Climsoft – Metadata Management

February 2020

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1. Introduction

Welcome to the Climsoft version 4 Metadata Management Guide. This guide is intended for administrators who wish to import, modify or create metadata.

For the purposes of Climsoft, metadata refers to information about stations, elements, instruments and other objects in the Climsoft database. Station and element information must be in place in Climsoft database before data for that station and element can be added into the database. We would anticipate this information being added by the site administrator.

Climsoft uses metadata to describe the data archived in its database. It's therefore important to manage the metadata well and ensure all metadata are in place before the data is loaded into the Climsoft database.

2. Getting Started

To start, sign into Climsoft, then click on the "**Metadata Information**" icon, located at the welcome dialog. This will open the dialog box shown in Figure 1. This dialog facilitates the management of all metadata in Climsoft database.

The main interface for the metadata management consists of menu bar, tabs, text boxes and commands. Each tab opens a dialog for management of each metadata type. The interface opens with the dialog for station metadata as the default (Figure 1).

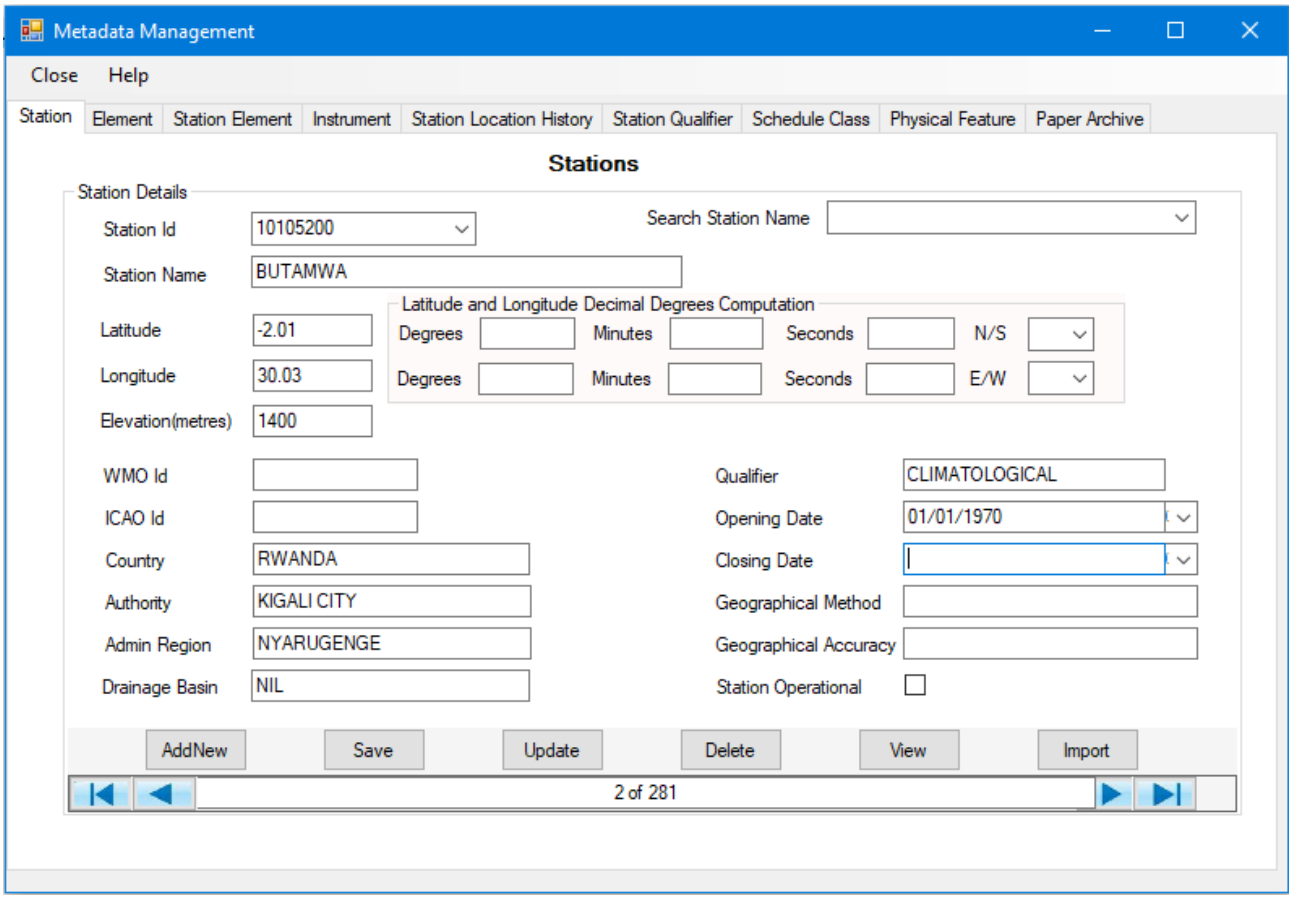

Figure 1 - Metadata Management dialog

3. Station

Attributes of station metadata

Attribute	Description
Station ID	This is the unique identifier for the station and is alphanumeric; each station must have a unique ID. It is also used to search the station by typing the ID
Station Name	The name of the station
Search Station Name	To locate the station very quickly using the station name.
Latitude	Latitude in decimal degrees
Longitude	Longitude in decimal degrees
Latitude and Longitude Decimal Degrees computation	To convert directly a new station metadata with geographical coordinates (Latitude and Longitude in Degrees, Minutes and Seconds) into Degrees Decimal.
Elevation	Height above the sea level measures in metres
WMO Id	WMO Station Identification number
ICAO Id	ICAO Station Identification number
Country	Country in which the station is located
Authority	Administrative authority where the station is located (District, Country, Province, etc.)
Admin Region	Administrative region where the station is located.
Drainage Basin	An area of land from which the rain flows into a particular river or lake.
Qualifier	Qualifier for the station (e.g.: synoptic, agro-met., climate, rainfall, etc.)
Opening Date	Date that the station started operating
Closing Date	Date that the station finished operating; note: if the station is still operational then this should be left blank.
Geographical Method	Geographical Method (Coordinate Reference System) through which geographical coordinates are determines (E.g. WGS 84 (reference coordinate system used by the Global Positioning System), WGS 74, WGS 66, etc.)
Geographical Accuracy	The locations measurement are never 100% accurate but within some fraction of a degree e.g. six decimal places.
Station Operational	This is a check box to indicate whether or not the station is currently operational

Table 1 – Attributes of station metadata dialog

- Adding a station record

Step1: Click **AddNew** command button to obtain a blank form

Step2: Enter metadata values for the station:

- Select **Station Id** is mandatory;
- **Opening Date** and **Closing Date** values will be obtained from the date picker. Where they cannot be determined they may be left blank. If the station is still operational, it means that it does not have the closing data, in this case, the closing date will be left blank (in

previous versions of Climsoft, stations which are still operational use to have the value "31/12/9999" to explain that there are still operational and not yet closed, but in Climsoft version 4, stations with such closing date ("31/12/9999") inherited from previous versions of Climsoft can be imported into Climsoft version 4 but cannot be entered or typed in the Closing Date text box because the text box is using the calendar date and "31/12/9999" is not a valid calendar date).

- **Latitude** and **Longitude** must be entered in decimal degrees. However, a dialog to convert directly geographical coordinates in degrees, minutes and seconds (Latitude and Longitude in Degrees, Minutes and Seconds) into Degrees Decimal is provided.

- The **Station Operational** box should be unchecked if the station is no longer operational

- Updating (editing) existing station record:

Step1: Use either **Search Station Name** box or **Station Id** to locate the station

Step2: Edit the desired values

Step3: Click **Update**

- Deleting a station:

Step 1: Use either **Search Station Name** box or **Station Id** to locate the station

Step2: Click on **Delete**

- Common Metadata dialog structure

All metadata dialogs have the same structure. They consist of the following controls:

CONTROL	FUNCTION
Text boxes	For the input of metadata values or showing the values for the selected record.
Scroll bar	To navigate through the metadata records
Search Station Name List Box	Searches station for the selected name and displays its details in the text boxes
Station Id List box	It can also be used to search by selecting its Station Id value.
AddNew	Adds a new metadata record after details have been typed in. The Station Id value is mandatory
Save	To save the selected record in the database
Update	Saves the changes made on the selected record in the database
Delete	Removes/delete the selected record from the database
View	Displays the metadata records in a tabular form or datasheet view
Import	Opens a dialog through which stations metadata in a text (csv) can be imported into Climsoft

Table 2 – common elements of metadata Controls

- Importing Stations Information

The metadata import file can be created using Excel spreadsheet then saved as text Comma Separated Values (CSV) with column headers. (Figure 2 and Figure 3).Other file format will not be imported into Climsoft, other than CSV.

id	wmoid	aviationid	begin_datetime	end_datetime	station_name	district	country	qualifier	drainagebasin	latitude	longitude	elevation
8435001			01/01/1970 00:00		KIBISH POLICE POST	TURKANA	KENYA	RAINFALL	2B	5.23	35.85	547
8534000			01/01/1949 00:00		LOKICHOGGIO POLICE POST	TURKANA	KENYA	RAINFALL	2B	4.25	34.35	638
8534001			01/01/1985 00:00		LOKICHOGIO LOPANDING AMREF STATION	TURKANA	KENYA	RAINFALL	2B	4.2	34.4	638
8534002			01/01/1986 00:00		LOKICHOGIO A.I.C	TURKANA	KENYA	RAINFALL	2B	4.2	34.35	638
8534003			01/01/1987 00:00		LOKUDULE PRIMARY SCHOOL	TURKANA	KENYA	RAINFALL	2B	4.05	34.83	547
8535000			01/01/1932 00:00		LOKITAUNG D.O.'S OFFICE	TURKANA	KENYA	RAINFALL	2B	4.25	35.75	729
8535001			01/01/1948 00:00		TODENYANG POLICE POST	TURKANA	KENYA	RAINFALL	2B	4.53	35.91	395
8535003			01/01/1966 00:00		KOKURO POLICE POST	TURKANA	KENYA	RAINFALL	2B	4.66	35.71	608
8535004			01/01/1970 00:00		KAMATHIA POLICE POST	TURKANA	KENYA	RAINFALL	2B	4.9	35.35	760
8535005			01/01/1973 00:00		KALENG TRADING CENTRE	TURKANA	KENYA	RAINFALL	2B	4.38	35.55	730
8535006			01/01/1973 00:00		LOWARENGAK MISSION	TURKANA	KENYA	RAINFALL	2B	4.28	35.9	380
8535007			01/01/1985 00:00		LOKITAUNG SECONDARY SCHOOL	TURKANA	KENYA	RAINFALL	2B	4.28	35.78	730
8535008			01/01/1986 00:00		KAIKOR T. R. P.	TURKANA	KENYA	RAINFALL	2B	4.53	35.4	700
8535009			01/01/1986 00:00		KACHODA T. R. P.	TURKANA	KENYA	RAINFALL	2B	4.35	35.63	547
8535010			01/01/1990 00:00		TODENYANG A. P. POST	TURKANA	KENYA	RAINFALL	2B	4.61	35.93	410
8535011			01/01/1992 00:00		NACHUKUI PRIMARY SCHOOL	TURKANA	KENYA	RAINFALL	2B	4.08	35.91	410
8535012			01/01/1983 00:00		KOYASA A. P POST	TURKANA	KENYA	RAINFALL	2B	4.95	35.65	608
8536000			01/01/1948 00:00		SABAREI POLICE POST	MARSABIT	KENYA	RAINFALL	2A	4.35	36.9	760

Figure 2 - Structure of stations metadata file in Excel format

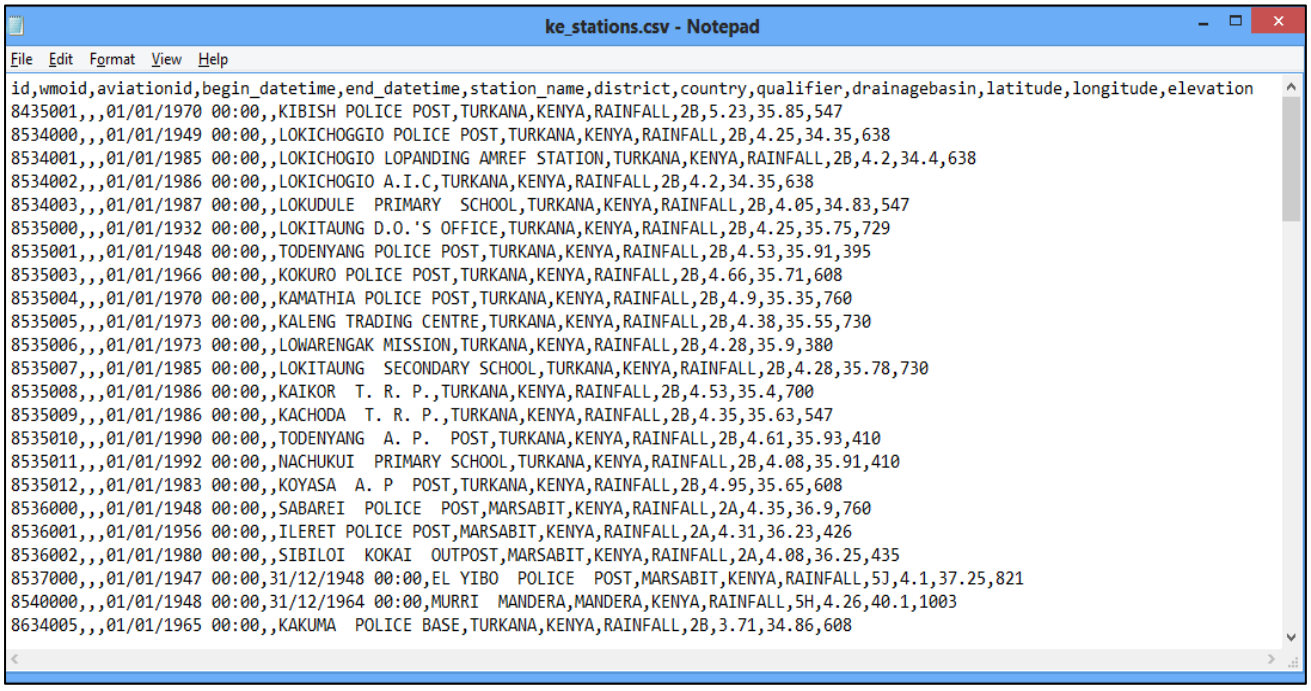

Figure 3 - Structure of stations metadata file in text format (csv)

Follow the steps below to import stations information into Climsoft version 4:

Step 1: Sign into Climsoft as "**administrator"**;

Step 2: Click on **"Metadata Information"** icon, located in the welcome window, by default the station dialog will be displayed;

Step 3: Click on the **"Import"** button on the station dialog;

Step 4: Browse the folder under "Text File (csv) to the file containing station information and then;

Step 5: Click on **"import"** button to open the Metadata Import dialog (Figure 4)

Note: The column headers in the text file are listed in the **Import Field Name** column of the dialog (Figure 4).

Step 6: For each field double click on the "**Select Fields"** to select the corresponding field name from the database;

Step7: When through click **Import** command. The metadata will then be imported and any station that fails to import will be listed in **Errors messages** box **(e.g. 76 Duplicate entry '8734003' for key 'PRIMARY')** and the cause of the failure.

Step 8: Scroll through the error messages and find out what corrections can be done in the text file then repeat the exercise. Duplicate errors should be ignored since it indicates the record already exists in the database;

Step 9: Click **Close** to exit the dialog.

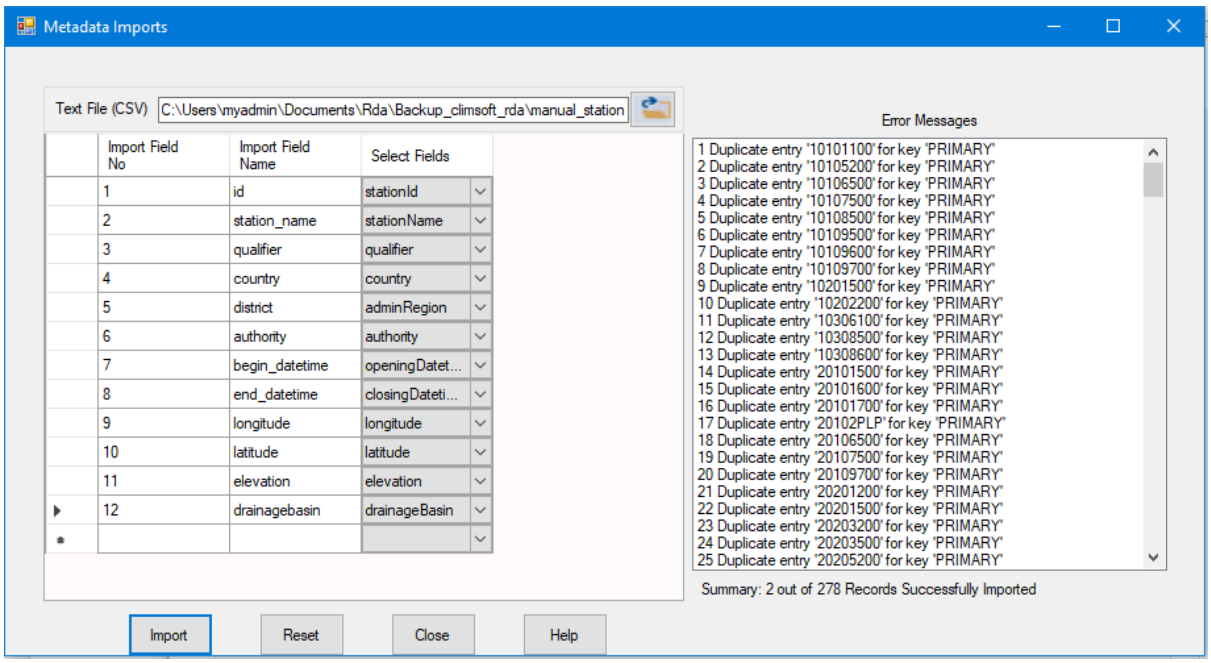

Figure 4 - Importing stations metadata

- View stations information

To view the list of stations imported in datasheet view or tabular form, click on **"View"** command button to open the dialog below (Figure 5).

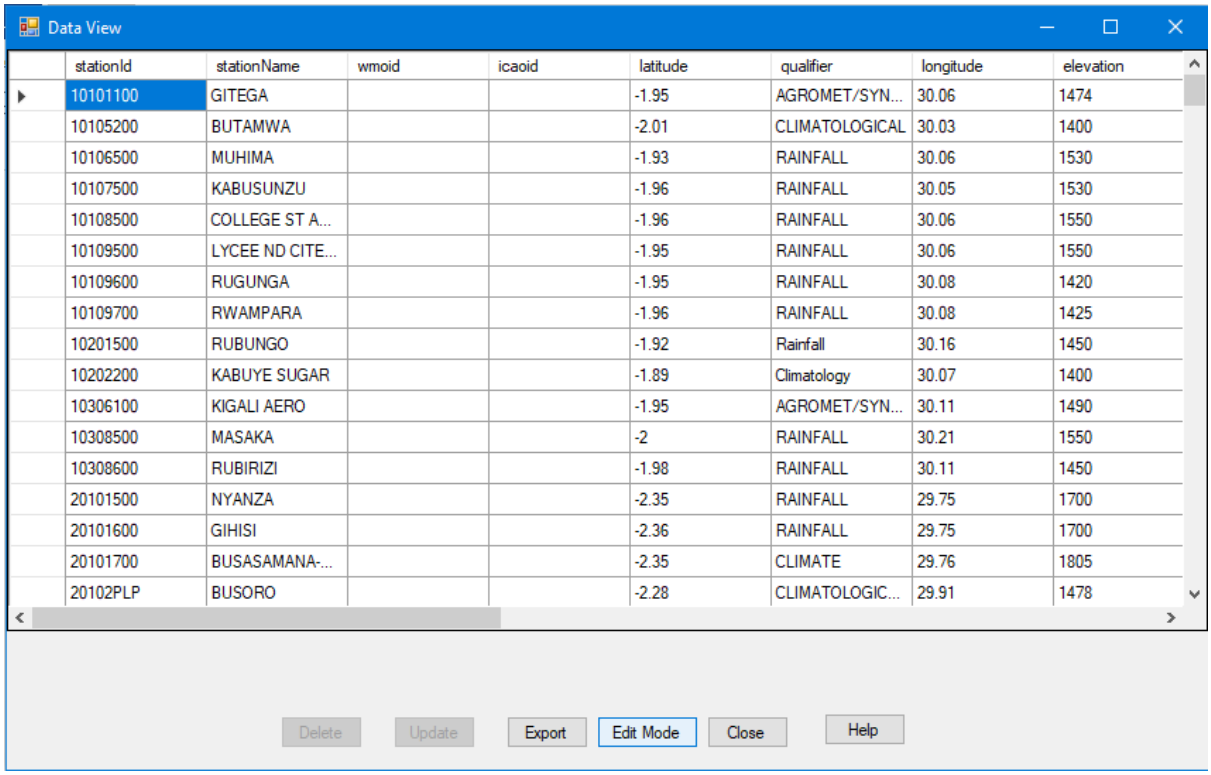

Figure 5 - Stations information in data sheet view

Important

Data sheet view or tabular form view has 2 two mode; **View mode and Edit mode**. **In view mode** (default), the **Delete** and **Update** buttons are disabled, in this case, the content of the table can only be viewed but not be modified.

To update or modify/change the content of the table/or cells, or to Delete records/cells, you need to be in the **Edit mode,** after selecting the **Edit Mode, Delete and Update** buttons are **enabled** and modify/change the contents of the table or cells become possible. To validate the action of editing/changing the content of the table or cells, you need to select the **Update** button. **Delete** button will delete record(s) or cell(s) and **Export** button will export data content of the form in csv format.

4. Elements

The commonly used observation elements metadata comes with Climsoft. However, Climsoft database administrator may wish to customize them according to the data management requirements. The elements metadata management tab allows adding, editing, viewing and deleting of the elements records.

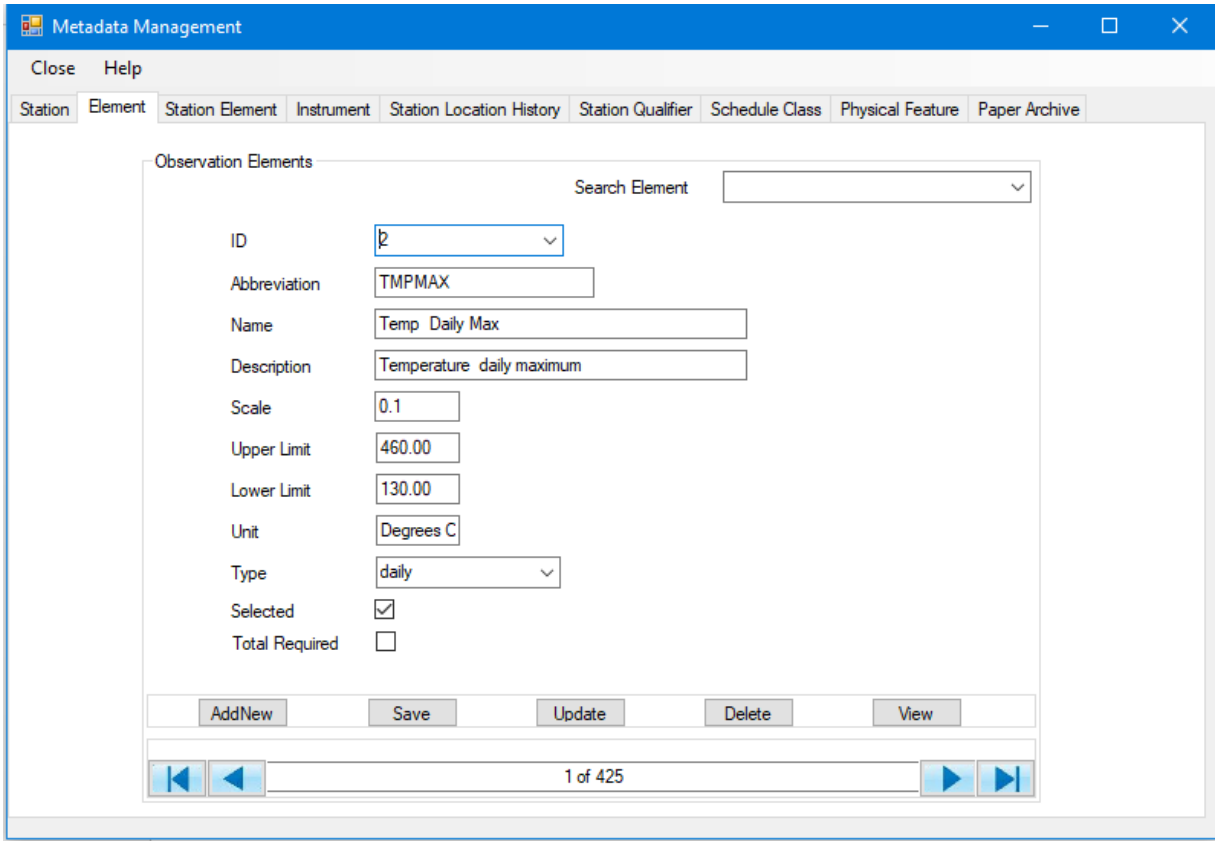

Fig 5 - Observation Element dialog

- Adding a new element record

Step1: Click AddNew to obtain a blank form

Step2: Enter metadata values for the element:

- Data for **ID** is mandatory
- **Scale** is the factor used in key entry for the decimal point. Therefore **Upper Limit** and **Lower Limit** values should take the scale into account
- **Type** the frequency of observation e,g, minute, hourly, daily etc.

- Saving a new element record

Click Save to save the entered metadata

- Updating (editing) existing element record

Step1: Use either **Search Element** box or **ID** to locate the station

Step2: Edit the desired values

Step3: Click **Update**

- Deleting elements

Step1: Use either **Search Element** box or **ID** to locate the element

Step2: Click on **Delete**

- View all elements

Click View command to view the elements in a table and edit them as may be required,the list of elements will be displayed in datasheet view or tabular form (Fig 6):

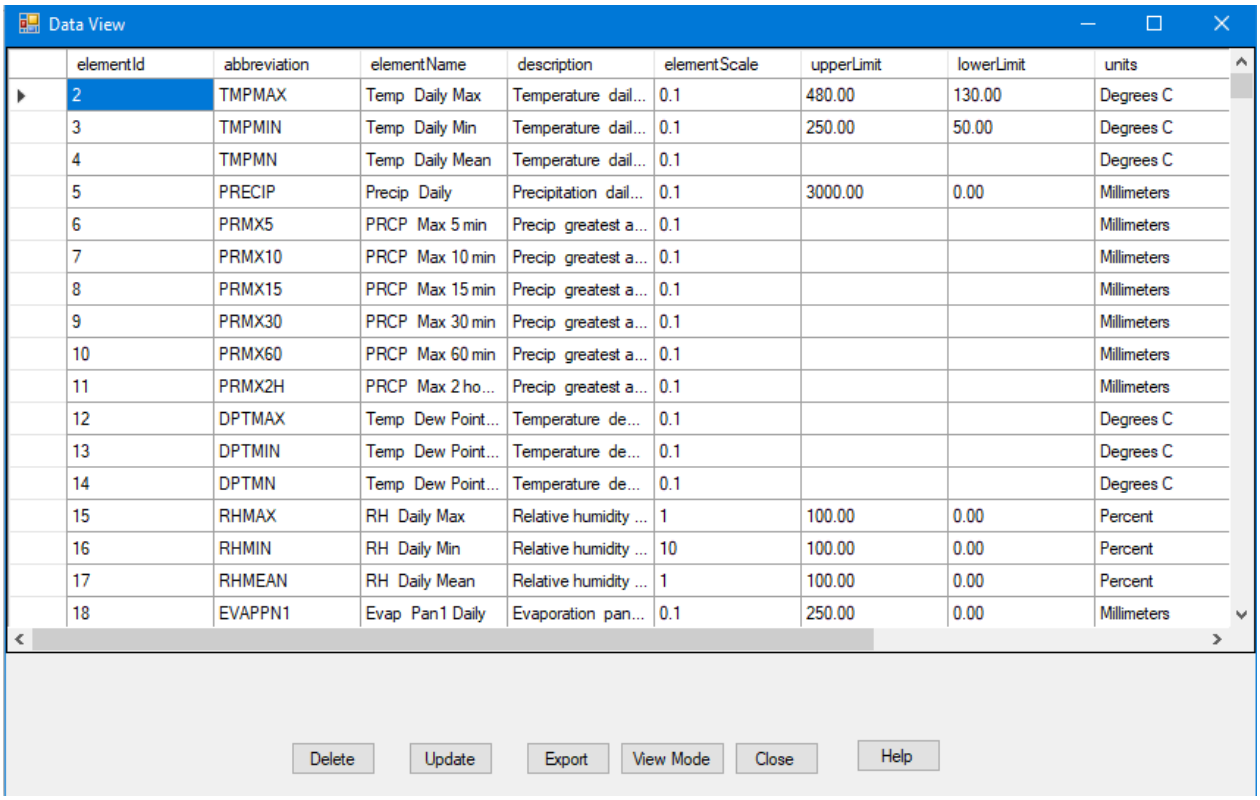

Figure 6 - List of observation elements in datasheet view

Important

Other metadata do not require importing but can be typed in since they are usually few. These are: Station Element, Instrument, Station Location History, schedule class, Physical Feature, and Paper Archive Definition

5. Station Element

All the details about the elements observed at a particular station are entered here. This dialog enables the editing and updating of elements information as recorded at a particular station. It is critical to first update the tables: ***station, element, instrument*** and ***scheduleclass*** before updating the ***stationelement*** table.

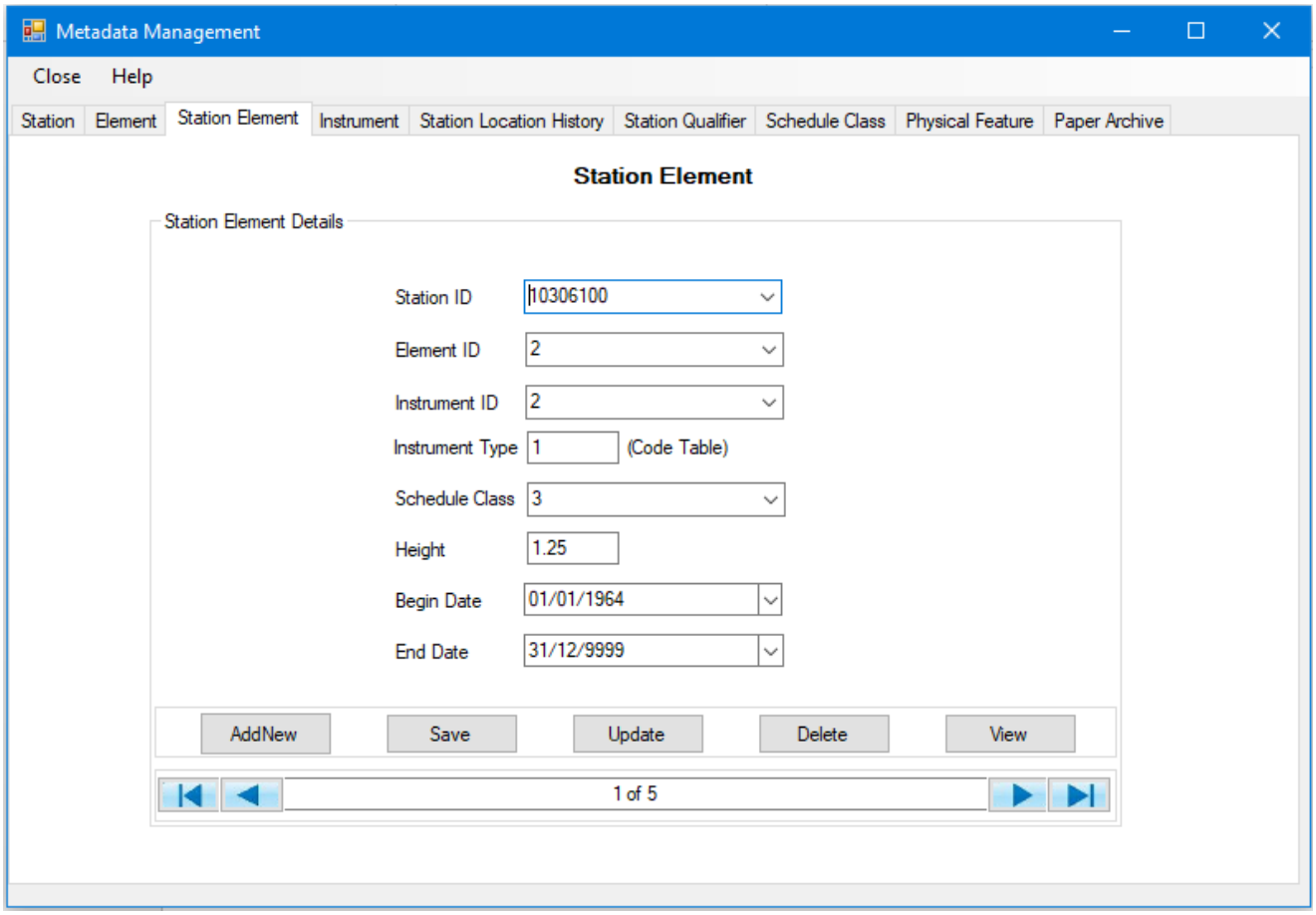

Figure Station Element Metadata Dialog

Attribute	Description
Station ID	This is the unique identifier for the station and is alphanumeric; each station must have a unique ID
Element ID	To select the element ID recorded at the selected station
Instrument ID	Country in which the station is located
Instrument Type	Type of the instrument for the selected element as defined in the code table (manual on codes).
Schedule Class	Various observation schedule classes can be define by the administrator in Climsoft.
Height	The height of the instrument(e.g.1.25 for Dry and wet Bulb thermometers)
Begin Date	The date when the instrument was installed
End Date	The date when the instrument stopped to observe if this is no longer operational.

Table

6. Instrument

This dialog enables the system administrator to specify the characteristics of a particular instrument used to record an element at a given station.

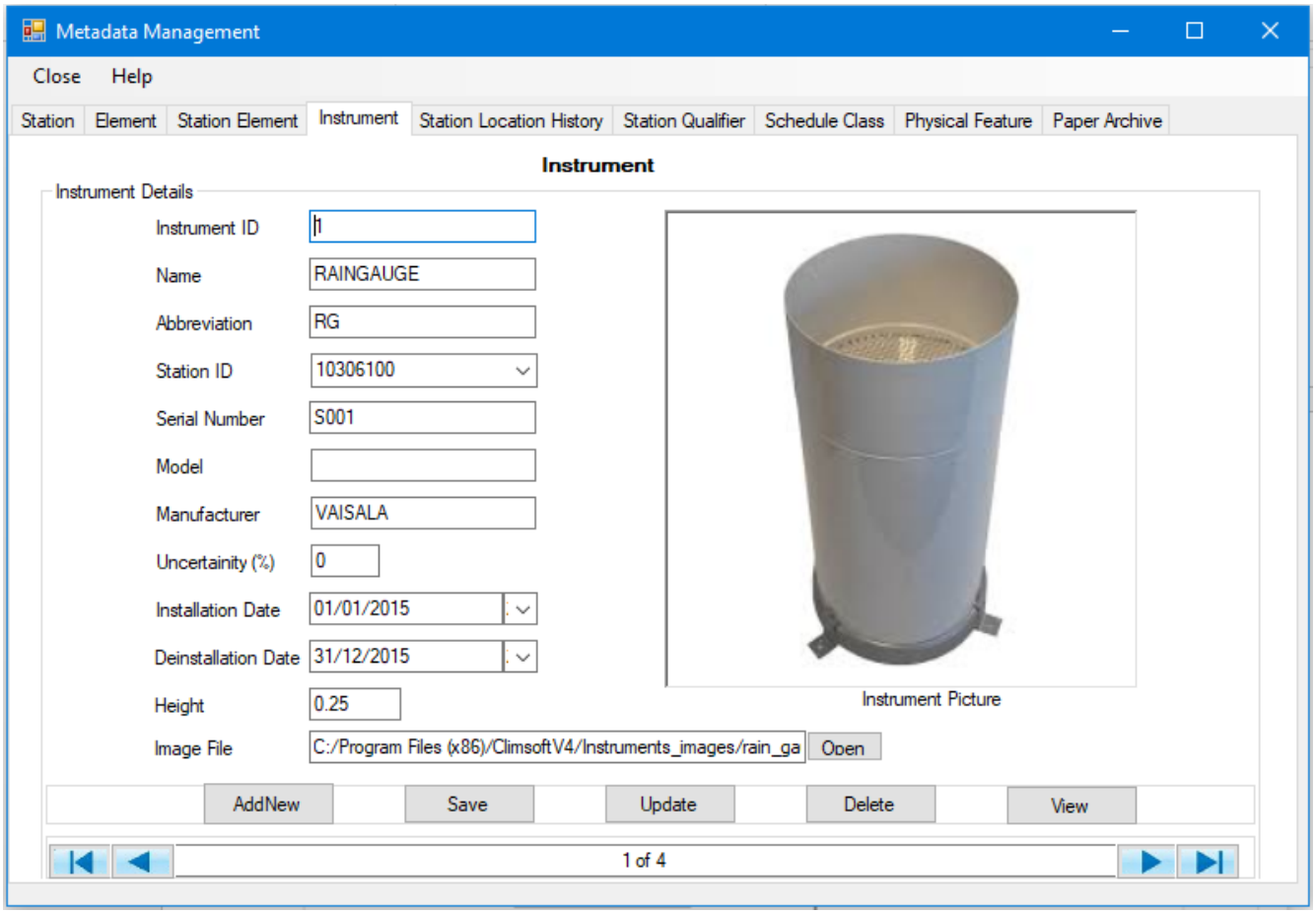

Figure: Instrument Metadata Dialog

Attribute	Description
Instrument ID	The assigned ID to the instrument
Name	The name of the instrument(e.g. Rain gauge)
Abbreviation	The abbreviation name of the instrument (e.g. RG for Rain gauge).
Staion ID	The ID of the station where the instrument is installed.
Serial Number	The serial number of the particular instrument (if available).
Model	The Model of the instrument (if available)
Manufacturer	The name of the instrument manufacturer (e.g. Vaisala, etc.)
Uncertainty (%)	The error Margin (e.g.0.1)
Installation Date	The date of the installation of the instrument.
Desinstallation Date	The date the instrument was Uninstalled
Height	The height of the instrument from the ground level
Image File	The path where the image of the instrument is located.

7. Station Location History

The detailed history of the station location are filled in the dialog below:

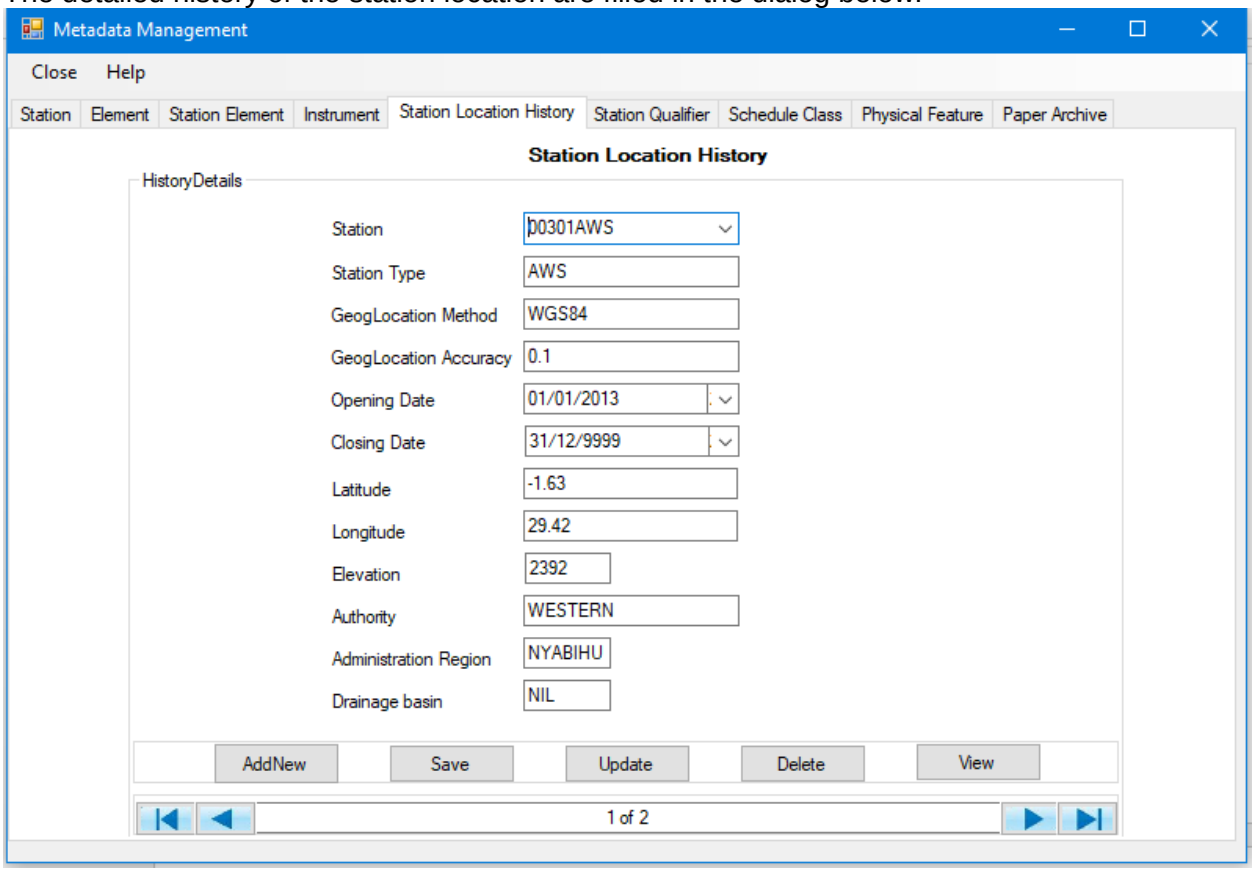

Figure: Station Location History Dialog

Attribute	Description
Station	This is the unique identifier for the station and is alphanumeric; each station must have a unique ID
Station Type	The type of station (e.g. Synoptic, Climate, Rainfall, AWS, etc.)
GeoLocation Method	Geographical coordinate system used (WGS 84 is the common used)
GeoLocation Accuracy	The accuracy of the Geographical method(e.g. 0.1)
Opening Date	The opening date of the station
Closing Date	Date that the station finished operating; note: if the station is still operational then this should display the current date
Latitude	Latitude of the station in degree decimal
Longitude	Longitude of the station in degree decimal
Elevation (Height)	The height of the station (in metre) in respect of the Mean Sea Level (MSL)
Authority	Authority under which the station in located
Administration Region	The Government administrative region where the station is located (e.g. County, Province, District, etc.)
Drainage Basin	The catchment area or river basin where the station is located.

8. Station Qualifier

The details of the qualifier of the station are filled in the dialog below:

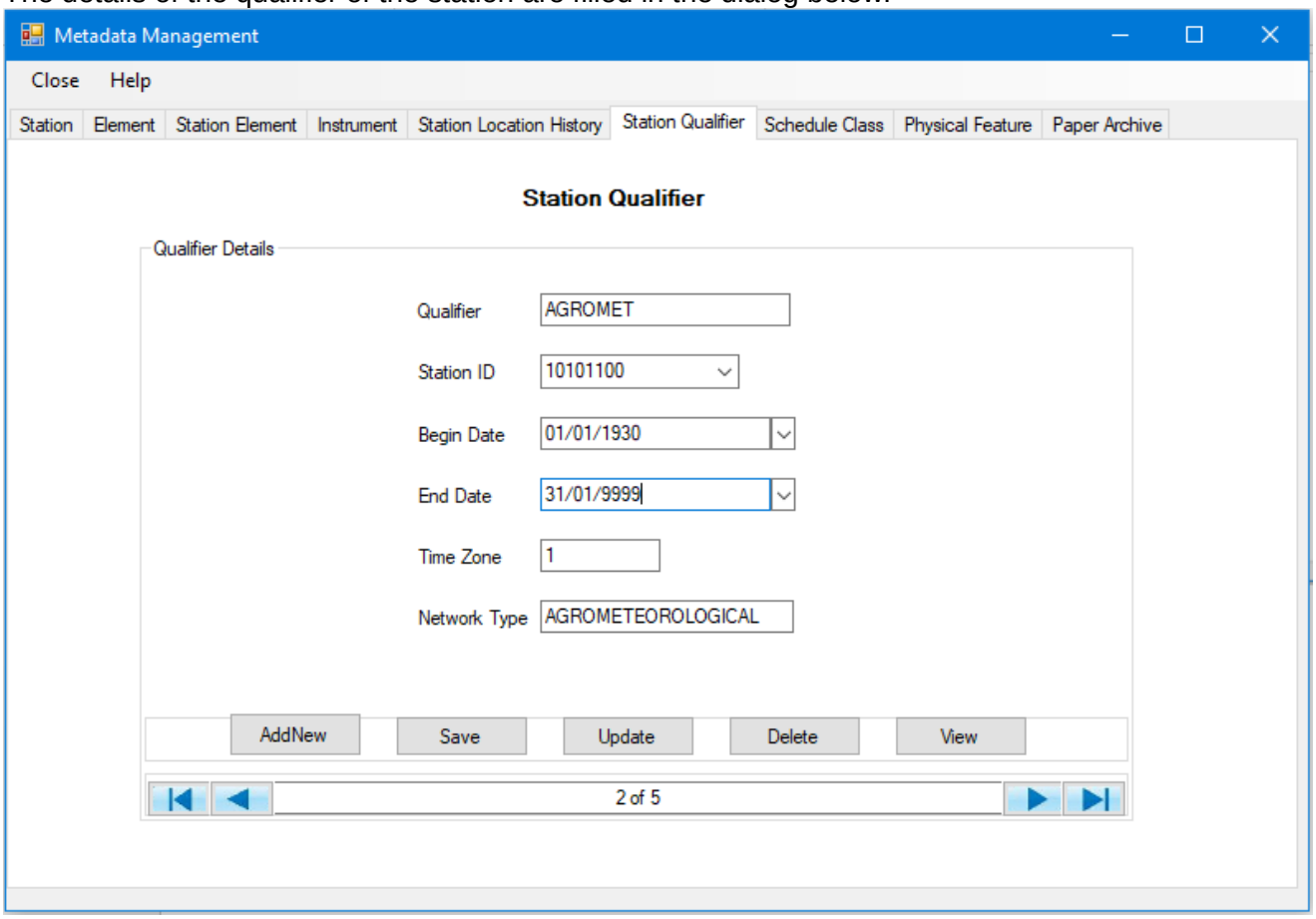

Figure: Station Qualifier

Attribute	Description
Qualifier	Type of the station (e.g. Synoptic, Climate, Rainfall, AWS, etc.)
Station ID	This is the unique identifier for the station and is alphanumeric; each station must have a unique ID
Begin Date	The opening date of the station
End Date	The closing date of the station
Time Zone	Specify the time zone of the station if different from other stations time zone (A country can have one or more than one time zone)
Network Type	Type of station network (e.g. Manual or Automatic station)

9. Schedule Class

Various observation schedule classes can be define in Climsoft as indicate the dialog below:

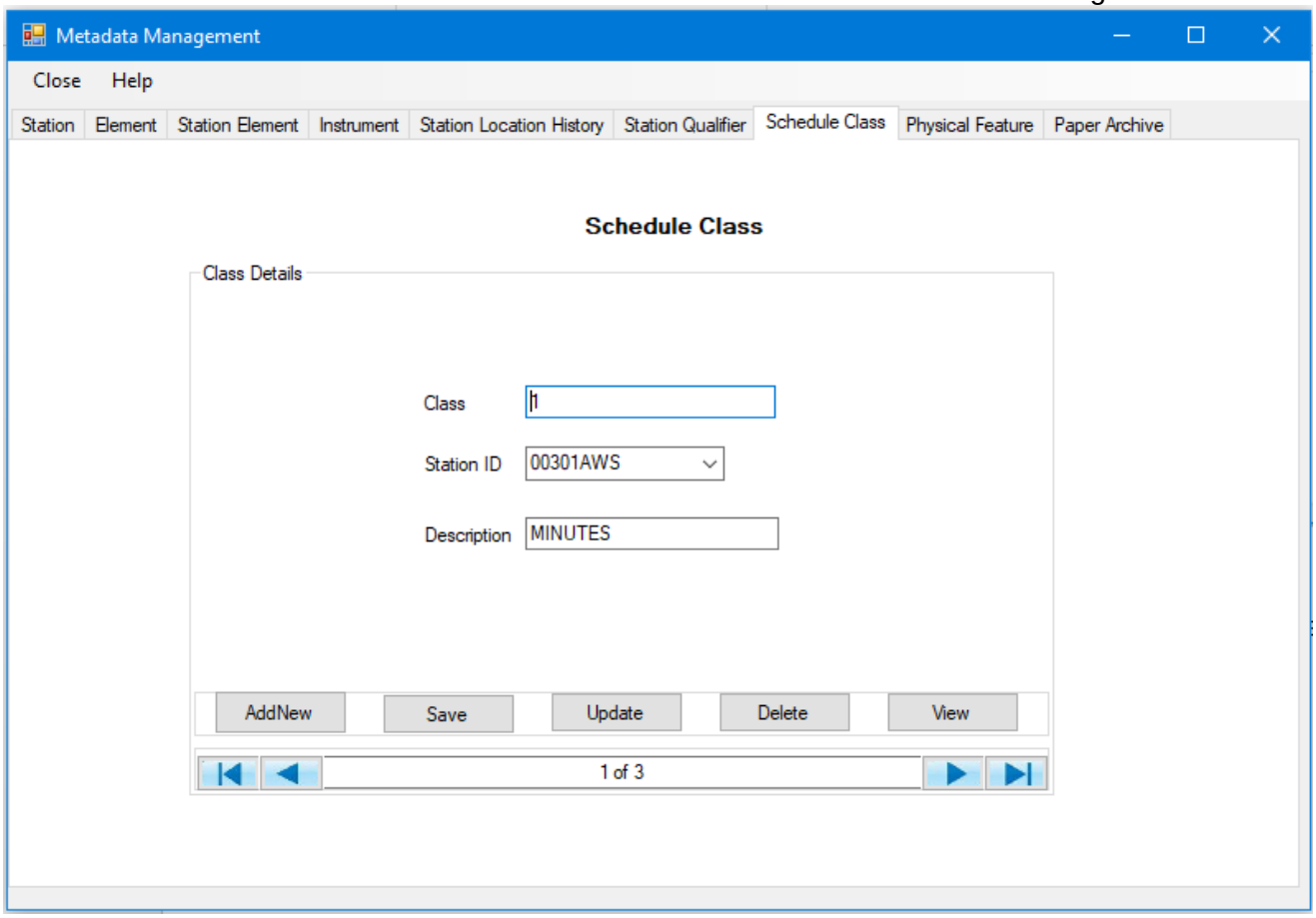

Figure: Schedule Class

Attribute	Description
Class	Class name (e.g. Manual, Automatic, etc.)
Station ID	This is the unique identifier for the station and is alphanumeric; each station must have a unique ID
Description	More details about the class (e.g. Manual Weather Station, Automatic Weather Station, Automatic rain gauge, etc.,)

10. Physical Feature

The detailed Physical features of stations are filled in the dialog below:

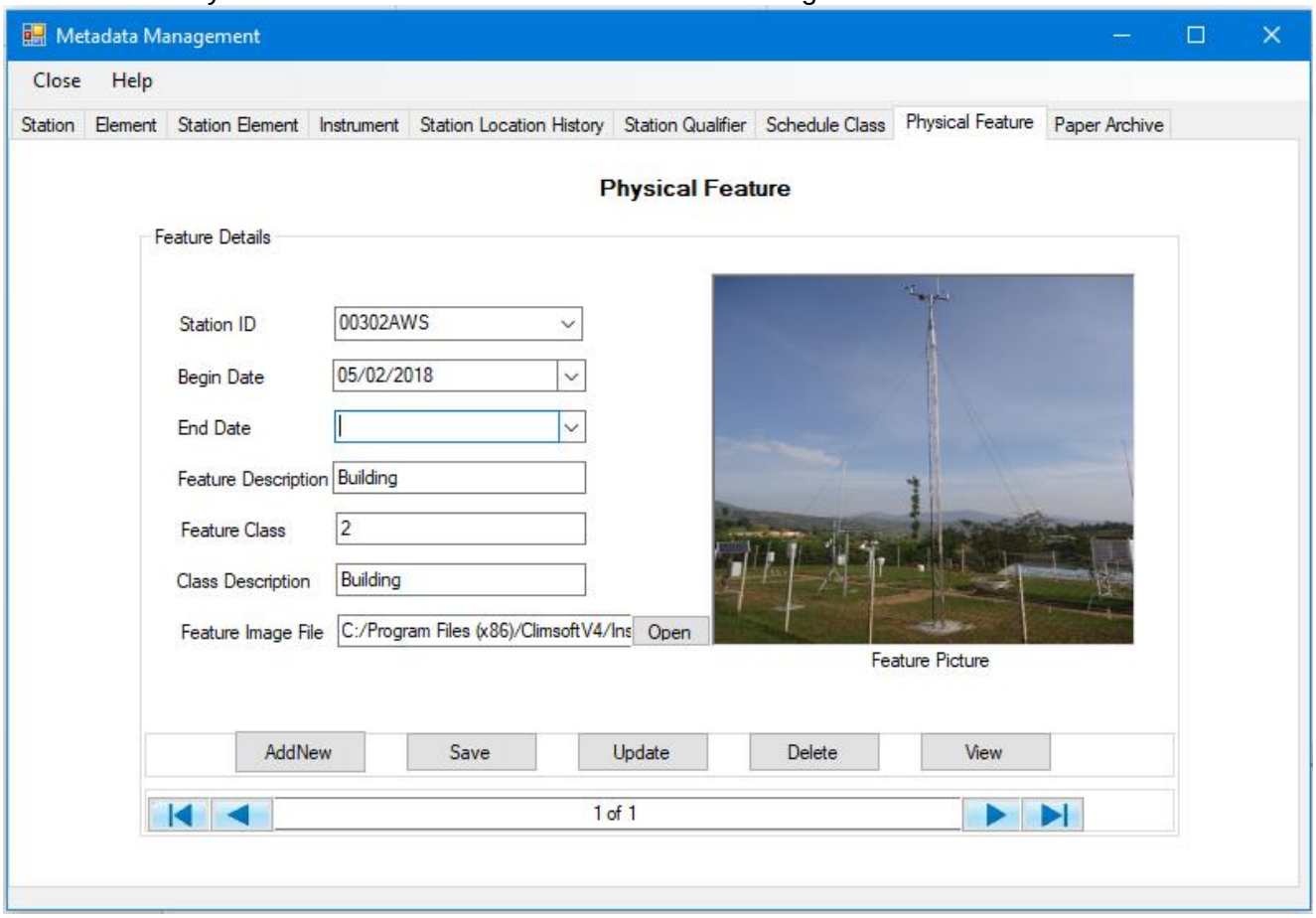

Figure: Physical Feature

Attribute	Description
Station ID	This is the unique identifier for the station and is alphanumeric; each station must have a unique ID
Begin Date	The opening date of the station
End Date	The closing date of the station
Feature Description	Description of the physical feature at the station (e.g. Building, tree, etc.)
Feature Class	Feature class (e.g. natural, artificial, etc.)
Class description	Detailed description of the feature class
Feature Image File	The path where the image of feature class is located.

11. Paper Archive Definition

The details metadata definitions of the paper images to be archived are filled in the dialog below, this is done before the exercise of paper archives is conducted in Climsoft version 4:

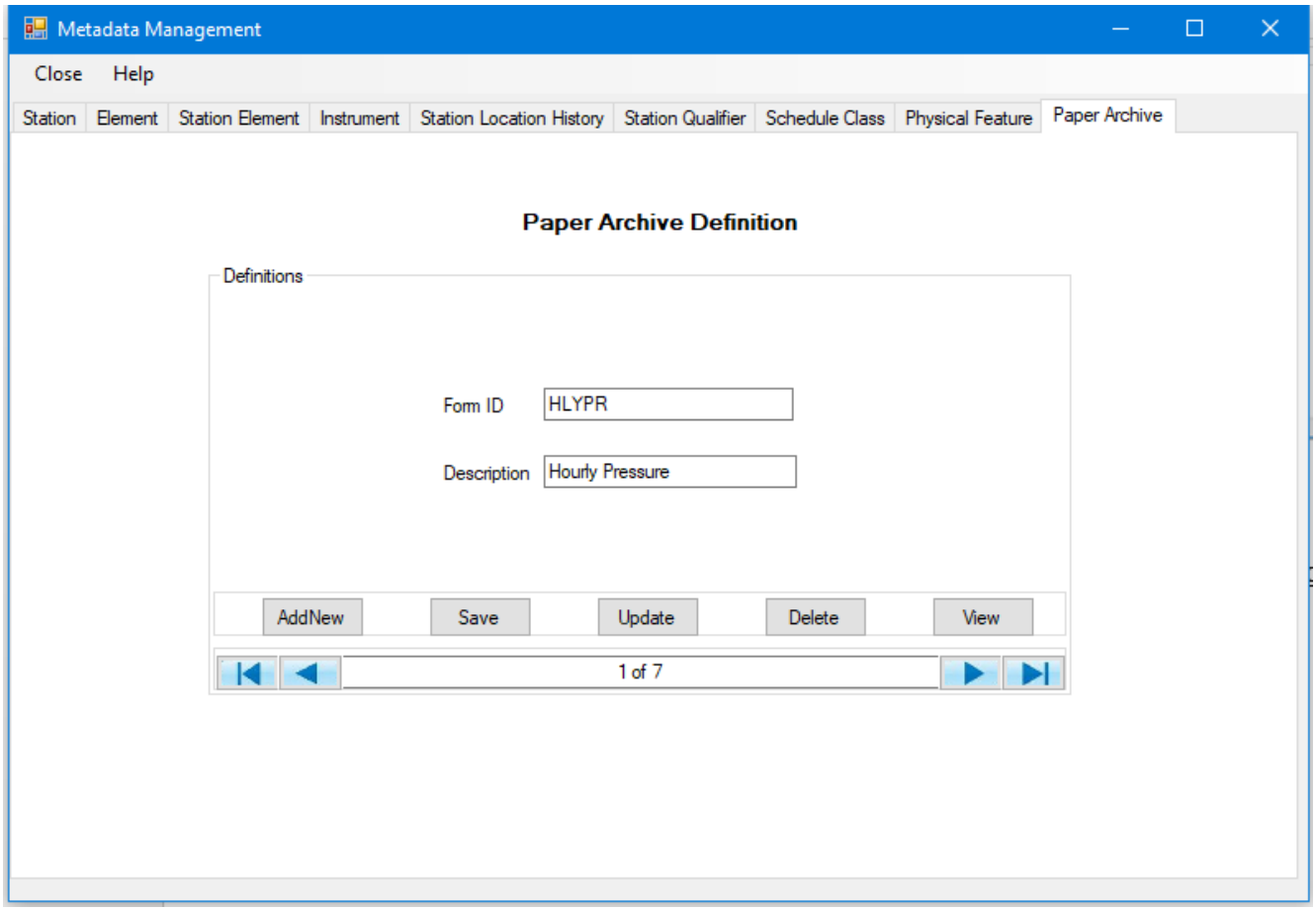

Figure: Paper Archive Definition

Attribute	Description
Form ID	This is the Identification of the paper Form (Return form) each paper image form must have a unique ID
Description	The detailed description of the Form (e.g. Hourly, Daily, Monthly, etc.)

Note: For any question or further clarifications, contact the CLIMSOFT Helpdesk: support@Climsoft.org