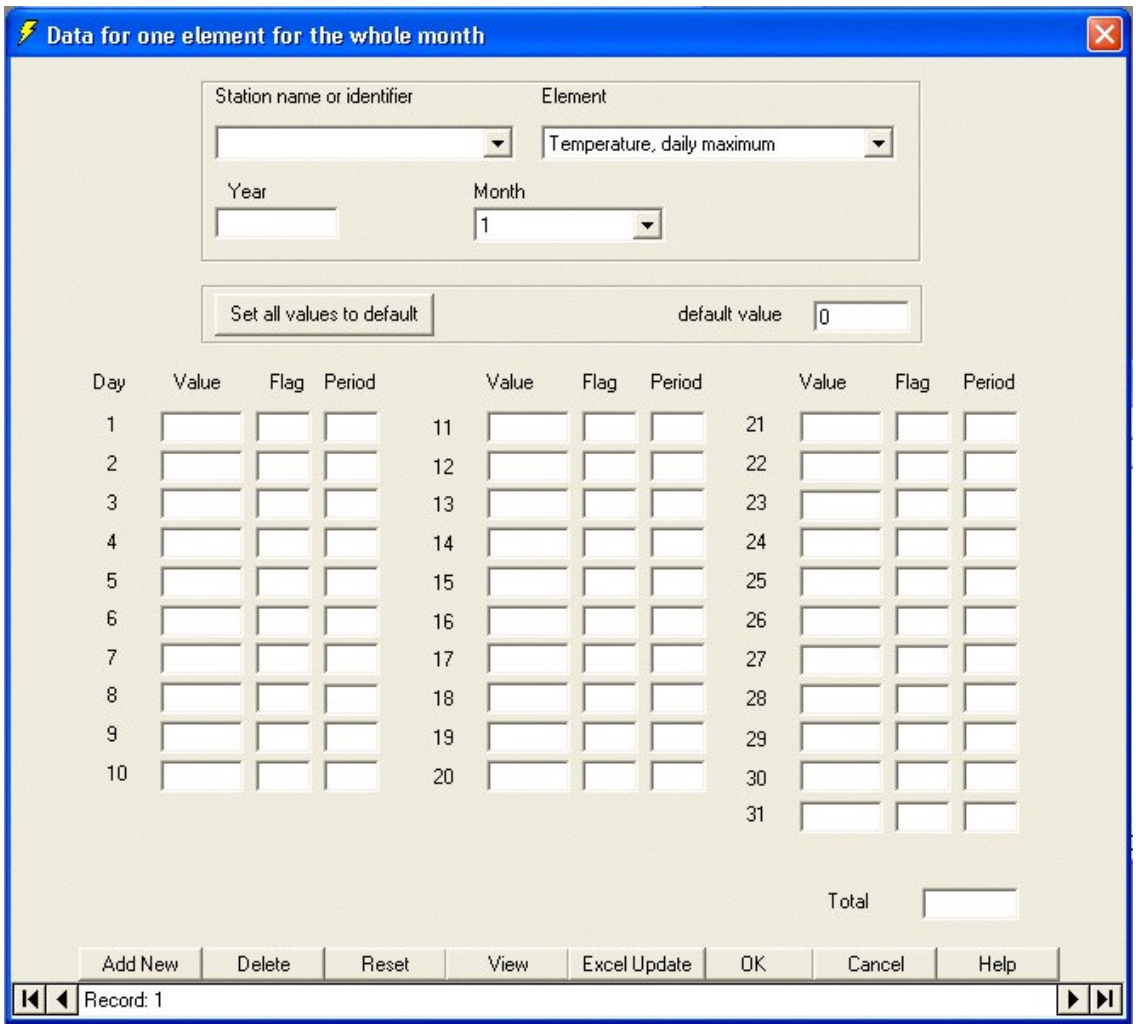
The Key Entry facility of the Climsoft program enables you to take climatic data that has been supplied on paper forms and input the data via the keyboard into the Climsoft system. A number of quality checks will be performed automatically as you enter the data to catch obvious errors. These may be caused, for example, by mis-typing on the keyboard, misreading of the paper records, or misrecording of the original observation. If a problem is detected, the program will display a suitable message, and will give you an opportunity to correct the problem.

The data that you input will be stored in a small database called the ***Temporary Work File***. This database is "temporary" in the sense that it is a holding place for data before they are transferred to the main climatic database for permanent storage. However, the contents of the Temporary Work File are preserved when you exit from the Climsoft program. When you run the program again, you can look at (and if necessary change) the records that you entered previously, and of course you can add new records. Thus you can build up the contents of the Temporary Work File over several sessions.

From time to time, the contents of the Temporary Work File can be transferred to another database, so that further consistency checks on the data can be carried out. Generally, this operation will clear the contents of the Temporary Work File.

Data Entry Form Layout

The Climsoft standard Data Entry forms all have a similar layout, to make them easy to understand and to use. They are intended to reflect the structure of typical paper forms used to record climatic data. The general layout can be illustrated by one of the forms, "Data for one element for the whole month", which allows daily data about a particular element to be entered for a whole month.



Data Entry Form Header Area

The frame at the top of the form contains general information about the record, in this case comprising the station name, element type and the year and month of the record. This information can be changed by typing into the boxes or by using the drop-down lists.

Tip: If you type the first letter (or first few letters) of the station or element name, and then click on the drop down arrow, the list will be displayed starting at the letter(s) that you typed. This makes it easier to find the name that you want in the list. Alternatively, you can type the station/element code. On pressing the Enter key, the station/element name will be displayed in the box.

Entering Data

The central area of the form contains boxes for entering the data values. The number of boxes and their arrangement will vary depending on the purpose of the form. You can use the Enter or Tab keys to move between boxes, or you can click on another box with the mouse. Error checking will be invoked whenever you leave a box, and a message will be displayed if it contains an incorrect value. See the section on QC During Key-entry.

In most of the forms, a Flag field is associated with each data value. Normally this is blank, but a code letter (the “flag”) may appear in this field for certain data values. The codes are:

E The data value is an estimated value rather than an observed value.

G The data value has been generated from other values.

M The data value is missing (i.e. blank).

T The data value has been recorded as zero, but a very small trace was observed.

You cannot enter values directly into the flag field. To record flags E and G, type the data value immediately followed by the flag letter into the value box, for example 12.3E. You can type the letter in either upper or lower case. Climsoft will recognise this as an estimated value, and insert E into the flag box. A trace is recorded by typing 0T into the value box. Climsoft will only accept the trace flag if the data value is zero. Climsoft automatically inserts an M into the flag box if the data value box is left blank.

A Total field is included in some of the data entry forms. You can use this to enter the total value of all the data values that you have entered. If you type a value into the Total field, Climsoft will check that the total is correct and display an error message if it is not. This provides a simple check against typing mistakes.

Key-entry Command Buttons

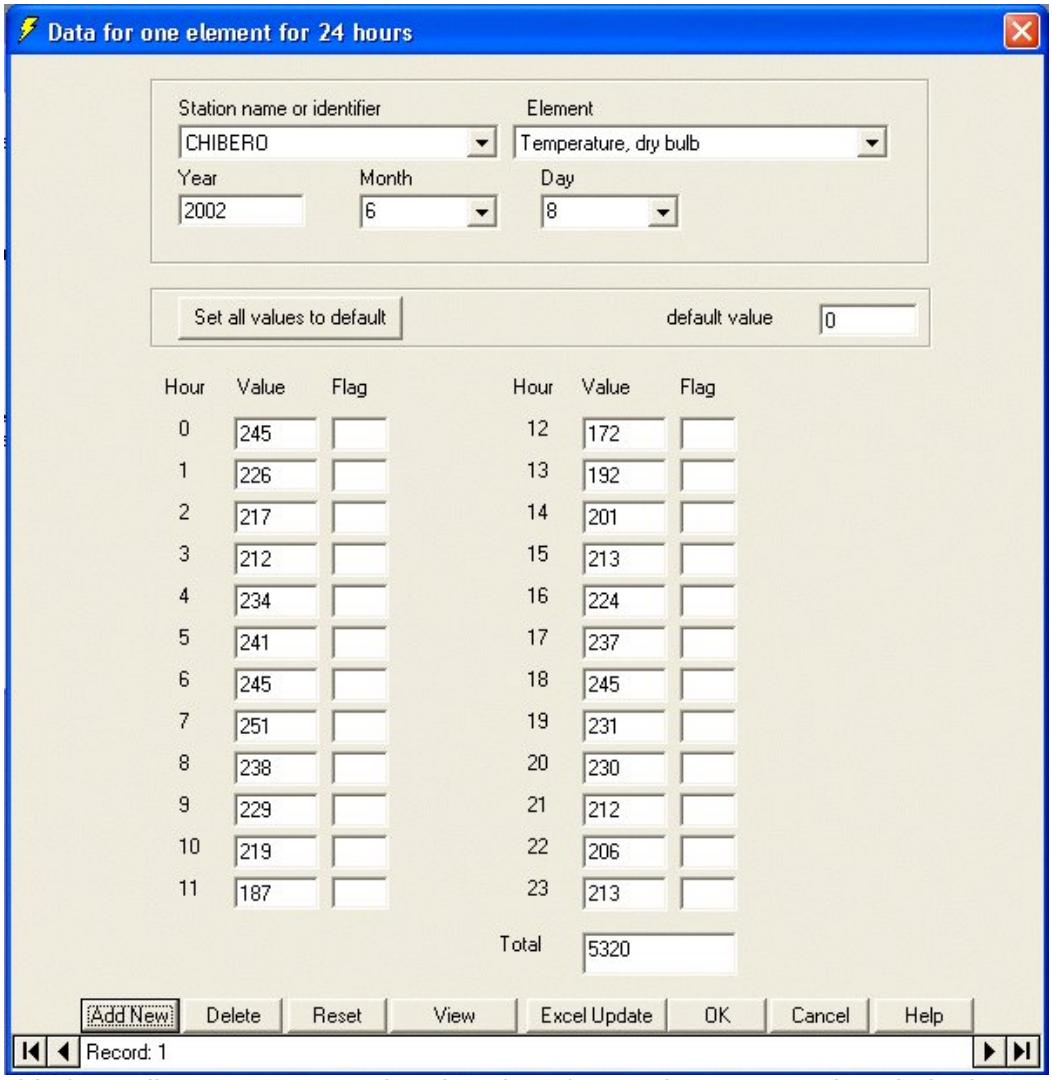
COMMAND BUTTON	FUNCTION
AddNew	Inserts a new record at the end of the table. Unless the System administrator has specified otherwise, the station name has the same value as the previous record, and the date is updated to the next in sequence (e.g. the next day if this is a daily record).
Delete	Deletes the current record.
Reset	Clears all the data and flag fields in the form. The header fields are not affected.
View	Displays all the records corresponding to this form that are currently in the Temporary Work File. The data are displayed as an Excel worksheet, which you can modify or otherwise handle using Excel.
Excel Update	Updates any changes you would have made in Excel after viewing the form data in Excel.
OK	When you have input all the required records for this type of form, then use the **OK** button to exit from the form. This inserts the current record into the Temporary Work File before exiting from the form.
Cancel	Exits from the data entry form without writing the current record to the temporary work file . Any data that you have entered or changed in the current record will be lost, so be careful!
Help	This gives help about the current form.

Data Entry Forms

The following data entry forms are supplied with the standard Climsoft system, and are associated with the supplied **Temporary work file:**

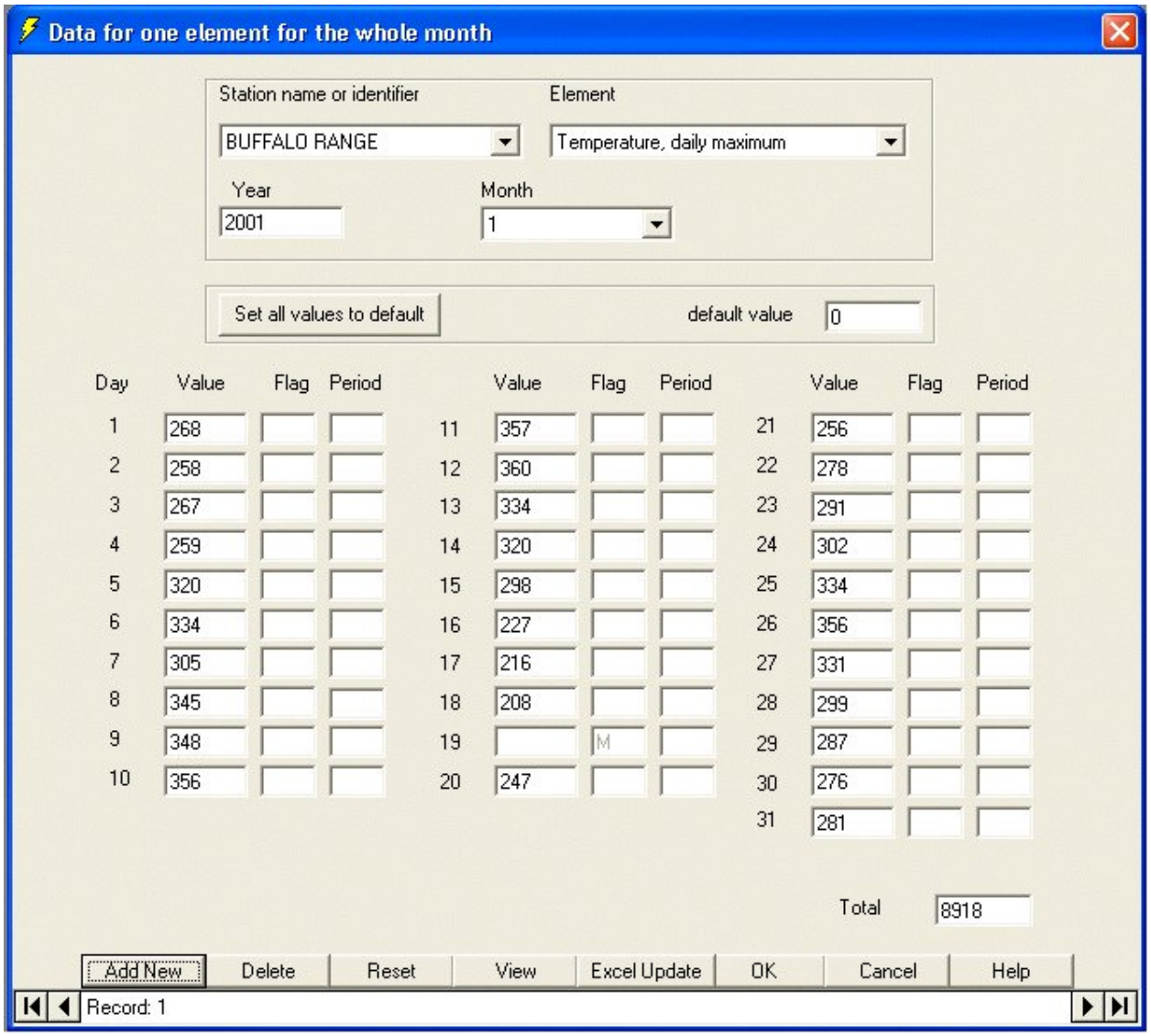
- Data for one element for 24 hours: hourly values of a single element in a specified day.
- Data for one element for the whole month***:*** daily values for a whole month of a single element.
- Data for some elements for one day: summary values of several elements on a specified day.
- Synoptic data for one hour for one element for the whole month: values of a single element at a specified time of day in a specified month.
- Synoptic data for many elements for one observation time: values of several elements at a specified time on a specified day.
- Synoptic data for all hours for one element: values of a single element at 3-hourly intervals on a specified day.
- Rainfall Data: Sample rainfall data used in ZimMet
- Upper air data for several elements for one day: summary values of several upper air elements at a specified level on a specified day.
- Upper air data for one element and one level for the whole month: daily values for a whole month of a single upper air element at a specified level.
- Hourly Wind Data: Wind direction and speed for 24 hours. This data typically comes from a wind clock instrument e.g. Dines Anemograph.
- Temperature Data: This is a sample data entry form for temperature data used in Uganda.
- Agromet Data: Sample data entry form to capture Agro-meteorological data and is used in the Kenya Meteorological Department.

Data for one element for 24 hours



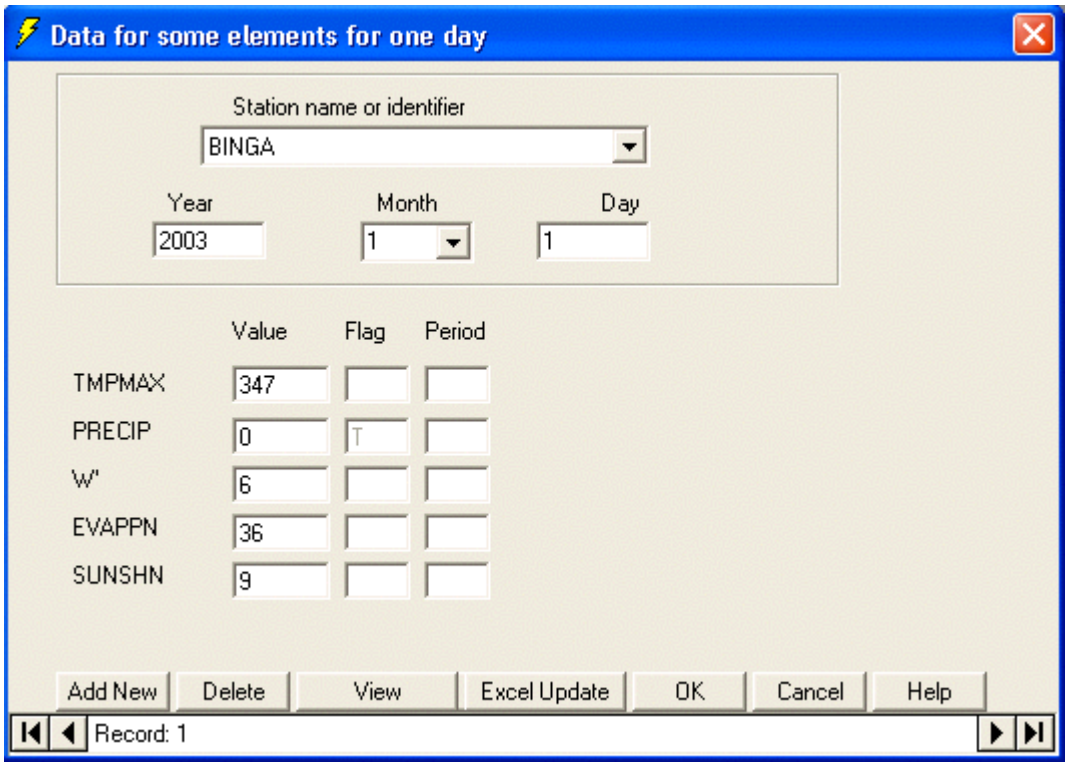
This form allows you to enter hourly values for an element over the whole day. In this example, 23 hourly dry bulb temperatures were entered. Note that the temperature values are given in tenths of a degree Celsius, so that 212 means 21.2°C.

Data for one element for the whole month



This form allows you to enter daily values for an element over the whole month. In this example, 31 daily maximum temperature values (in tenths of a degree) were entered for January. This form displays the number of days in a month e.g. if the month is February of a leap year, then 29 days will be shown.

Data for some elements for one day



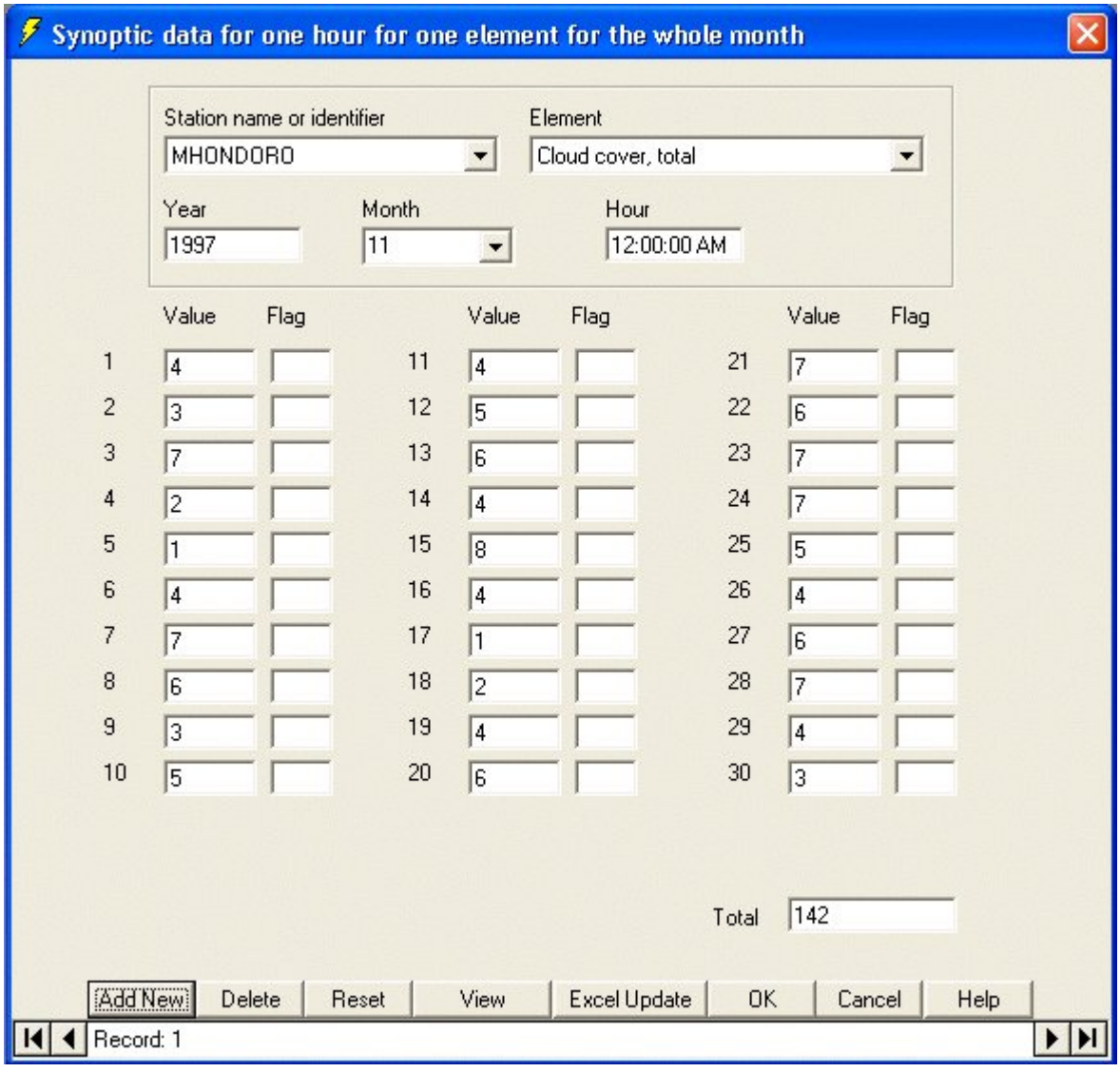
This form allows you to enter summary values for certain elements for a particular day. *The form is suitable for entering data for daily elements (which require booking back) soon after an observation* .An example of such values is given below. Daily values which are not booked back e.g. minimum temperature and ground minimum temperature are best entered on form_synoptic2 which is suitable for entering many synoptic elements for the same observation time.

TMPMAX	Maximum temperature, expressed in tenths of a degree Celsius, omitting the decimal point. Thus 347 means 34.7°C
PRECIP	Total rainfall in tenths of a millimetre.
W'	24 Hour past weather code (0 to 9)
EVAPPN	Evaporation in tenths of a millimetre.
SUNSHN	Amount of sunshine recorded in hours.

The period fields can be used to indicate that the record spans more than one day. For example, a record for Monday might span the 3-day period from Saturday to Monday if the observers do not

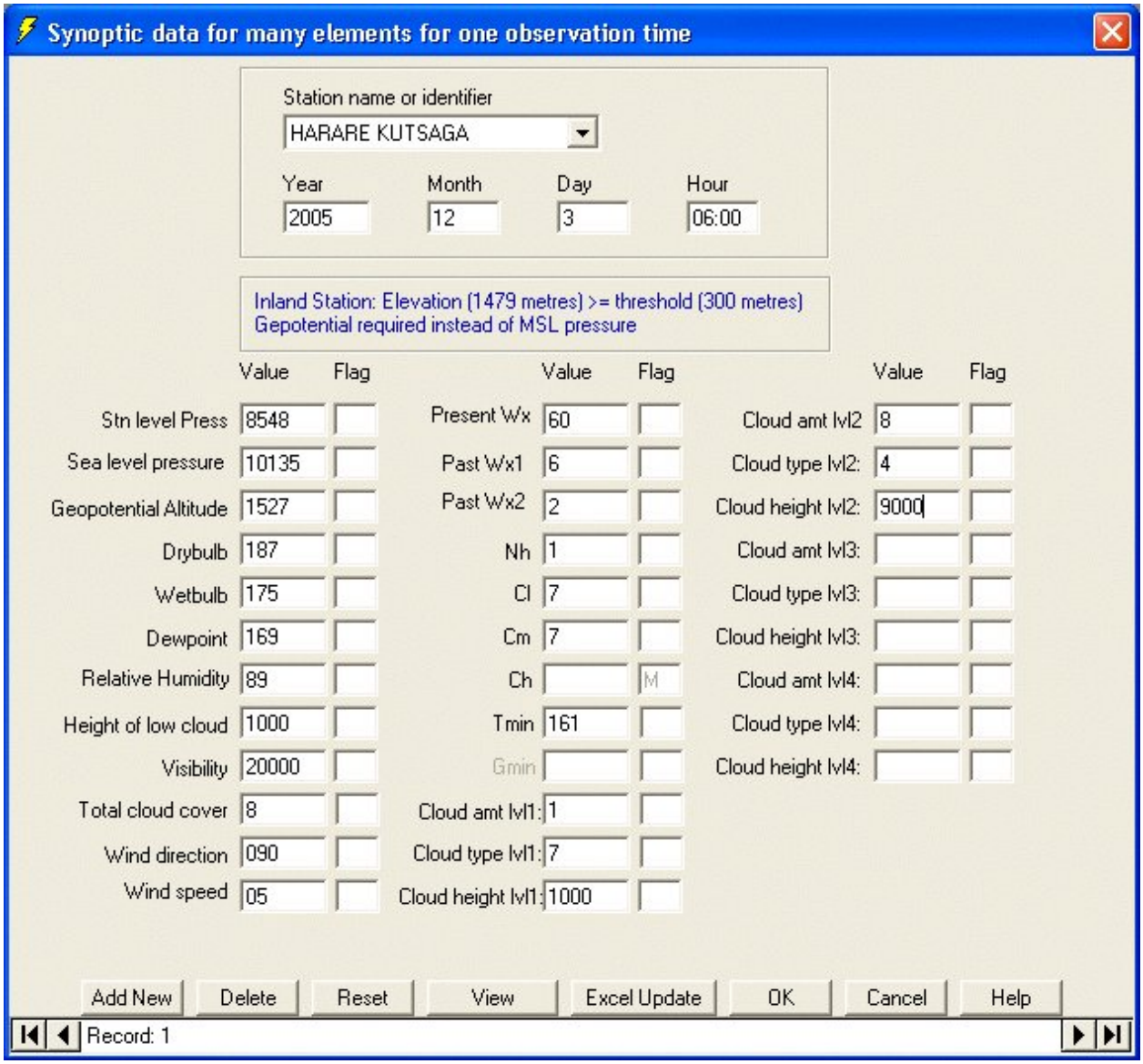
work at weekends. In this case, the value 3 should be entered. If the period boxes are left blank, the default value of 1 day is assumed.

Synoptic data for one hour for one element for the whole month



This form allows you to enter values for an element measured daily at a particular time over the whole month. In the example above, 30 cloud cover values (in oktas) taken at 12:00:00AM were entered.

Synoptic data for many elements for one observation time



This form allows you to enter values for certain elements for a particular time on a specified day. *The form is suitable for entering data soon after a synoptic observation.* The elements are typically those contained in a synoptic report. One significant feature on this form is the automatic calculation of dewpoint temperature, relative humidity, pressure reduced to mean sea level and geopotential height. Once the station level pressure and drybulb temperature have been entered, there is automatic calculation of pressure reduced to mean sea level and the geopotential height. Depending on the altitude of a station, either mean seal level pressure or geopotential height is required to be included in a synop message. Low lying stations are

required to report mean sea level pressure while high altitude stations are required to report geopotential height.

Data from this form can be coded into a synop message in CREX format.
The key-entry form requires visibility to be entered in metres and cloud height to be entered in feet. The cloud height will be converted to metres by the ClimSoft software. Likewise, total cloud cover entered in oktas will be converted to percentage as required by the CREX format.

Values for some elements are required only at a particular observation time e.g. minimum temperature is required only at the time scheduled for daily elements, while ground minimum may be required only for winter months, but at the same observation time with minimum temperature. Months for which ground minimum temperature is required are selected in table **gmin_months** in the **Temp work file**. See Fig .1 below. The time for daily elements is set in the **Options** accessed via **Tools** on the main menu. Pressure reduced to mean sea level is required for coastal stations while geopotential is required for high altitude inland stations. The threshold elevation and the reference pressure level are also set on the **Options** dialogue.

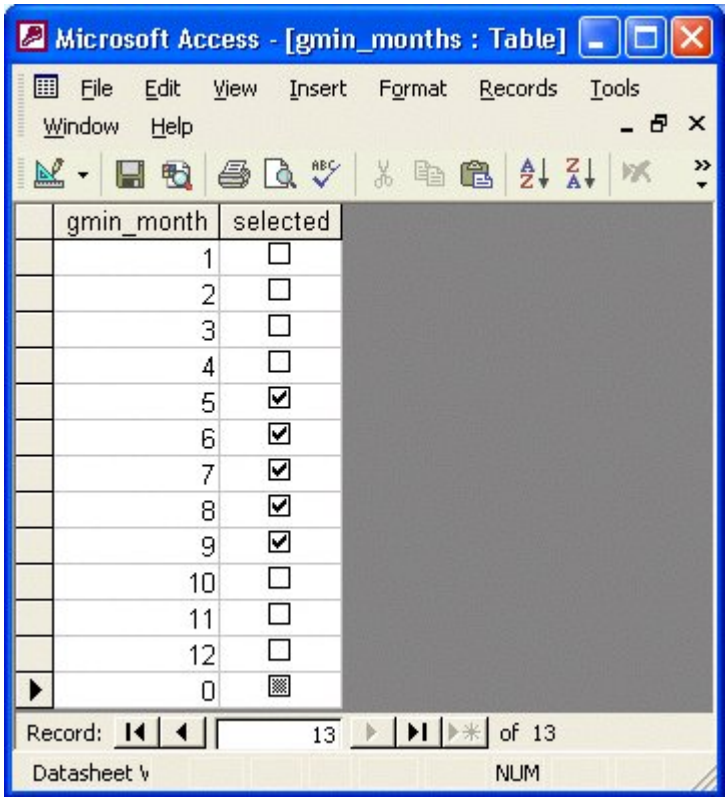
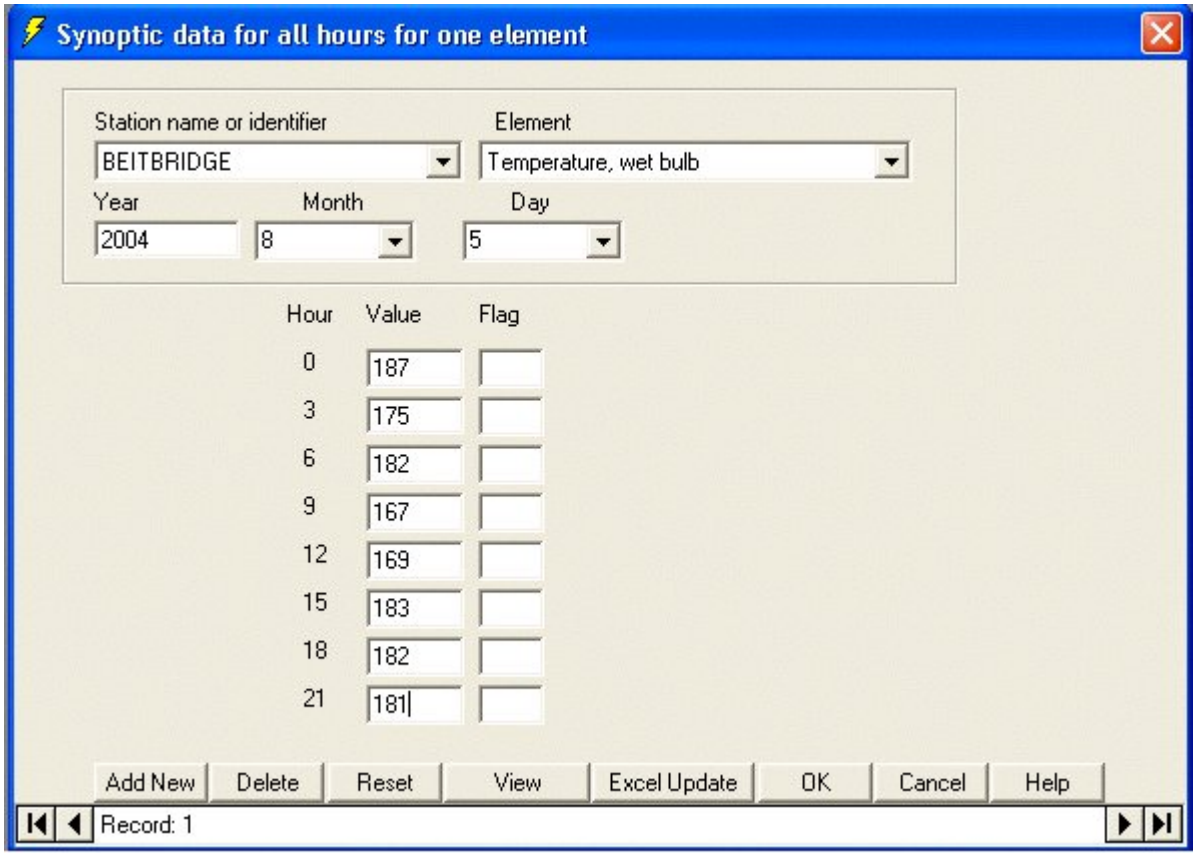


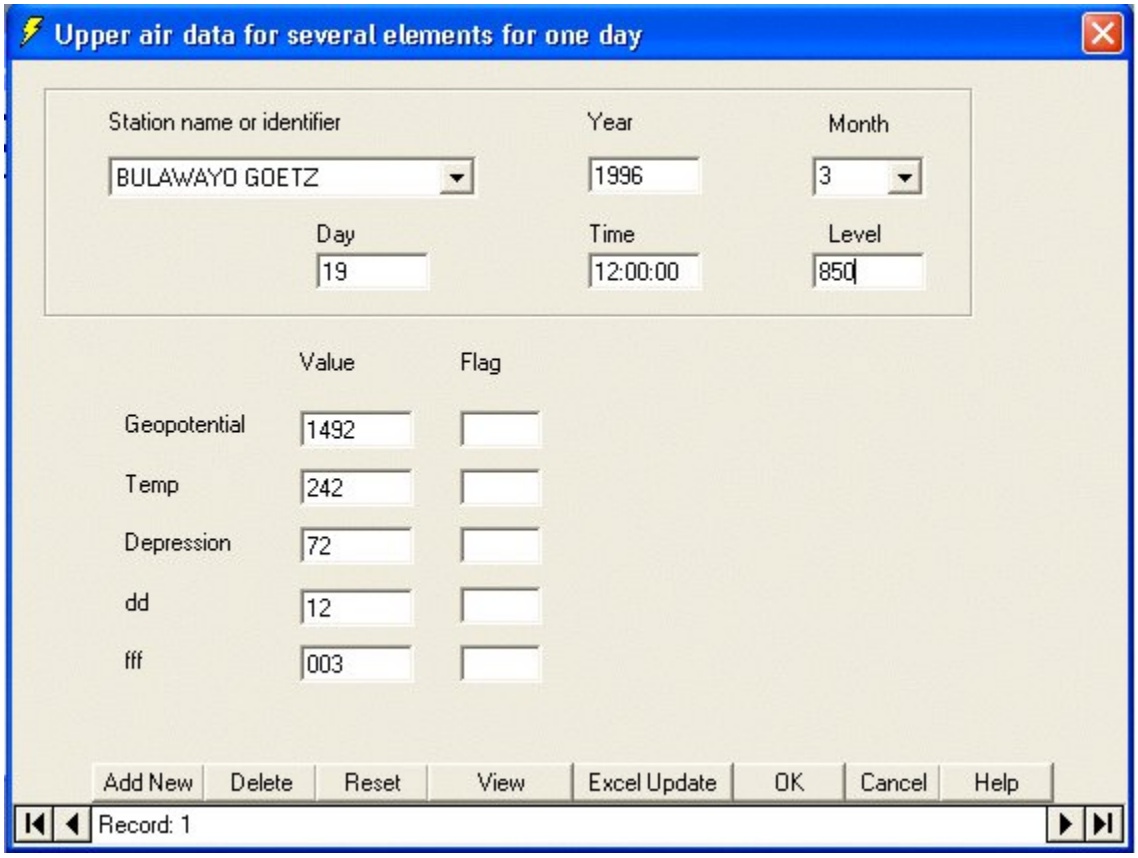
Fig 1. Selection of ground minimum months

Synoptic data for all hours for one element



This form allows you to enter values for an element every three hours over the whole day. In the example above , 8 3-hourly wet bulb temperature values have been entered.

Upper air data for several elements for one day

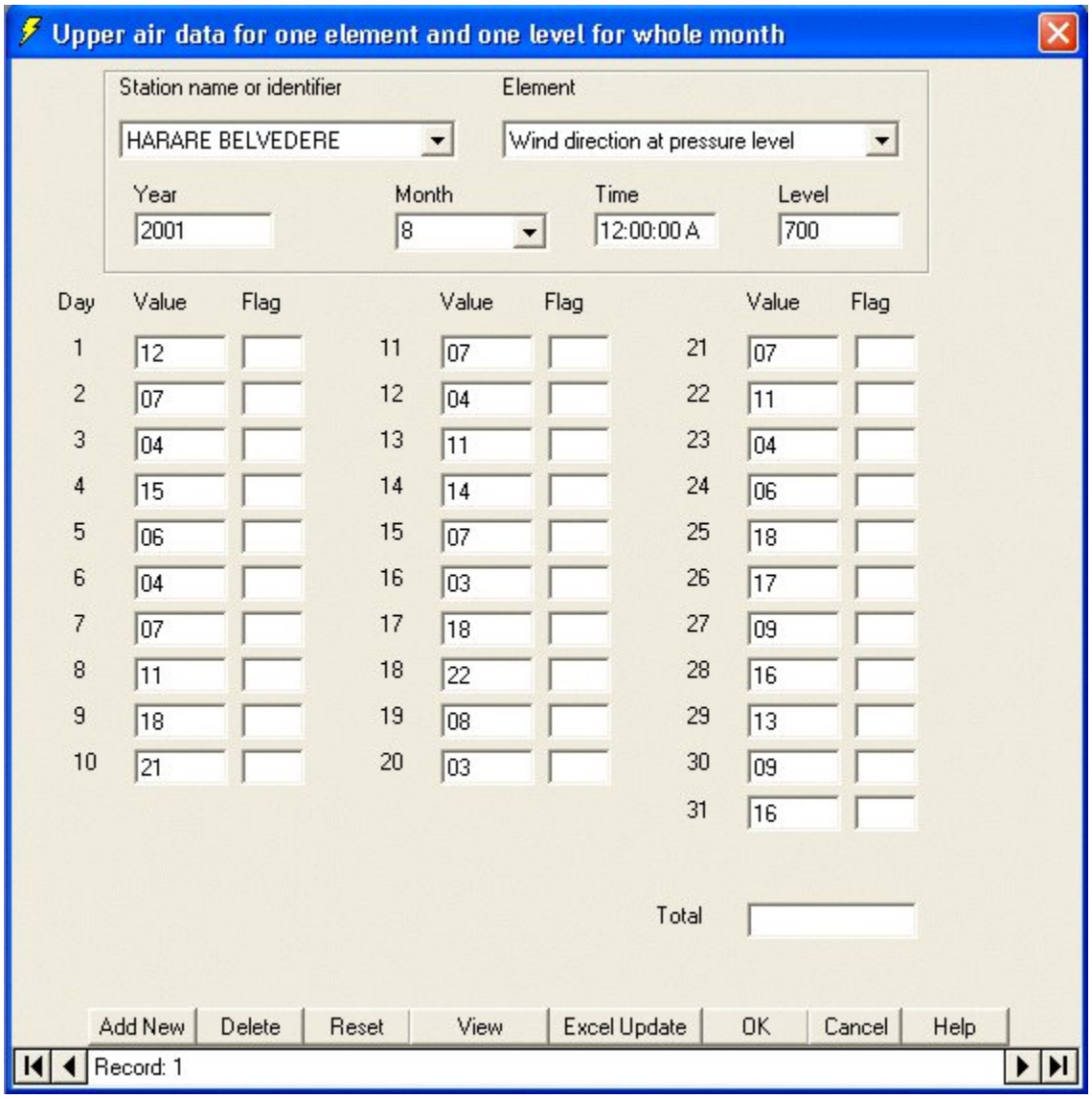


This form allows you to enter summary values for certain upper air elements for a particular day and time. It also records the level at which the readings were taken (generally in units of hectopascals or millibars).

The summary values are:

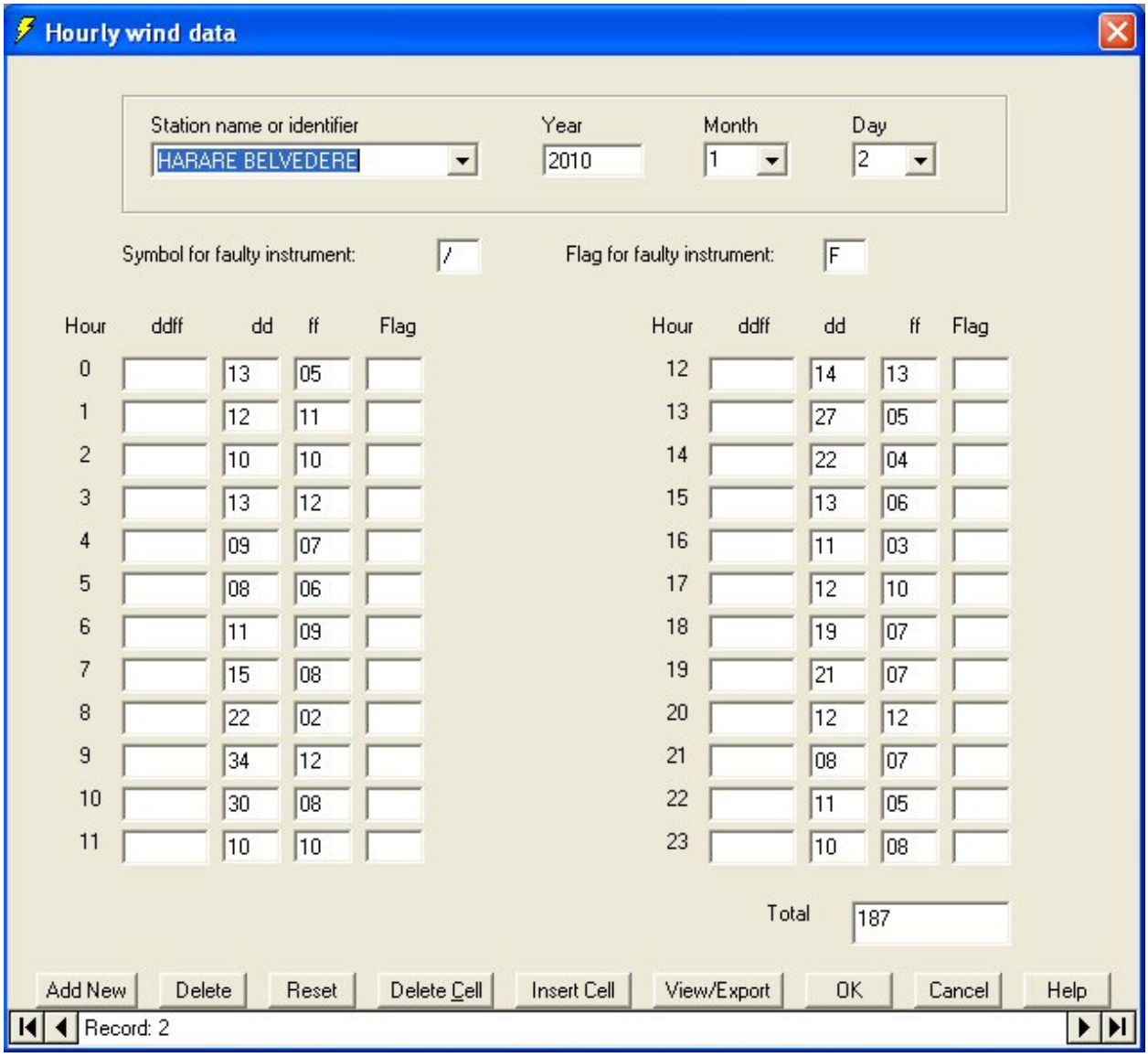
geopotential	Height
temp	Temperature.
depression	Dew point depression.
dd	Wind direction
fff	Wind speed.

Upper air data for one element and one level for the whole month



This form allows you to enter daily values for an upper air element over the whole month. For example, 31 daily wind direction at pressure level 700 hPa values were entered for August 2001.

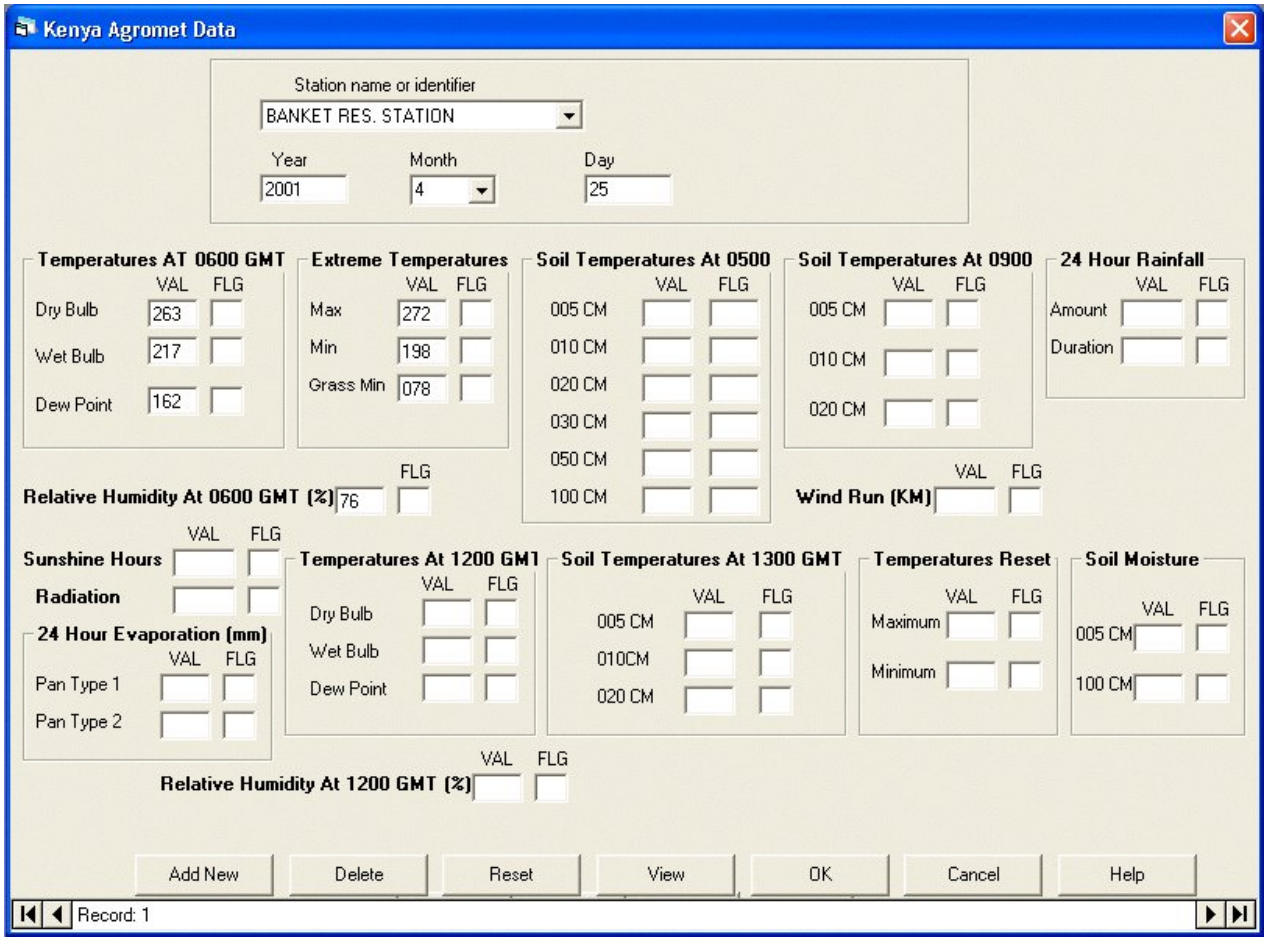
Hourly Wind Data



This allows hourly wind data to be entered as one figure which would be automatically separated into direction and speed.

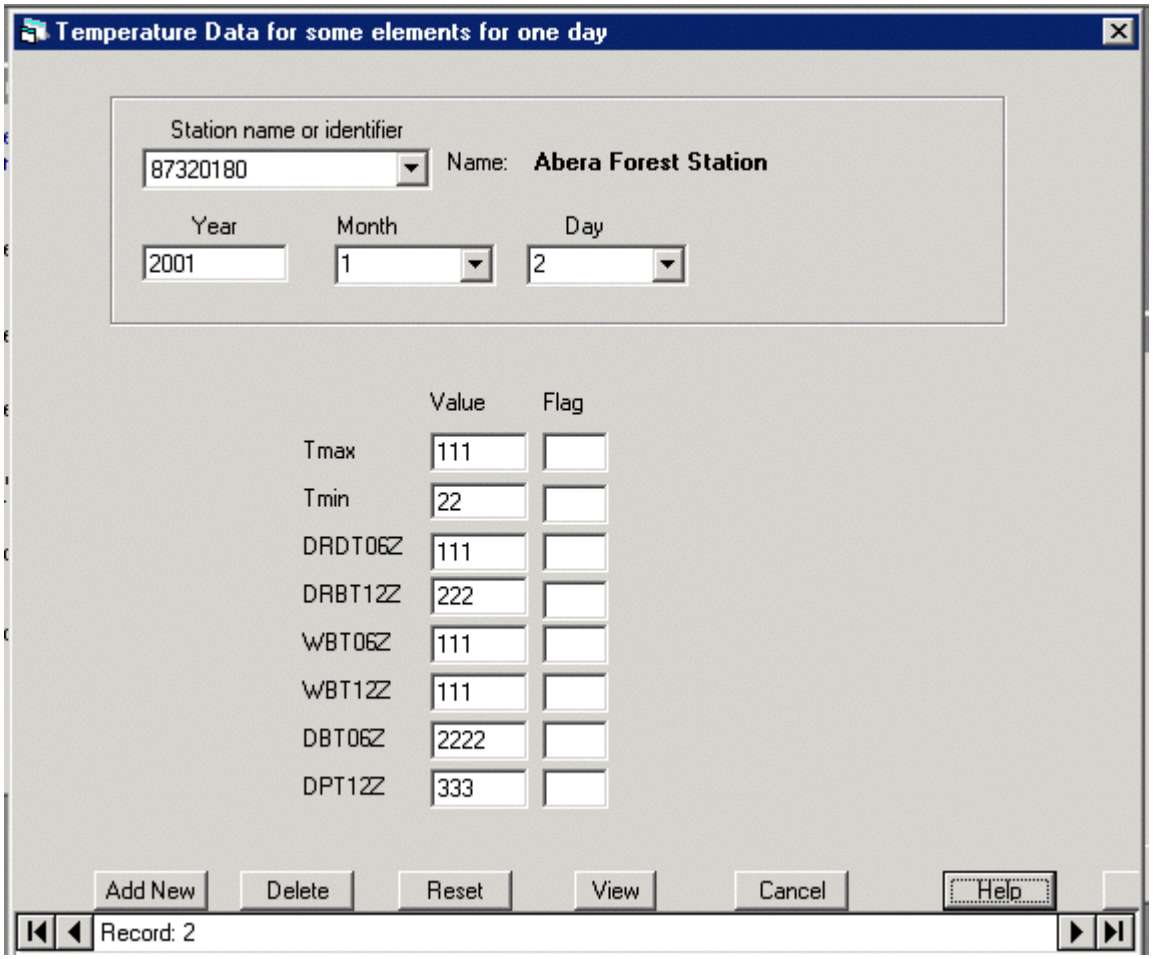
The administrator is free to change the symbol to represent faulty instrument and also the flag for faulty instrument.

Agromet Data



This form allows you to enter daily observation of agrometeorological data for many elements. Except Relative Humidity, Wind Run and Radiation the rest of the elements are entered with a factor of 0.1

Temperature Data



Sample data entry form for temperature.

Monthly Data

The form has been designed to be consistent with the Climsoft data model, which defines a daily observation as having a **period**, among other attributes. The default value for the observation period is one day. In the case of monthly data, the period is equal to the number of days in a given month. The day of observation is set to the last day of the month, which has the same value as the observation period, and the time of observation is taken to be the standard time for recording daily values in a given Met Service.

When entering monthly values on the form, the observation period is automatically calculated and placed in the corresponding 'period' field for a perticular month (including February of a leap year). This means that the element selected should be the one for daily data e.g. element code "**5**" for precipitation. An appropriate flag may be added to further qualify the data value, though the period attribute may be considered to be sufficient. An example of a suitable flags would be "**A**" for **accumulated** or "**C**" for **cumulative** and "**A**" for **averaged**, depending on how the flags have been defined in the" flags" table.

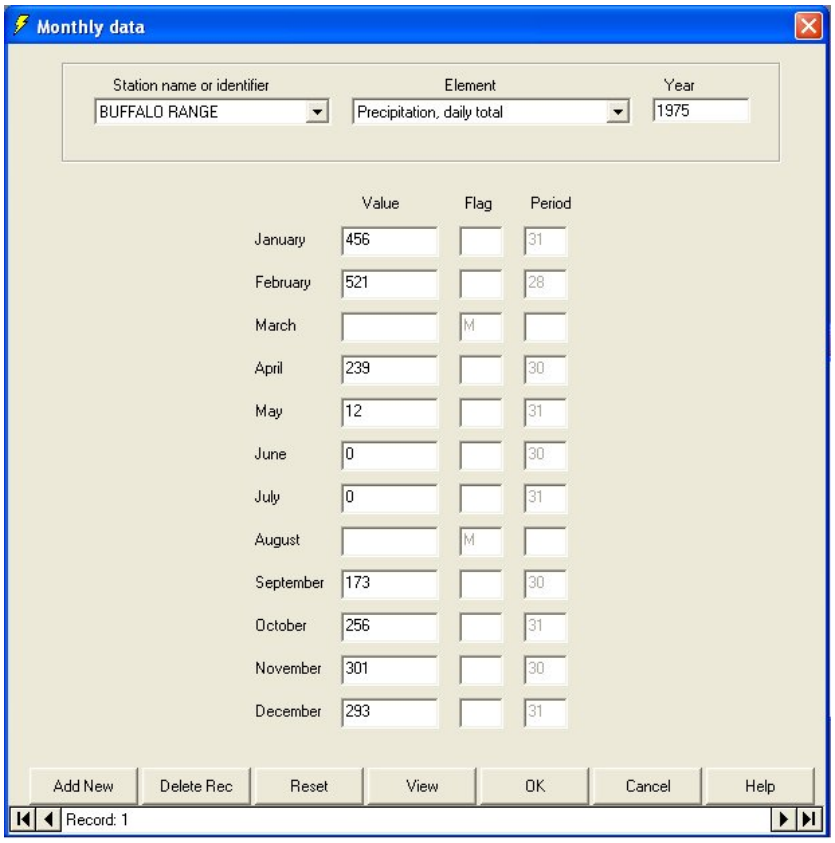


Fig 1. Key-entry form for monthly data

QC During Key-entry

When you click the AddNew or OK buttons, or if you move to another record, Climsoft will perform validity checks on all the values in the current record before writing it to the Temporary Work File. If any of these checks fail Climsoft will remain in the current record, and will display an explanatory error message. It will also highlight the offending value with a coloured background.

An error message will also be displayed if you have typed an incorrect value in a data field and have tried to move to the next field by pressing Enter.

The following types of errors may occur:

- The specified station name or element are not defined. This should only occur if you have typed a name into the box, rather than selected a name from the drop-down list.
- The date (or time) is impossible, for example 31st November.
- The date lies outside the period that the station was active, or the period when the station was equipped to record the specified element.
- A non-numeric character has been typed into a numeric field (apart from valid flag codes).
- The value in a field lies outside the global range of values allowed for this element.
- The value in a field lies outside the local range of values allowed for this station. The allowable range may also depend on the month, for example to allow for different temperature ranges in cool and warm months.
- The total (if specified) is incorrect.

For some types of error (values that are valid but out of range), the message box gives you a choice of the action to take. If you click Cancel, the cursor will be placed back into the box to allow you to correct the error. If you click OK, the dubious value will be accepted, but the coloured background remains to indicate that this value needs further investigation. This may occur, for example, when a genuinely extreme value occurs (e.g. the lowest temperature ever recorded), or where the correct value cannot easily be determined.

For other types of error (values that are invalid), you can only click on OK, and Climsoft will not continue until you have corrected the error.