Clidata System Presentation

(Brief information about Clidata application)

April 2005

Content of the document

Introduction.....3
Main Features Of The System.....4
Climatological Stations.....6
Observed Elements.....9
Station Observation Definition.....9
Automatic Derivative Calculation.....10
Static Data Defintion (The lists of values).....11
Stored, Measured or Derived.....12
Daily Data Quality Control.....13
Manually Keyed Data.....13
Loading Data From Text Files.....14
Loading CLICOM Data.....14
Wind Rose Diagrams.....14
X-day Summaries.....15
Rainfall Intensity Charts.....15
Custom Extremes.....15
Data Security and User Privileges.....15
System Requirements.....15
Automated Data Emails.....16
Automatic FTP Transfer.....16
Data Extraction Alternatives.....16

Introduction

The Clidata system is primary intended for archiving of climatology data and for administration of climatology stations and station observations. The System was designed to replace the old CLICOM system, which has been used in Czech Republic from 1993-2000.

The system is designed for the Oracle database environment, which defines simple and secure access to stored data.

By virtue of the system flexibility, easy administration and multi-language support, the system is capable of set up in any foreign country and for any meteorological service. The system has been operationally used in Czech Hydrometeorological Institue for 5 years and it is successfully installed in more than 11 other countries.

The system is particularly user-friendly during the definition of stations, station observations and manual key entry of the data. The system facilitates the population of data from automated (real-time) stations as well as the definition of personalised key entry forms.

Main Features Of The System

The Clidata system provides the definition of:

- Climatological stations
- Observed elements
- Station observations
- Automatic calculations
- Other static data (countries, units, basins etc.)

The database can store these kinds of data:

- Daily observed data and daily data measured by automatic stations
- Observation of meteorological phenomena
- Monthly data (which has not been calculated from daily data)
- Upper air data (ascent data)
- Long term rainfall gauge measurements (rainfall accumulations)
- Normals (which have not been calculated from daily data)
- One minute precipitation totals (rainfall intensity)

The system automatically calculates these kinds of data:

- Daily data (according to calculation formula)
- Monthly/Yearly data (max, min, sum, average and conditional day count)
- Long term normals
- Long term extreme values
- Interpolation of missing values
- Inventory of missing data

For input of data the system uses:

- User defined key entry forms
- Automatic imports from formatted text files
- Direct import of CLICOM data files

Additional calculated products:

- Wind roses
- X-day function
- Chart of the rainfall intensity
- User defined extreme values

Additional features of the system:

- User defined rights, roles and user defined access to the data
- Three level control of the input data
- Definition of personalised key entry and quality control forms
- Extensible system deployment (from portable computer to high-performance servers with data replication)

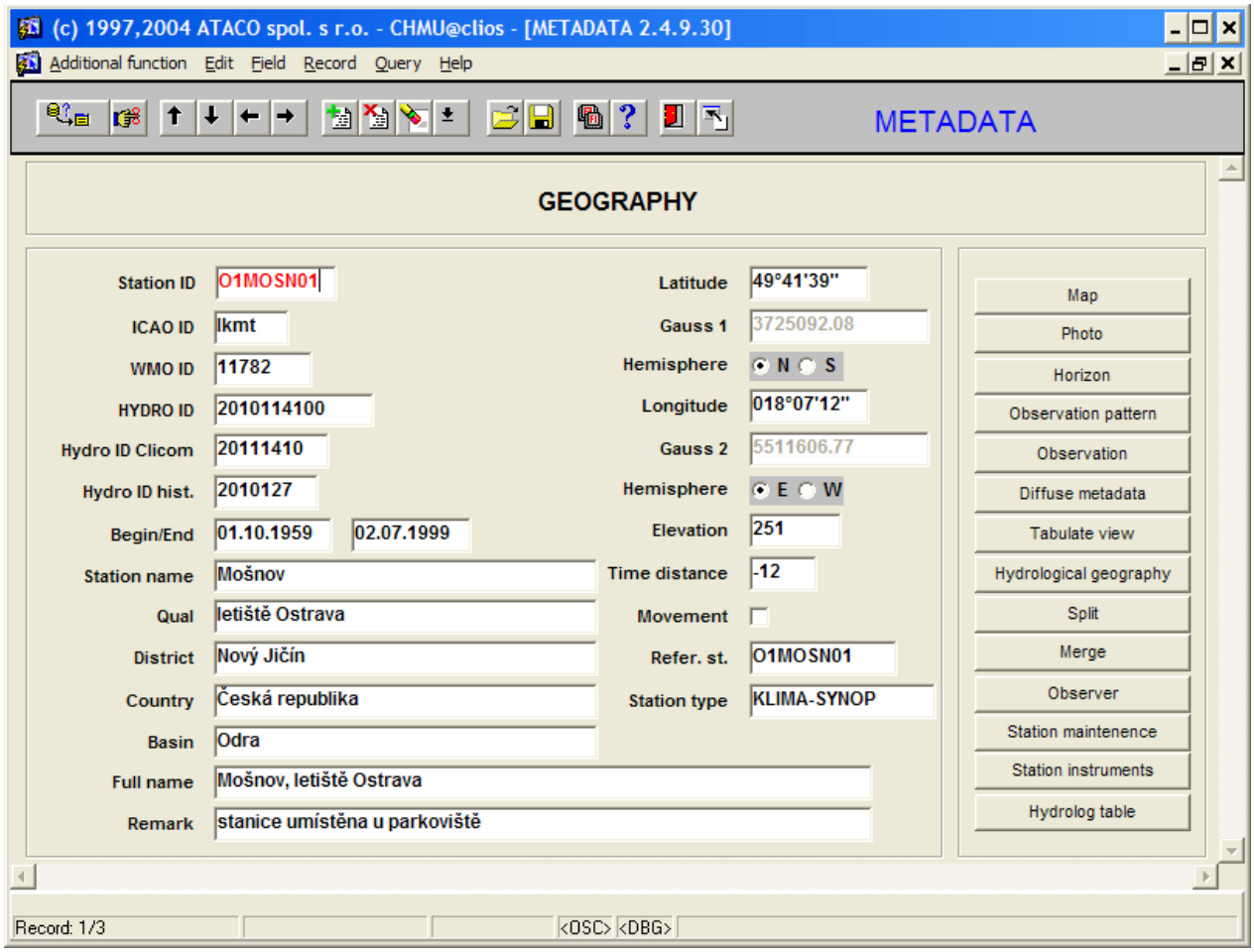
Climatological Stations

This well-arranged form is used for the definition of the climatological stations.

The main features of this form have been adopted from the old Clicom system.

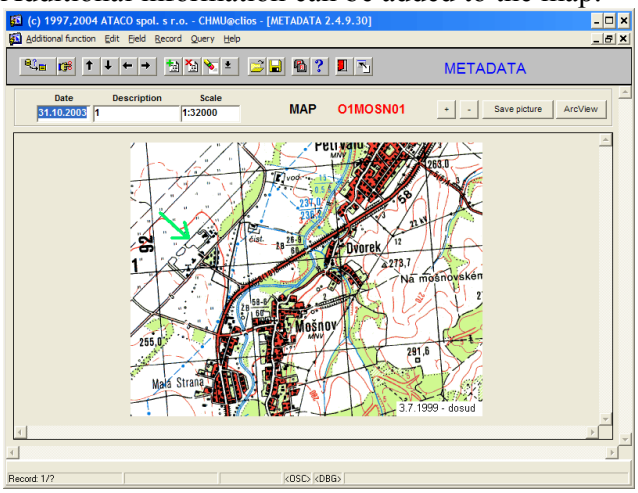
The basic information has been extended and currently the users can maintain all the station documentation in one place.

This definition of the station is the basis for data input checking. It is not possible to store the data for an undefined station.

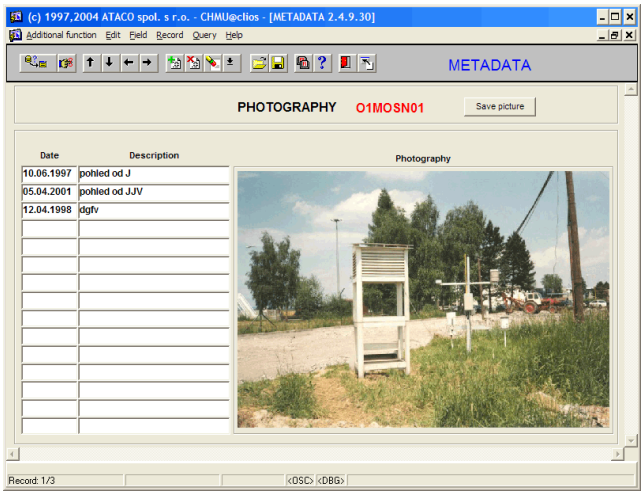


As well as the basic geographic station information the system provides the following extended information:

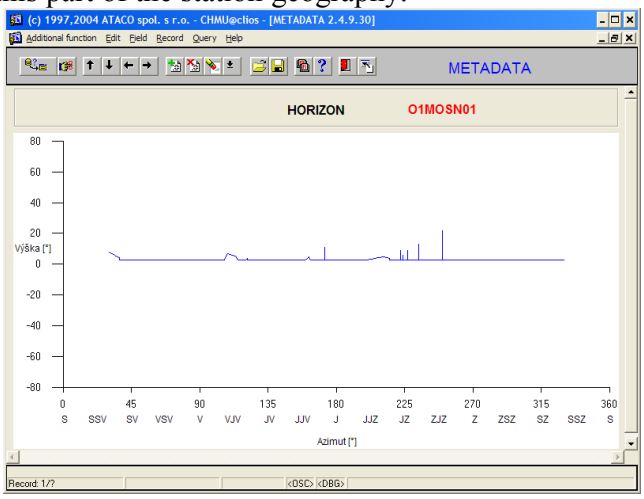
Maps – the map pictures. Additional information can be added to the map.



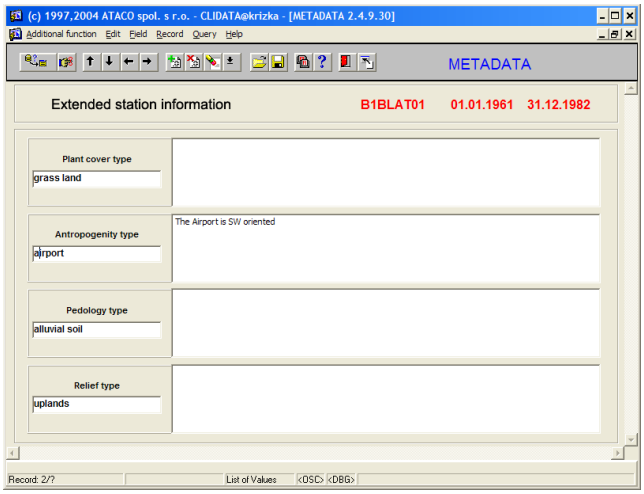
Photos – complete digital photo documentation for each of the stations.



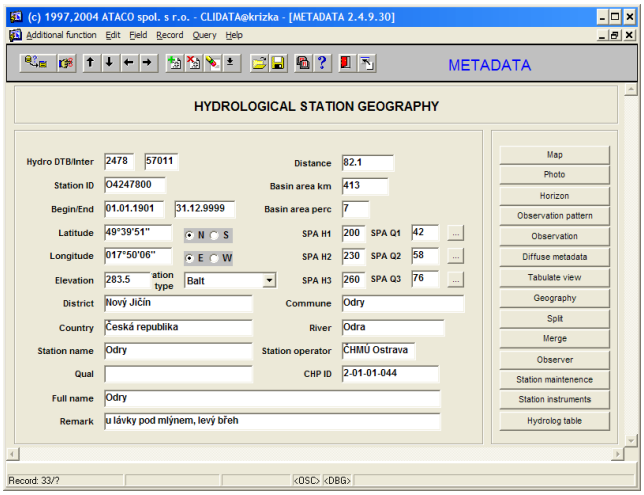
Heliographic horizon – the horizontal shape of the surrounding landscape, natural and artificial obstacles are recorded in this part of the station geography.



Extended station information – the additional information about pedology, anthropogenic influence, vegetation cover and relief.



Hydrological information – additional information related to hydrology



Observers – the list of current and ex-observers.

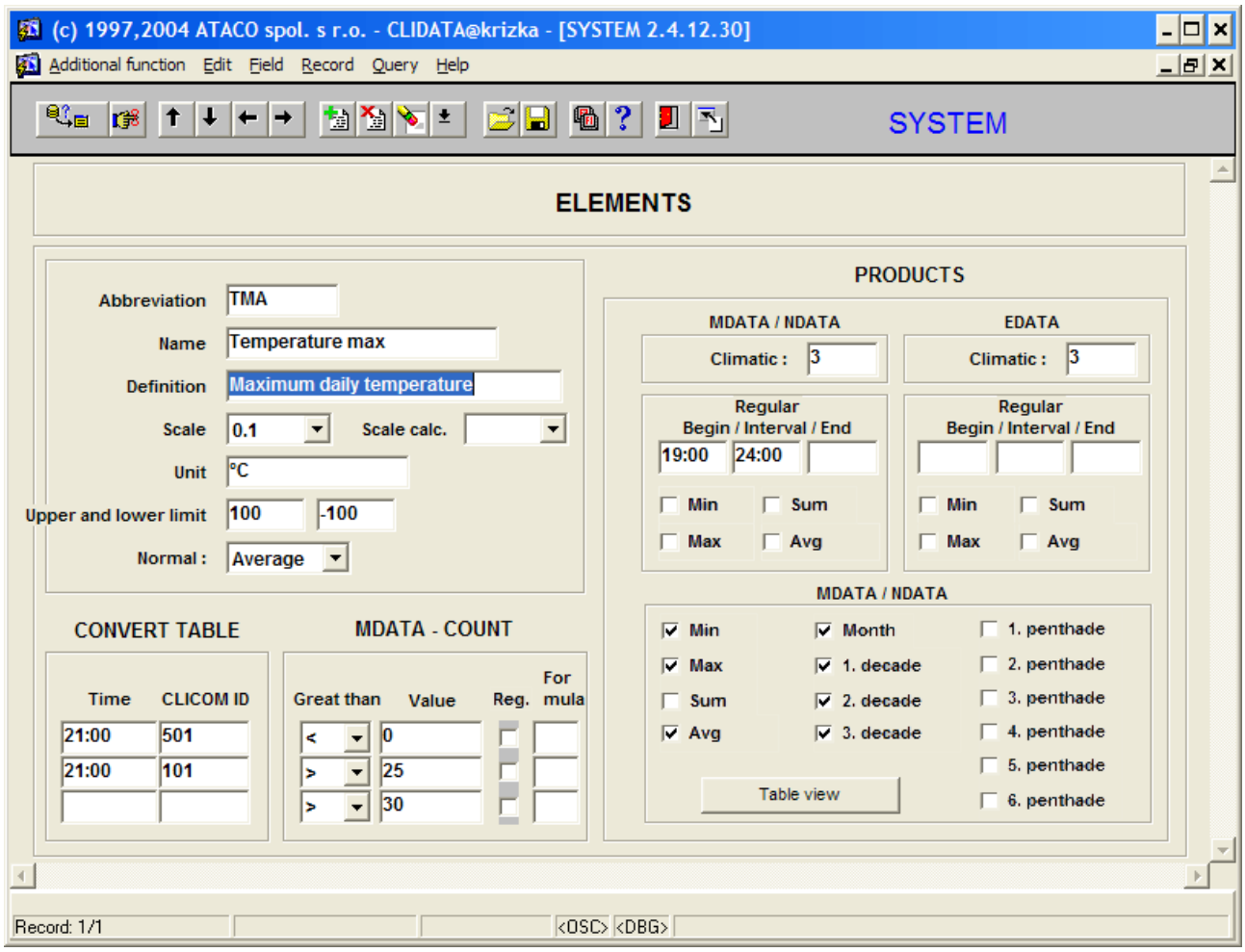
Station documentation – the various types of documentation, e.g. MS Word or Excel files.

Instruments – the list of all station instruments

Observed Elements

Each observed element (e.g. Temperature, pressure or wind direction) must be defined in the Clidata system.

For the definition of the meteorological or other elements this simple form is used.



This form defines the abbreviation and the name of the observed element, short description, unit, scale and the specification of automatic calculations.

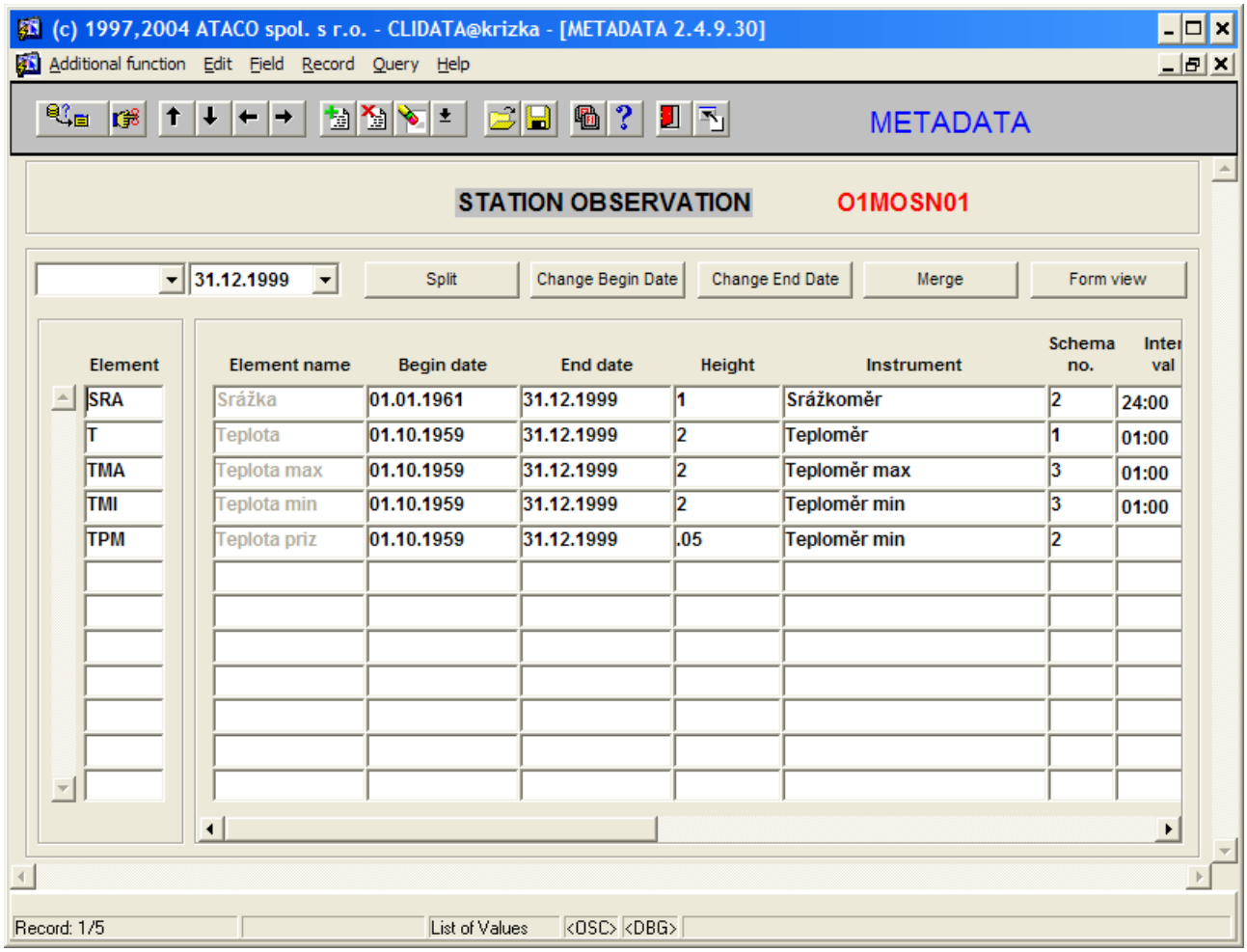
Among these belong the definitions of the monthly and yearly data calculations. It's possible to define functions for calculation of maximum, minimum, sum, average and conditional day count.

The system carries out the calculations automatically in real time, thus the calculated data are available nearly immediately.

Specifically for legacy Clicom users, there is the definition of the conversion relationship between new Clidata element and old Clicom element.

Station Observation Definition

The list of observed elements is maintained for each station registered in the Clidata system. The observation period and the instrument are defined for each of these elements.



For the purpose of documentation, and to determine archive completeness, the Clidata system introduced the definition of the observation scheme. For each of the observed elements the observation scheme must be defined. The observation scheme specifies the times during a day in which the observation is carried out.

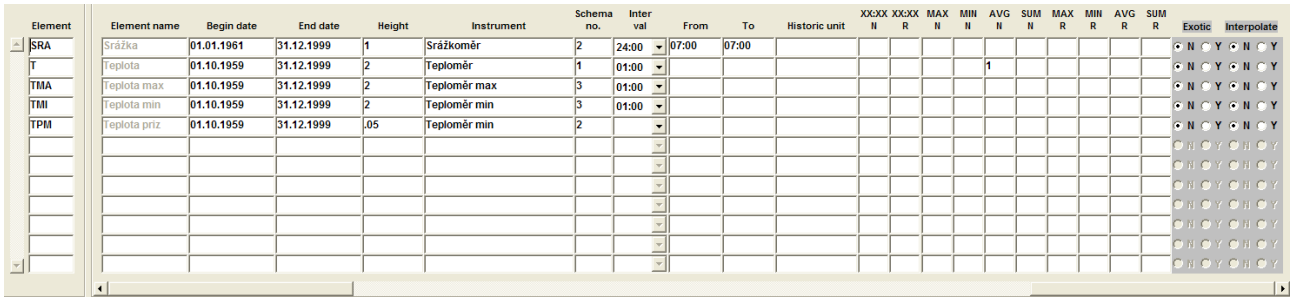
The Clidata system distinguishes between two types of the observation schemes: regular and non-regular (climatological). The regular scheme is used mostly for the observations of automatic stations (e.g. each 15 minutes) and the non-regular scheme is mostly for manual stations (human observations, e.g. at 07, 14 and 21 or just once a day).

For each of the observed elements the historical unit can be defined. This historical unit can be later used for automatic transfer of the values from historical to current ones.

In addition, there are definitions for the automatic calculation of hourly and daily aggregated values.

The hourly calculated values are stored and calculated for a specific time during the day. The hourly

calculated values can be, for example, calculated relative humidity from temperature, pressure and wind speed at different times (e.g. 07, 14 or 21).



Element	Element name	Begin date	End date	Height	Instrument	Schema no.	Interval	From	To	Historic unit	XX:XX N	XX:XX R	MAX N	MIN N	AVG N	SUM N	MAX R	MIN R	AVG R	SUM R	Exotic	Interpolate
SRA	Srážka	01.01.1961	31.12.1999	1	Srážkoměr	2	24:00	07:00	07:00												N Y	N Y
T	Teplota	01.10.1959	31.12.1999	2	Teploměr	1	01:00								1						N Y	N Y
TMA	Teplota max	01.10.1959	31.12.1999	2	Teploměr max	3	01:00														N Y	N Y
TMI	Teplota min	01.10.1959	31.12.1999	2	Teploměr min	3	01:00														N Y	N Y
TPM	Teplota priz	01.10.1959	31.12.1999	.05	Teploměr min	2															N Y	N Y

The daily aggregated values are functions like daily minimum, maximum, sum or average perday.

Following definition of the calculations, they are performed automatically by the Clidata system without any user action necessary.

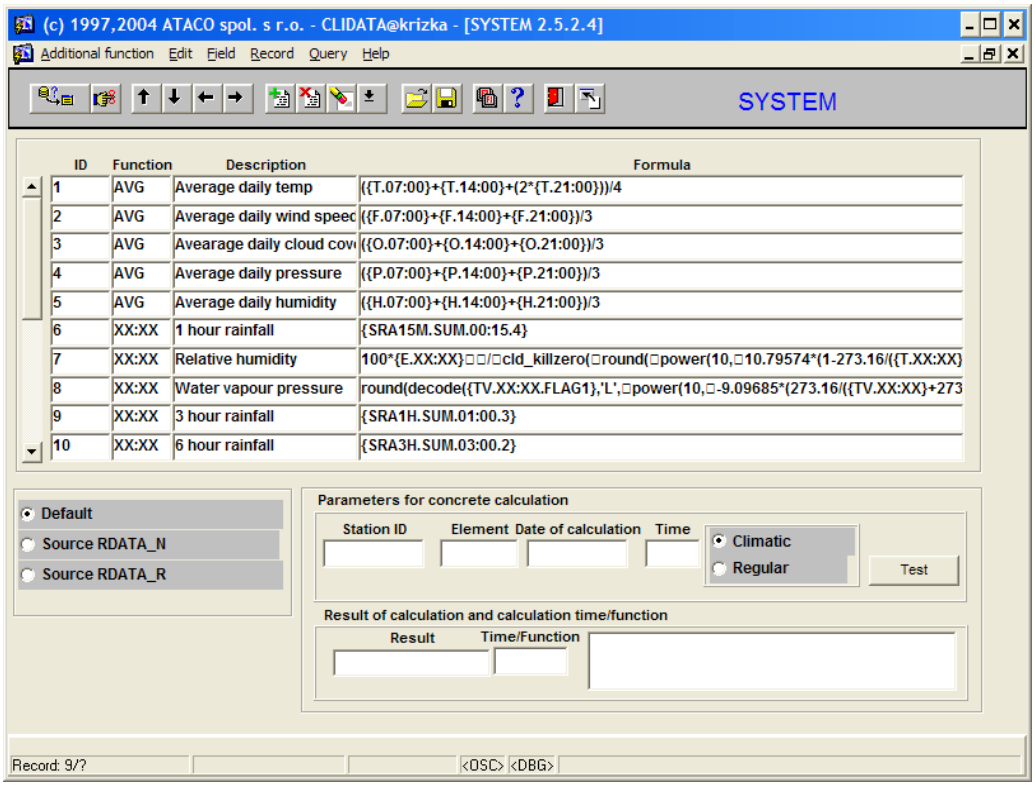
Automatic Derivative Calculation

The Clidata system introduces user-defined automatic calculation of many derived elements from daily measured values. The derivatives system adopts a simplistic, user-friendly approach, such that the user defines only what he/she wants to calculate and the Clidata system carries out the calculations automatically without interaction. The definition of the formulas used for the calculation is very flexible, and the user is able to define very complex calculations.

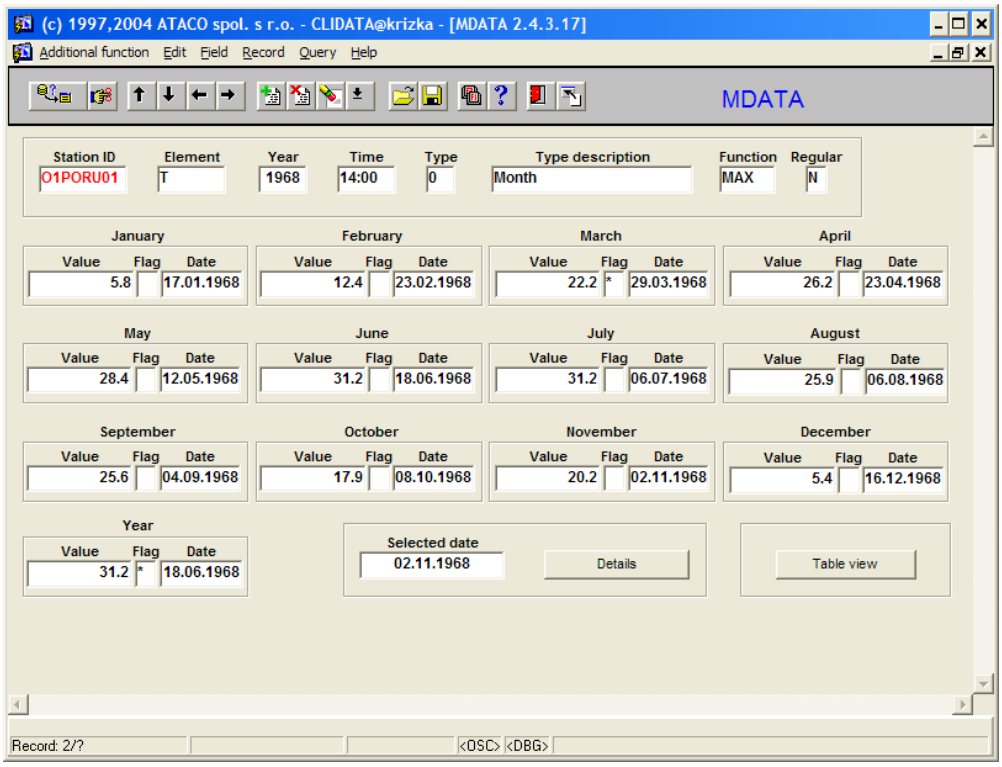
The system is able to calculate:

Hourly values – the definition of the general formula related to a time during a day. For example, the calculation of relative humidity from the temperature, wet bulb temperature, pressure and wind speed, or the calculation of the absolute difference between two consecutive observation of the same element.

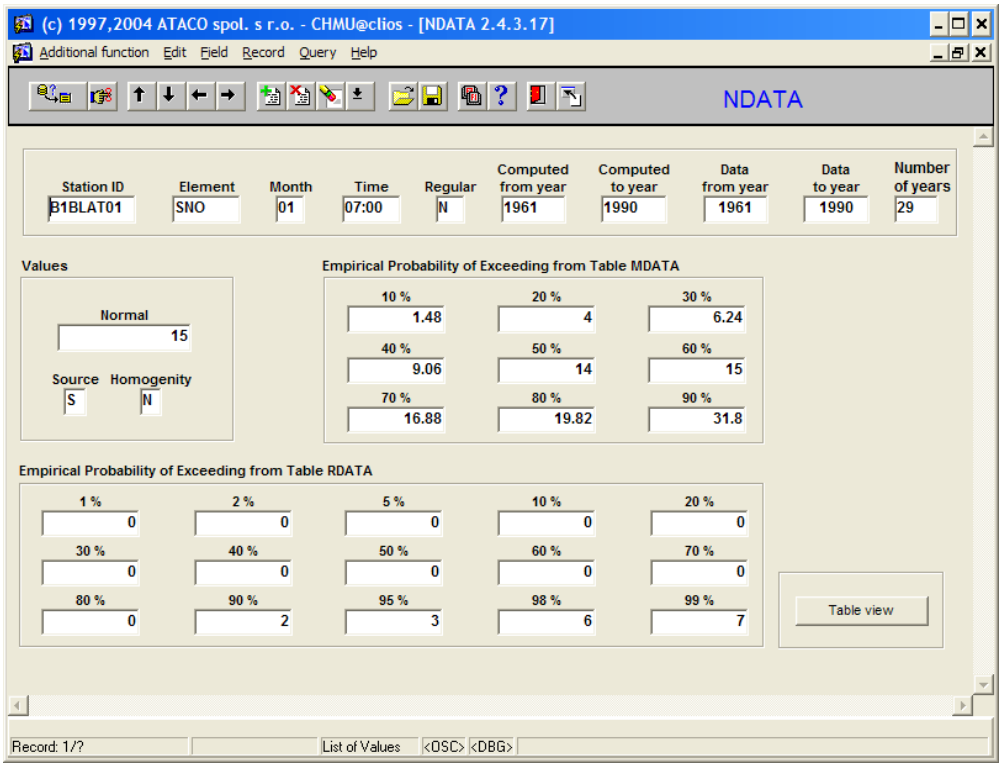
Daily aggregated values – the definition of the general formula for daily maximum, minimum, sum or average.



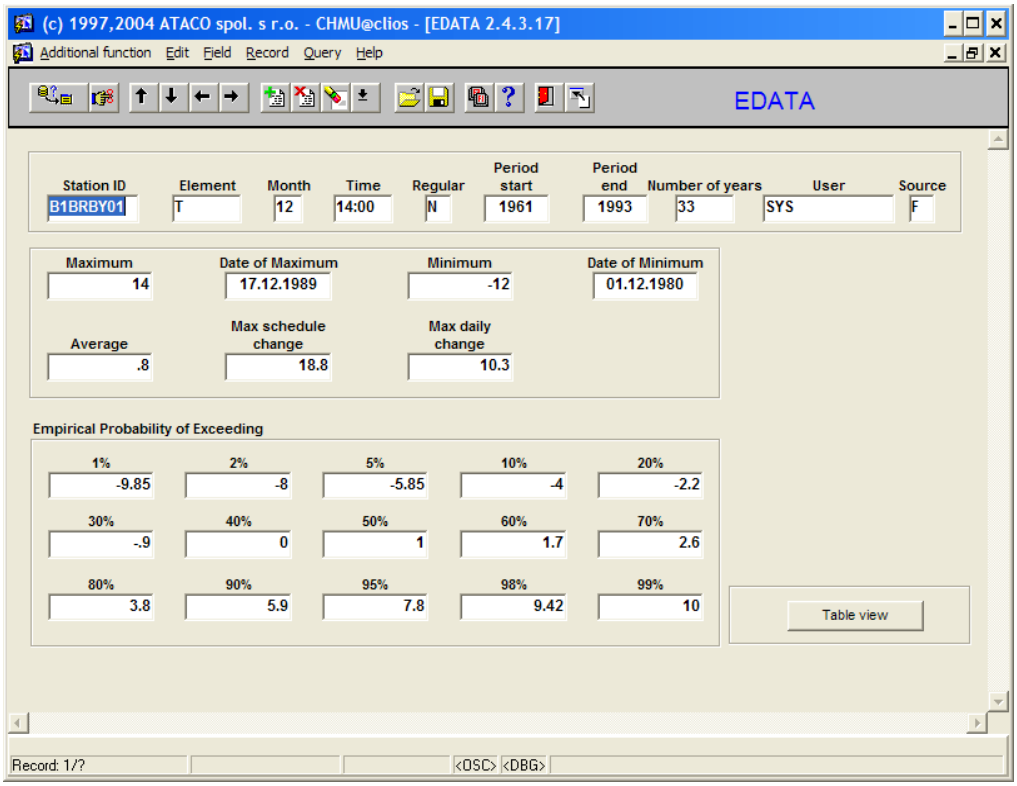
Monthly/Yearly values – definition of the calculation, not only for the month and year, but also for the 1-3 decade or 1-6 pentade of the month. You can calculate the maximum, minimum, sum or average for these time periods. Alternatively, you can calculate the number of days which satisfy certain conditions over a period (e.g. the number of "summer days", where temperature for a "summer day" is above 25 °C).



Normals – definition of the long term calculation of the normal values; calculated for each month and for the year.



Extreme values – user-defined calculation of the long term minima, maxima and averages.



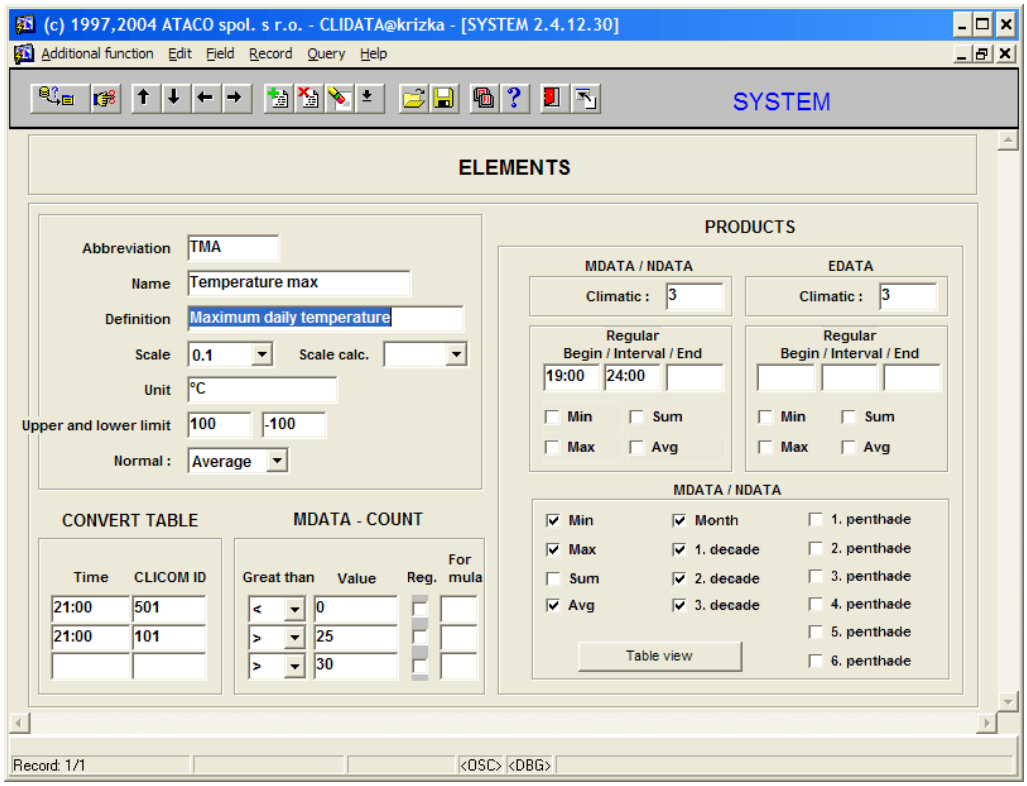
Value interpolation – for the data measured regularly during a day the system can automatically infill missed values from those neighbouring by the interpolation process.

Days with phenomenon – the system automatically calculates the number of days in month and year in which the specific phenomenon has been observed. From this, the system also calculates (for long term period) the normal number of days for each of the months and for the year.

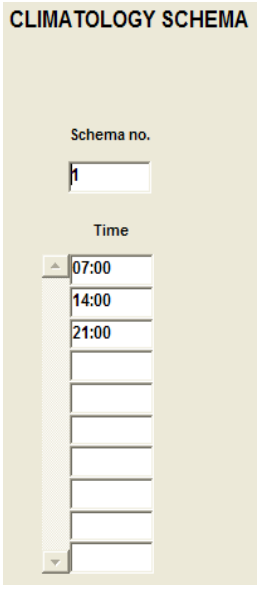
Static Data Defintion (The lists of values)

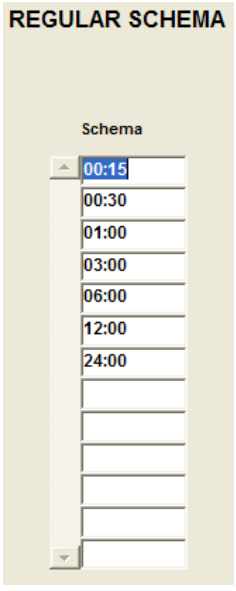
The system relies on the many sets of user-defined static values, which are subsequently used for the definition of the stations, station observations, during the key entry process, and for querying the database. Among the most important of these are:

Observed elements – each observed element (temperature, pressure etc.) must be defined in the Clidata system; undefined elements cannot be stored in the database.



Observation schemes – for each element the observation scheme is defined. The system requires the definition of all used observation schemes. The observation scheme defines the times in which the observation is carried out.

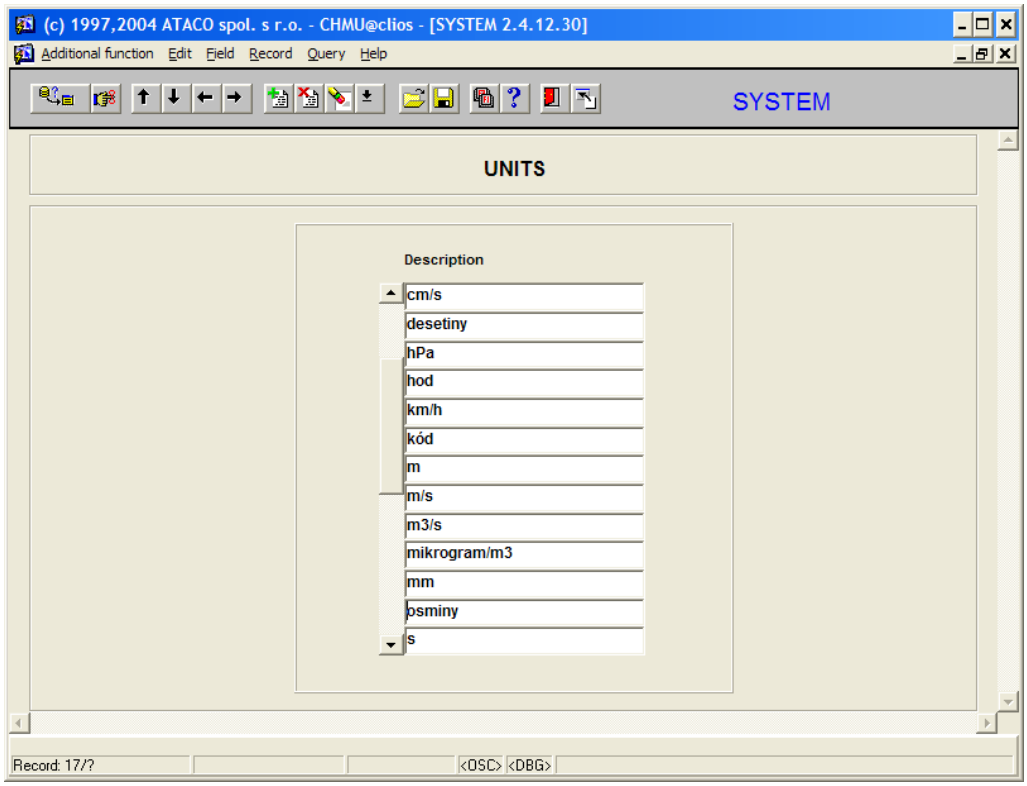




Countries – the definition of all used countries must be in the Clidata system. The countries are used during the definition of the station geography.

More detailed administrative subdivision of the country – the system allows two level detailed subdivision of the country.

Units – definition of all units, which are later used for the definition of the element

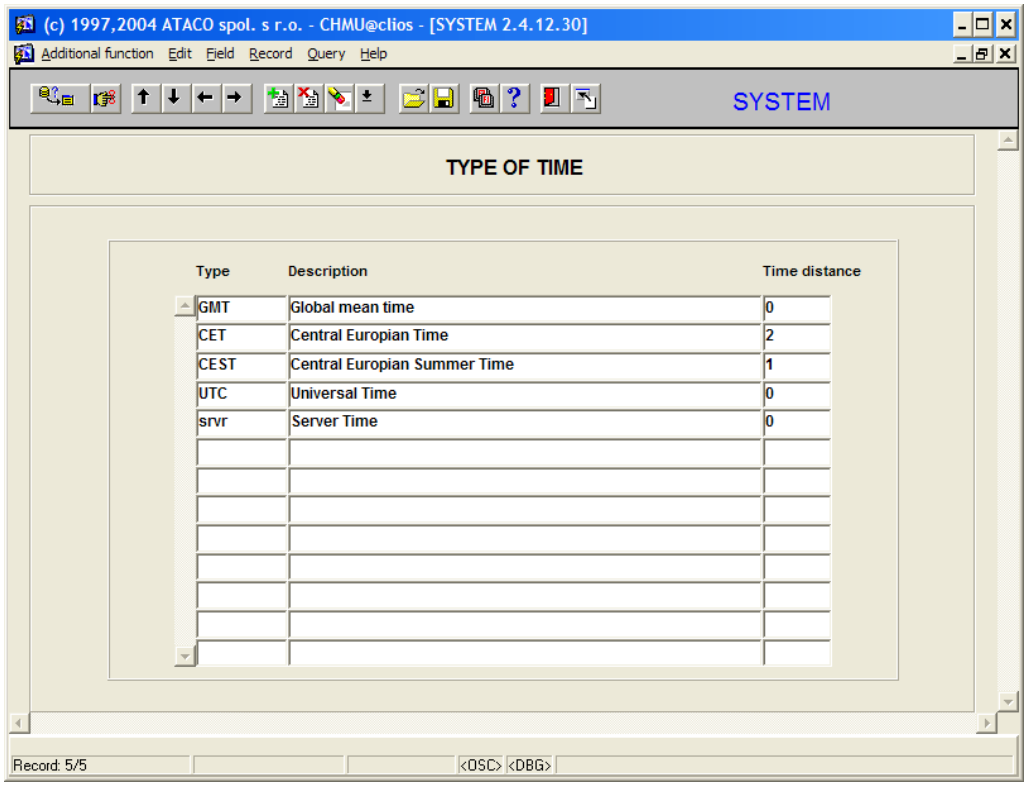


Historical units – definition of the units, which have been used recently, but are not used any longer. The system facilitates automatic transfer between the current and historical measurement units.

Description of coded values – the short description can be stored for the values in the database which are represented by number codes.

Instruments – the list of all instruments, which are used for measuring of the meteorological elements.

Different times and time delays – all times used for the measuring of the data are defined. For example, GMT (Greenwich Mean Time) in comparison with CET (Central European Time) is one hour delayed. These time differences are later used during key entry process or during the import of the data into the database. If the default time of the database is CET and the import file is defined in GMT the values are automatically shifted to CET.



Additional information about basins, pedology, anthropogenic influence, vegetation cover and relief – these lists predefine values which are later used for the extension of the station geography.

Seasons – in the system several different seasons can be defined, e.g. spring, summer, autumn and winter or wet and dry seasons.

Summer times – for each year the time period known as "Summer Time" can be defined. If the data are keyed in the CEST (Central European Summer Time), they are automatically stored in the default CET (Central European Time) if the CET is the default time of the database.

Stored, Measured or Derived Data

Daily observed data – the data are observed by observers or are measured by automatic stations during the day. These are stored into the daily data table with the information on the day and specific time. An example is the daily measurement of temperature done by an observer three times a day at 0700, 1400 and 2100 or the temperature measured by the automatic thermometer each 15 minutes. These are the basis for the derived daily, monthly, yearly or long term characteristics. The data can be keyed manually or can be imported directly from data files into the database.

Page Items: Eg Gh Id: O1MOSN01 | Year: 2005 | Month: 02 | Day: 01

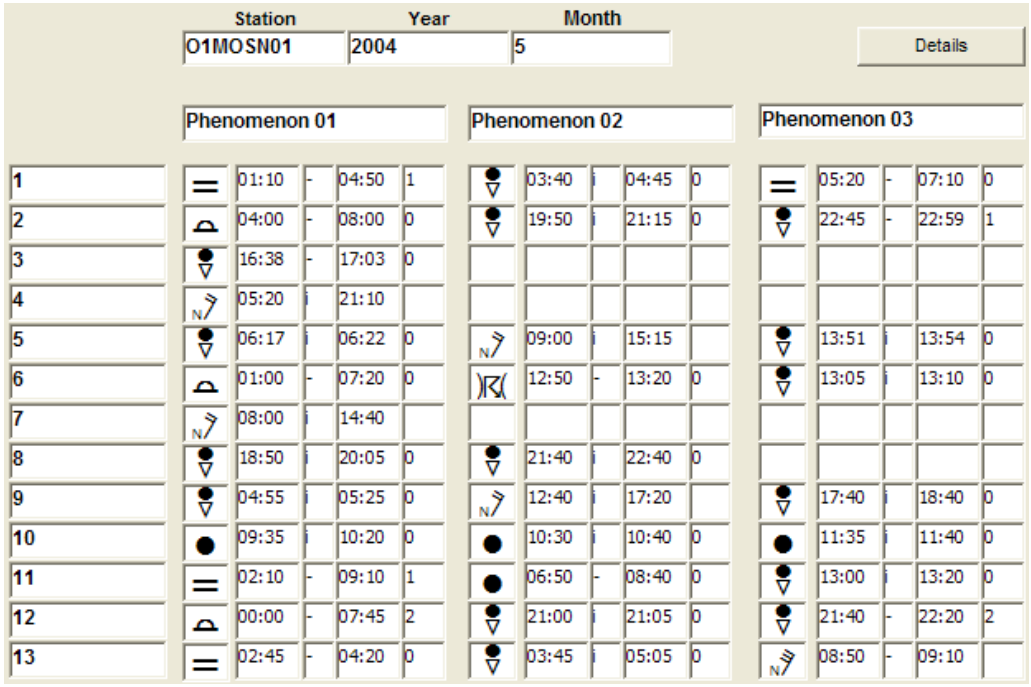
	D	D10	Ddraha	E	F	H	N	P	S-C1	S-C2	S-C3
00:00	346	0	1173	6	1	95	8	976	7	6	
01:00	318	0	2165	6	3	95	8	976	7	6	
02:00	326	33	2886	6	3	85	8	976	7	6	
03:00	353	35	2930	5	3	84	8	977	6	6	3
04:00	360	36	2917	5	3	100	6	977	6	6	
05:00	0	0	1110	5	1	100	3	977	6		
06:00	169	0	494	4	1	100	4	978	6		
07:00	197	0	1317	4	1	96	5	978	6		
08:00	222	22	1767	4	2	94	7	979	6		
09:00	200	19	2110	5	2	70	6	979	8	6	
10:00	207	21	1566	5	2	59	6	980	8	6	
11:00	217	22	2316	5	3	76	7	981	8		
12:00	223	22	2788	5	3	72	8	981	7	8	
13:00	237	24	2756	6	3	73	8	981	7	8	
14:00	318	0	621	6	1	70	8	982	7	8	
15:00	332	0	1830	6	2	80	8	982	7	6	
16:00	350	35	1184	6	1	84	7	983	7	6	6
17:00	65	0	1238	5	1	97	7	984	6	6	
18:00	337	0	1623	5	2	96	8	985	8		
19:00	357	36	1620	6	2	93	8	985	7	8	
20:00	277	0	843	6	1	93	8	986	7	8	7
21:00	263	26	1768	5	2	95	8	986	7	6	
22:00	196	21	902	6	1	98	8	987	6	6	
23:00	247	25	1982	5	2	97	8	987	7	8	

Daily aggregated values – are daily minima, maxima, sums or averages calculated via a defined calculation formula. For example, the calculation of average daily temperature or daily precipitation total.

Page Items: Eg Gh Id: O1MOSN01 | Year: 2005 | Month: 02

		Value					
		E	P	S-P	S-VV	SD	T
01	AVG	5	981	1013		5	-1
	MIN				15		
02	AVG	5	987	1020		5	-1
	MIN				16		
03	AVG	6	992	1025		6	-1
	MIN				12		
04	AVG	5	1002	1035		5	-2
	MIN				25		
05	AVG	3	1002	1036		3	-7
	MIN				22		
06	AVG	2	1003	1037		2	-12
	MIN				1		
07	AVG	2	1005	1040		2	-13
	MIN				1		
08	AVG	2	1006	1040		2	-8
	MIN				20		
09	AVG	2	1004	1039		2	-9
	MIN				60		
10	AVG	3	999	1033		3	-4
	MIN				30		
11	AVG	6	990	1023		6	0
	MIN				10		
12	AVG	6	977	1009		6	2
	MIN				20		
13	AVG	6	961	992		6	3
	MIN				61		
14	AVG	5	965	997		5	-0
	MIN				62		
15	AVG	4	972	1005		4	-3
	MIN				14		

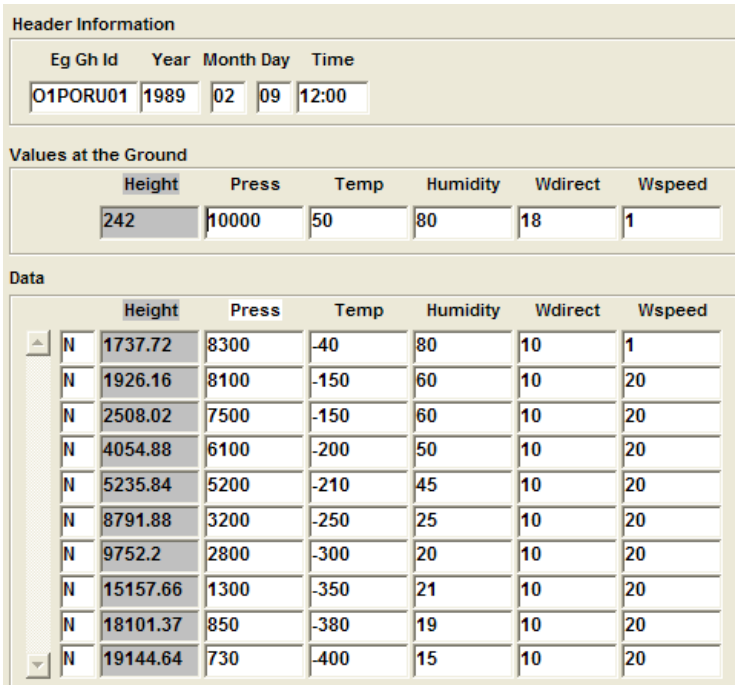
Meteorological phenomena – are observed by observers over a certain period of the day, for example, a thunderstorm, rain or dew. The observation can contain additional information, e.g. its intensity or progress. For key entry and for displaying of the phenomena the special pictorial symbols are used. These symbols have been adopted from the WHO Cloud Atlas. The meteorological phenomena are post processed so that occurrence day counts of each phenomenon are calculated for month and year. The data are keyed manually or they can be imported from data files.



Station	Year	Month	Details
O1MOSN01	2004	5	

	Phenomenon 01					Phenomenon 02					Phenomenon 03				
1	=	01:10	-	04:50	1	▽●	03:40	i	04:45	0	=	05:20	-	07:10	0
2	⊃	04:00	-	08:00	0	▽●	19:50	i	21:15	0	▽●	22:45	-	22:59	1
3	▽●	16:38	-	17:03	0										
4	N≫	05:20	i	21:10											
5	▽●	06:17	i	06:22	0	N≫	09:00	i	15:15		▽●	13:51	i	13:54	0
6	⊃	01:00	-	07:20	0	≪	12:50	-	13:20	0	▽●	13:05	i	13:10	0
7	N≫	08:00	i	14:40											
8	▽●	18:50	i	20:05	0	▽●	21:40	i	22:40	0					
9	▽●	04:55	i	05:25	0	N≫	12:40	i	17:20		▽●	17:40	i	18:40	0
10	●	09:35	i	10:20	0	●	10:30	i	10:40	0	●	11:35	i	11:40	0
11	=	02:10	-	09:10	1	●	06:50	-	08:40	0	▽●	13:00	i	13:20	0
12	⊃	00:00	-	07:45	2	▽●	21:00	i	21:05	0	▽●	21:40	-	22:20	2
13	=	02:45	-	04:20	0	▽●	03:45	i	05:05	0	N≫	08:50	-	09:10	

Upper air data (ascent data) – the data measured by meteorological balloons. The measurement is carried out at certain levels. The levels are specified by means of the height, the pressure or both. If only one of the pressure or height is available the other is automatically calculated. At the same time the standard pressure levels of 1000, 950, 850, 700, 500, 400 300, 250, 200, 150, 100, 70, 50, 30 a 10 hPa are calculated. The other measured values (wind speed and direction, temperature etc.) for the standard pressure levels are interpolated.



Header Information

Eg Gh Id	Year	Month	Day	Time
O1PORU01	1989	02	09	12:00

Values at the Ground

Height	Press	Temp	Humidity	Wdirect	Wspeed
242	10000	50	80	18	1

Data

	Height	Press	Temp	Humidity	Wdirect	Wspeed
N	1737.72	8300	-40	80	10	1
N	1926.16	8100	-150	60	10	20
N	2508.02	7500	-150	60	10	20
N	4054.88	6100	-200	50	10	20
N	5235.84	5200	-210	45	10	20
N	8791.88	3200	-250	25	10	20
N	9752.2	2800	-300	20	10	20
N	15157.66	1300	-350	21	10	20
N	18101.37	850	-380	19	10	20
N	19144.64	730	-400	15	10	20

Storage precipitation gauge measurements (accumulations) – the system can store data which are measured for more than one day by means of storage precipitation gauges. This data can be apportioned to daily precipitation values by means of the correlation relationship between the storage gauge and surrounding (regular) daily stations.

Station ID	Begin	End	Value	Refer satation ID
C1BRZK03	04.06.1991	17.10.1991	488	C1FILH01
C1BRZK03	18.10.1991	20.05.1992	1000	C1FILH01
C1BRZK03	21.05.1992	15.10.1992	440	C1FILH01
C1BRZK03	16.10.1992	18.05.1993	944	C1FILH01
C1BRZK03	19.05.1993	11.10.1993	800	C1FILH01
C1BRZK03	12.10.1993	18.05.1994	1246	C1FILH01
C1BRZK03	19.05.1994	12.10.1994	552	C1FILH01
C1BRZK03	13.10.1994	15.05.1995	1560	C1FILH01
C1BRZK03	16.05.1995	12.10.1995	704	C1FILH01
C1BRZK03	13.10.1995	16.05.1996	616	C1FILH01
C1BRZK03	17.05.1996	10.10.1996	576	C1FILH01
C1BRZK03	11.10.1996	19.05.1997	1152	C1FILH01
C1BRZK03	20.05.1997	16.10.1997	544	C1FILH01
C1BRZK03	17.10.1997	12.05.1998	728	C1FILH01
C1BRZK03	13.05.1998	15.10.1998	768	C1FILH01
C1BRZK03	16.10.1998	19.05.1999	1296	C1FILH01

Intensity of rainfall (One minute precipitation) – one minute precipitation can be stored into the database. This data is measured automatically in Czech Republic, thus it is imported directly from data files. This is subsequently used for computation of the intensity rainfall chart; here the cumulative and moving sums can be used.

	Gh Id	Datetime	Rainfall SUM	Day	Month	Year	Hour	Minute
1	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	03
2	B2VMEZ01	12-APR-2000	.2	12	04	2000	16	04
3	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	05
4	B2VMEZ01	12-APR-2000	.2	12	04	2000	16	06
5	B2VMEZ01	12-APR-2000	.3	12	04	2000	16	07
6	B2VMEZ01	12-APR-2000	.7	12	04	2000	16	08
7	B2VMEZ01	12-APR-2000	.7	12	04	2000	16	09
8	B2VMEZ01	12-APR-2000	1.2	12	04	2000	16	10
9	B2VMEZ01	12-APR-2000	.7	12	04	2000	16	11
10	B2VMEZ01	12-APR-2000	.5	12	04	2000	16	12
11	B2VMEZ01	12-APR-2000	.7	12	04	2000	16	13
12	B2VMEZ01	12-APR-2000	.4	12	04	2000	16	14
13	B2VMEZ01	12-APR-2000	.2	12	04	2000	16	15
14	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	16
15	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	17
16	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	18
17	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	19
18	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	21
19	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	22
20	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	23
21	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	24
22	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	25
23	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	26
24	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	27
25	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	28
26	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	29
27	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	30
28	B2VMEZ01	12-APR-2000	.2	12	04	2000	16	31
29	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	32
30	B2VMEZ01	12-APR-2000	.1	12	04	2000	16	34
31	B2VMEZ01	12-APR-2000	.1	12	04	2000	17	39
32	B2VMEZ01	13-APR-2000	.1	13	04	2000	21	57
33	B2VMEZ01	13-APR-2000	.1	13	04	2000	22	00
34	B2VMEZ01	14-APR-2000	.1	14	04	2000	04	00

Monthly data – these monthly values are calculated from daily data. The maximum, minimum, sum and the average is calculated not only for the month but also for the year. Optionally you can calculate the values for shorter 1-3. decade or 1-6. pentade periods. Besides these values the number of days satisfying certain condition can be calculated (e.g. number of days with temperature above 25 °C). For meteorological phenomena the number of days for which the phenomenon occurs is calculated (e.g. number of days with rainfall). All are automatically calculated by system.

Page Items: Eg Gh Id: O1MOSN01 | Eg El Abbreviation: T | Mdtype: 0 | Mdfunction: MAX

	Year	Time	Regular	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1	1983	21:00	N	10.70	8.10	9.20	20.40	23.80	20.60	25.10	22.80	23.80	18.40	9.40	12.30	25.10
2	1984	07:00	N	5.80	5.50	7.50	11.10	17.50	18.20	23.30	17.90	16.80	15.00	13.60	5.00	23.30
3	1983	07:00	N	7.80	2.90	9.70	18.70	24.30	19.50	23.80	22.60	21.80	15.30	10.30	8.70	24.30
4	1982	07:00	N	7.70	2.40	7.80	10.40	19.80	20.20	22.20	20.80	17.20	14.80	10.10	11.00	22.20
5	1981	07:00	N	4.80	5.20	10.00	9.70	22.30	23.80	21.80	20.30	20.60	15.30	10.90	5.40	23.80
6	1980	07:00	N	4.20	4.80	9.70	9.20	16.10	21.40	19.40	20.50	14.40	16.70	10.70	8.80	21.40
7	1979	07:00	N	8.40	1.60	10.50	10.20	21.70	21.30	19.30	21.10	16.20	17.20	11.20	9.80	21.70
8	1978	07:00	N	7.00	6.70	14.50	9.80	18.40	21.70	18.80	25.60	18.30	12.00	6.90	8.30	25.60
9	1977	07:00	N	7.60	10.00	10.00	17.70	20.10	19.70	21.60	18.30	17.20	11.80	13.90	4.00	21.60
10	1976	07:00	N	8.60	2.10	7.50	11.90	15.30	21.10	21.60	18.10	16.50	16.00	15.10	8.60	21.60
11	1975	07:00	N	8.00	2.70	7.70	12.20	16.10	21.80	21.70	18.60	17.20	21.40	7.20	5.40	21.80
12	1974	07:00	N	4.90	7.40	9.40	14.50	14.70	18.00	19.40	22.00	17.40	7.80	12.00	9.30	22.00
13	1973	07:00	N	2.00	3.90	7.60	12.60	20.30	20.40	21.80	23.20	17.60	13.30	7.20	11.20	23.20
14	1972	07:00	N	3.90	7.00	10.20	12.30	16.40	22.40	21.00	20.10	18.20	11.40	9.40	5.40	22.40
15	1971	07:00	N	7.10	5.70	10.80	11.10	19.90	18.60	22.60	23.20	16.20	12.70	9.10	8.60	23.20
16	1970	07:00	N	5.00	3.40	5.70	15.40	14.20	21.30	20.80	20.00	15.10	12.80	12.40	5.90	21.30
17	1969	07:00	N	6.80	6.70	5.80	17.80	23.70	19.40	21.20	18.10	16.00	13.80	10.40	-.60	23.70
18	1968	07:00	N	4.80	7.80	8.90	12.90	20.80	22.00	21.40	17.60	15.20	15.30	16.10	1.80	22.00
19	1967	07:00	N	3.60	5.80	9.70	15.20	20.20	23.20	23.20	21.60	19.60	15.40	11.40	8.70	23.20
20	1966	07:00	N	4.90	13.00	7.80	14.80	15.60	19.10	19.30	18.70	17.00	17.50	13.40	6.30	19.30
21	1965	07:00	N	3.00	-.40	6.30	8.00	17.80	21.40	20.90	21.10	20.40	14.10	11.00	8.80	21.40
22	1964	07:00	N	.70	3.10	3.20	15.30	16.60	21.10	20.20	20.40	18.90	15.70	10.40	2.90	21.10
23	1963	07:00	N	.50	.30	3.80	14.80	15.20	24.30	22.40	22.80	17.20	13.70	14.30	1.20	24.30
24	1962	07:00	N	4.70	1.90	8.10	16.30	14.40	19.70	22.20	21.20	20.50	12.70	11.10	4.80	22.20
25	1961	07:00	N	10.10	3.60	9.20	14.40	15.60	21.80	22.00	21.60	17.60	13.70	11.40	13.80	22.00
26	1983	14:00	N	9.40	6.60	17.10	22.90	29.90	28.20	33.50	32.10	28.20	23.90	17.80	12.40	33.50
27	1982	14:00	N	8.30	7.50	17.30	19.10	27.20	31.10	28.10	30.10	28.80	21.50	15.50	11.20	31.10
28	1981	14:00	N	5.10	7.60	20.80	21.90	27.10	31.30	29.10	30.70	27.20	23.70	13.40	7.00	31.30
29	1980	14:00	N	5.00	10.30	16.30	20.00	22.60	28.30	24.80	30.00	24.80	22.60	12.80	9.30	30.00
30	1979	14:00	N	5.30	6.10	15.50	19.80	30.20	30.20	27.50	30.00	26.30	22.40	12.40	11.60	30.20
31	1978	14:00	N	8.30	12.50	21.20	19.40	24.00	26.30	28.50	28.90	24.30	21.20	13.30	11.30	28.90
32	1977	14:00	N	9.10	12.90	20.20	27.60	29.20	29.60	27.70	28.00	26.30	25.50	15.30	5.60	29.60
33	1976	14:00	N	7.80	10.20	13.70	22.00	24.80	29.60	32.90	27.30	26.90	24.20	16.70	8.10	32.90

Normal data – normal values calculated from the monthly data. This data represents long term month or year normals; again calculated automatically by the system.

Page Items: Eg Gh Id: O1MOSN01 | Month: 01 | Time: AVG | Regular: N

	Eg El Abbreviation	First Year	Last Year	Normal	Perc 1	Perc 2	Perc 5	Perc 10	Perc 20	Perc 30	Perc 40	Perc 50	Perc 60
1	RV	01.01.197	31.12.199	83.0	60.3	65.0	69.0	72.0	77.0	79.0	82.0	84.0	86.0
2	SD	01.01.197	31.12.199	1.1	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1.0
3	E	01.01.197	31.12.200	4.9	1.2	1.6	2.1	2.6	3.4	3.9	4.5	5.0	5.4
4	F	01.01.197	31.12.200	4.8	0.3	0.3	1.0	1.7	2.3	3.3	4.0	4.7	5.7
5	H	01.01.197	31.12.200	83.0	59.0	62.9	67.0	71.0	76.0	79.0	82.0	84.0	86.0
6	O	01.01.197	31.12.200	7.4	0.0	0.0	1.3	3.3	5.0	6.3	7.7	8.3	9.2
7	P	01.01.197	31.12.200	988.0	964.1	967.2	971.0	974.3	978.2	982.0	985.3	988.5	991.7
8	T	01.01.197	31.12.200	-1.4	-18.3	-15.2	-11.5	-9.1	-5.6	-3.2	-1.7	-0.6	0.5
9	XX	01.01.199	31.12.200	1022.4	998.8	1001.2	1004.0	1007.4	1012.1	1016.4	1020.3	1023.7	1026.4

Extreme values – derived automatically from daily data, these represent long term maximum, minimum or average. The date of the occurrence of the extreme is stored for the maximum and minimum value.

Page Items: Eg Gh Id: O1MOSN01 | Month: 01 | Time: AVG

	Eg El Abbreviation	Regular	First Year	Last Year	Average	Maximum	Date Max	Minimum	Date Min	Max Sch Change	Max Day Change	Perc 1	Perc 2	Pe
1	XX	N	01.01.1991	31.12.2000	1022.4	1044.8	03.01.1993	995.6	11.01.1995	0.0	23.8	998.8	1001.2	1
2	RV	N	01.01.1961	31.12.1999	83.0	100.0	10.01.1994	40.0	01.01.1973	0.0	28.0	62.0	65.0	
3	T	N	01.01.1990	31.12.2000	-0.7	11.7	07.01.1994	-18.8	03.01.1993	0.0	11.5	-14.6	-12.3	
4	H	N	01.01.1961	31.12.2005	84.0	100.0	10.01.1994	38.0	01.01.1973	0.0	40.0	59.0	63.2	
5	T	N	01.01.1961	31.12.1995	-2.0	11.7	07.01.1994	-25.1	07.01.1985	0.0	14.7	-18.4	-15.9	
6	SD	N	01.01.1961	31.12.1995	1.0	5.8	07.01.1994	0.0	11.01.1963	0.0	3.9	0.0	0.1	
7	T	N	01.01.2000	31.12.2004	-1.8	10.1	29.01.2002	-15.4	04.01.2002	0.0	10.1	-14.5	-12.6	
8	SD	N	01.01.1961	31.12.1999	1.0	5.8	07.01.1994	0.0	11.01.1963	0.0	3.9	0.0	0.1	
9	E	N	01.01.1961	31.12.2005	4.7	9.7	28.01.2002	0.7	07.01.1985	0.0	4.1	1.3	1.6	
10	T	N	01.01.1961	31.12.2005	-1.9	11.7	07.01.1994	-25.1	07.01.1985	0.0	14.7	-17.4	-15.3	
11	F	N	01.01.1961	31.12.2005	4.7	12.7	15.01.1968	0.0	19.01.1961	0.0	8.0	0.3	0.3	
12	F	N	01.01.1961	31.12.1995	4.8	12.7	15.01.1968	0.0	19.01.1961	0.0	8.0	0.3	0.3	
13	H	N	01.01.1961	31.12.1995	83.0	100.0	10.01.1994	38.0	01.01.1973	0.0	29.0	59.0	63.0	
14	P	N	01.01.1961	31.12.1995	987.6	1010.9	03.01.1964	955.3	15.01.1981	0.0	22.5	963.0	966.1	
15	E	N	01.01.1961	31.12.1995	4.7	9.4	03.01.1991	0.7	07.01.1985	0.0	3.7	1.2	1.5	
16	P	N	01.01.1961	31.12.2005	987.7	1010.9	03.01.1964	955.3	15.01.1981	0.0	22.5	964.0	966.1	
17	RV	N	01.01.1961	31.12.1995	83.0	100.0	10.01.1994	40.0	01.01.1973	0.0	28.0	62.0	65.0	

Inventory – the system calculates the inventory of missing data. For each month the number of missing values is stored.

Page Items: Eg gh id: O1MOSN01 | Eg el abbreviation: T | Year: 2004

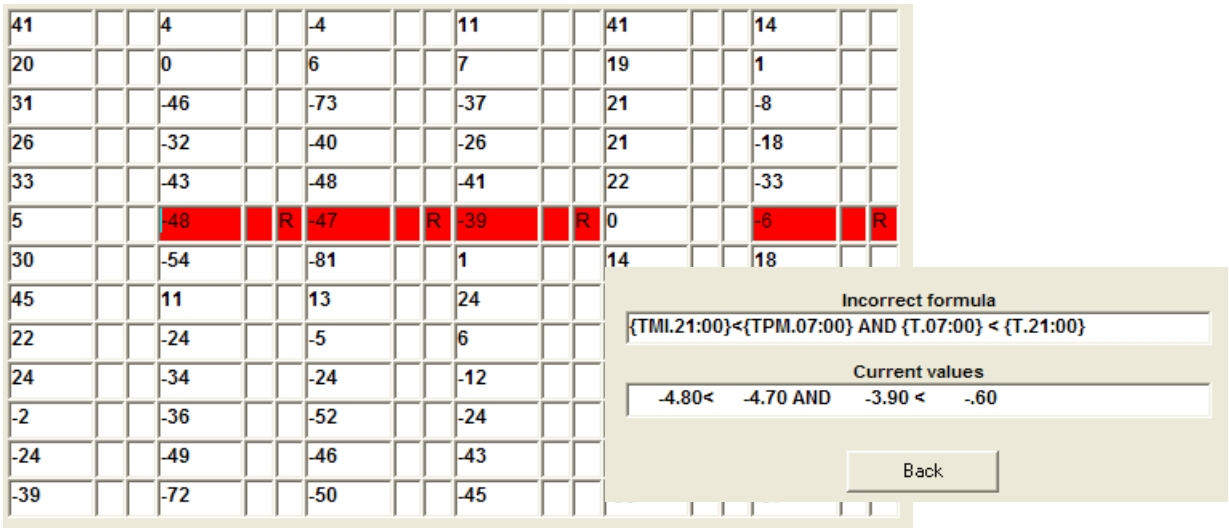
	Gap											
	01	02	03	04	05	06	07	08	09	10	11	12
00:00	0	0	0	1	0	0	0	0	0	0	0	0
01:00	0	0	0	1	0	0	0	0	0	0	0	0
02:00	0	0	0	1	0	0	0	0	0	1	0	0
03:00	0	0	0	1	0	0	0	0	0	0	0	0
04:00	0	0	0	1	0	0	0	0	0	0	0	0
05:00	0	0	0	1	0	0	0	0	0	0	0	1
06:00	0	0	0	1	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	1	0	0	0	0	0	0	0	0
09:00	0	0	0	1	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	1	0	0	0	0
11:00	0	0	0	1	0	0	0	1	0	1	0	0
12:00	0	0	0	1	0	0	0	1	0	1	0	0
13:00	0	0	0	1	0	0	0	1	0	1	0	0
14:00	0	0	0	1	0	0	1	0	0	1	0	0
15:00	0	0	0	1	0	0	0	0	0	0	0	0
16:00	0	0	0	1	0	0	0	0	0	0	0	0
17:00	0	0	0	1	0	0	0	0	0	0	0	0
18:00	0	0	0	1	0	0	0	0	0	0	0	0
19:00	0	0	0	1	0	0	0	0	0	0	0	0
20:00	0	0	0	1	0	0	0	0	0	0	0	0
21:00	0	0	0	1	0	0	0	0	0	0	0	0
22:00	0	0	0	1	1	0	0	0	0	0	0	0
23:00	0	0	0	1	1	0	0	0	0	0	0	0

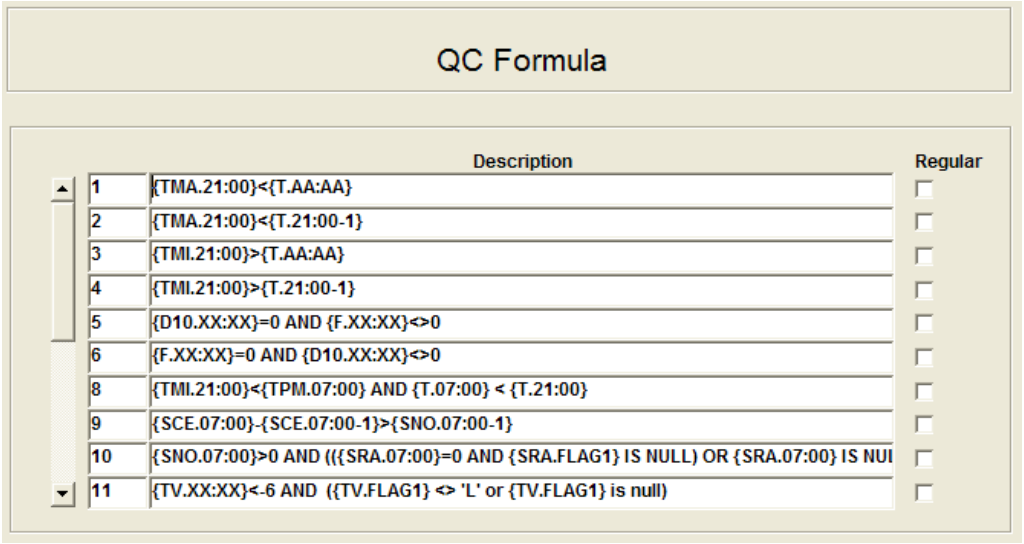
Daily Data Quality Control

All daily data stored in the database go through a series of controls. Three levels of control mechanism are applied in the Clidata system, as follows:

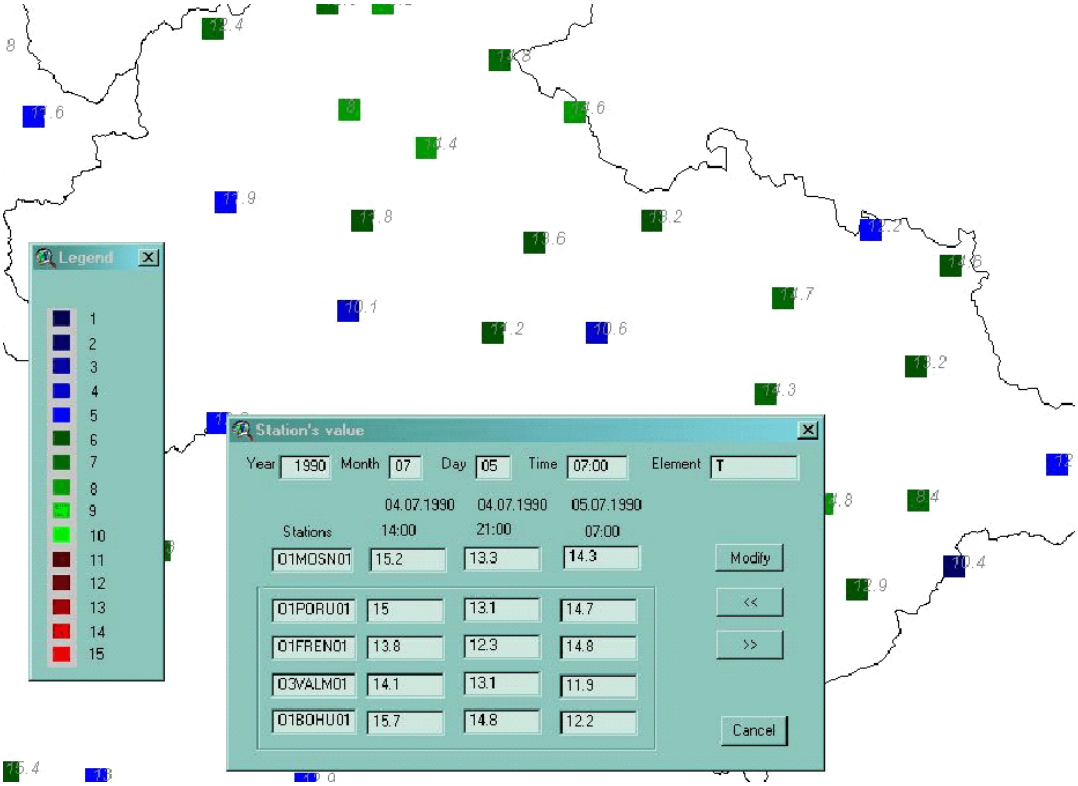
By definition – each value is checked before it is stored into the database. The basic controls are on the existence of the definition of the station and the definition of the station observation for the observed element. Next the value is checked on lower and upper limits. These limits are optionally defined by user for each measured element. Stored values are always rounded according to user definition. If some flags are defined for the element, they are checked as well (for example we can observe the ice on the wet bulb temperature - indicated by a special flag).

By Quality Control formula – in the Clidata system, general formulae for quality control on the data can be defined. Users can define the relationship between elements. A data checking form highlights the values not satisfying the quality control formulas. The user can correct the value and assign it a quality flag. For example, we can check if the minimum temperature is less than the maximum temperature during a day.





Spatial Analysis – the highest level of the control is the comparison between neighbouring values. This part of the Clidata application uses ArcView (GIS) software. The colour points representing different values are displayed on the map. These points are located exactly where the stations measuring the controlled values are located. If the colour of some station is markedly different from neighbours, the user can display more detailed information about the values and may indeed correct them if necessary.

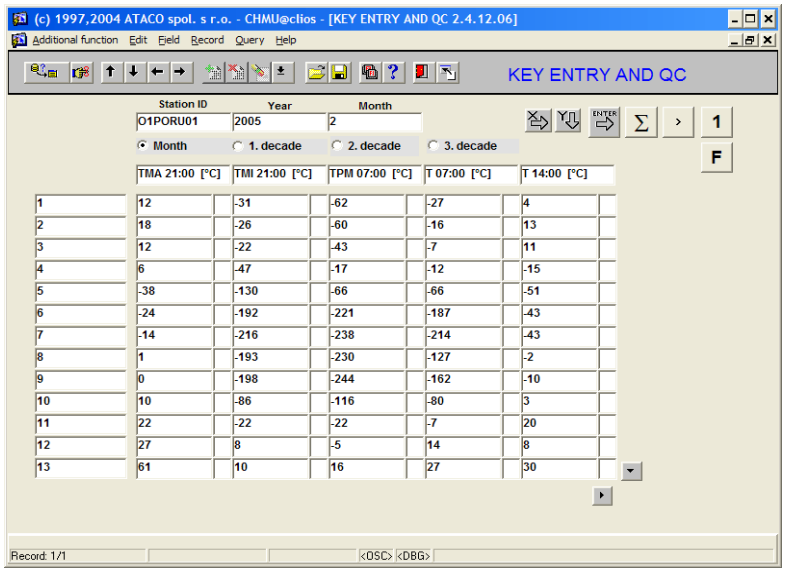


After the series of Quality Controls data are marked as validated. The system forbids changes to validated data. Only a privileged user can remove validation flags permitting change.

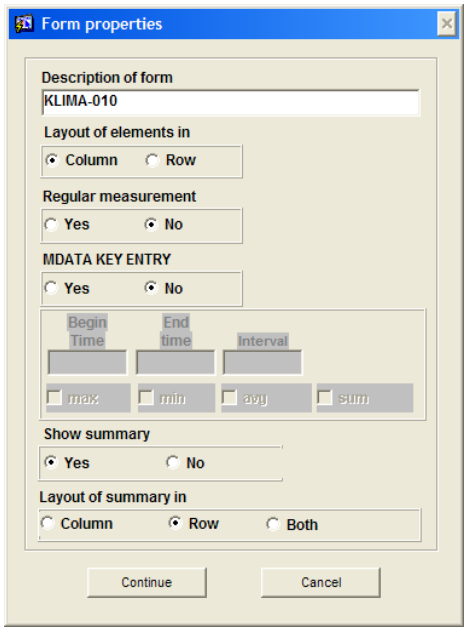
Manually Keyed Data

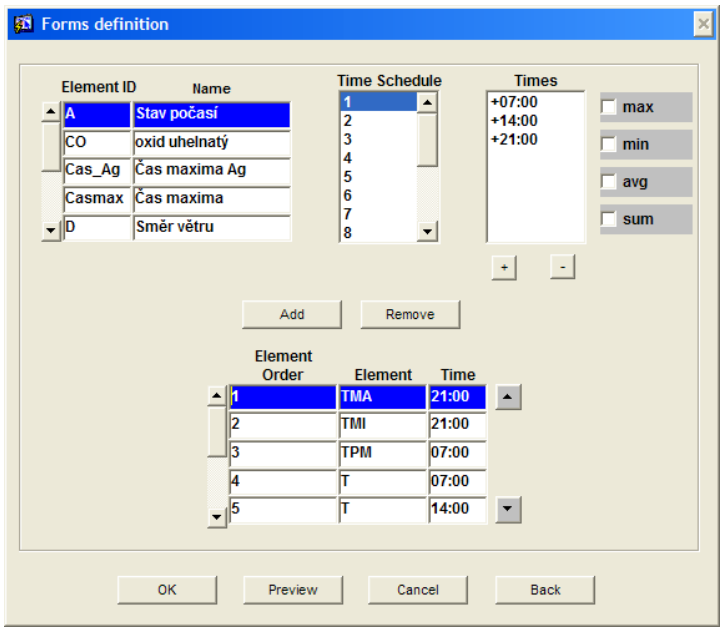
In the Clidata system data can also be entered manually by transcribing data from paper forms filled by observers.

There is functionality for definition of personalised key entry forms. The user can design his/her own key entry forms according to his/her needs and to precisely correspond to the original paper forms.



The data are keyed in well-arranged forms designed for user comfort. The keying system is based on the mature entry forms used in the Clicom system; hence, users adapted to the new system easily.

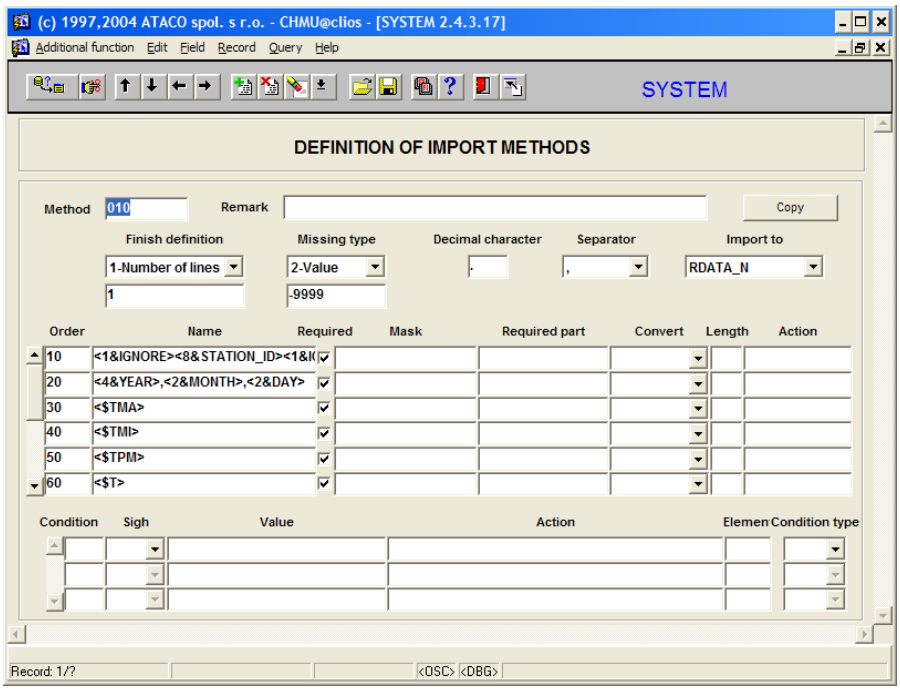




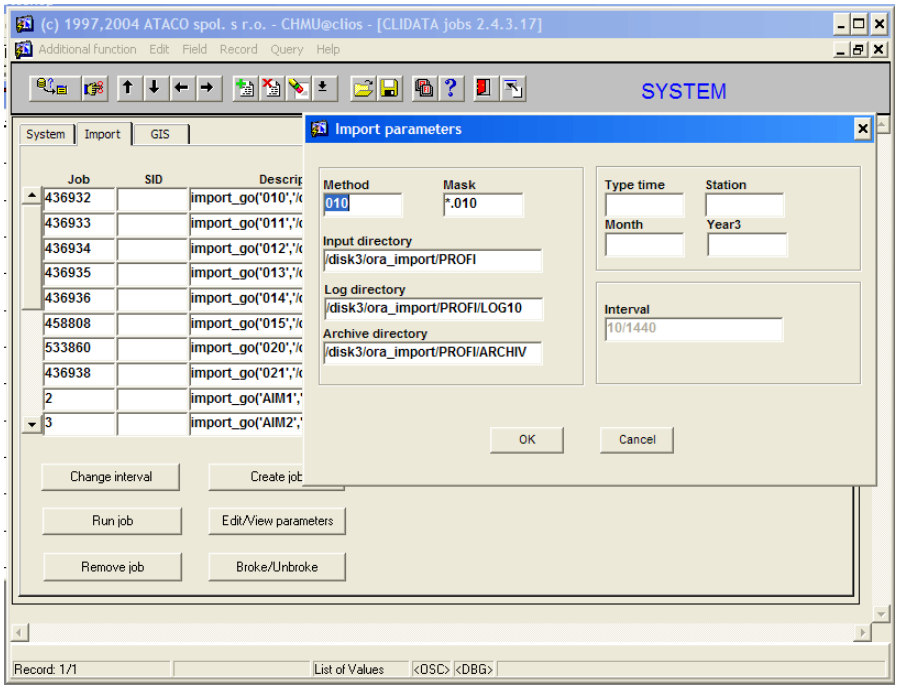
In the key entry forms the users can take advantage of the Quality Control checksums in rows or in the columns. As an alternative to the checksums a double entry process can be used for the assurance of the keyed data.

Loading Data From Text Files

The import of formatted text files is built into Clidata. The user defines their own method for each of the import text file types. The definition of the import method is very flexible and allows a wide range text file formats. After the creation of the import method the user sets up a, so called, import job to carry out loading at regular intervals.

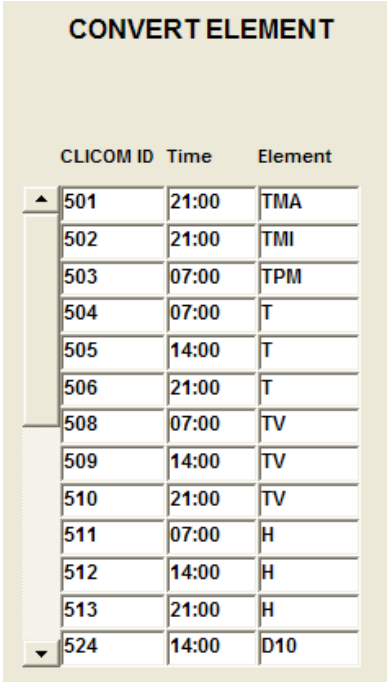


The import system is so flexible that all data in Czech Republic are imported by means of this system. Different kinds of the data are imported: daily data observed by observers and measured by automatic stations or data from the international exchange (the SYNOP messages), meteorological phenomena, one minute precipitation data etc.

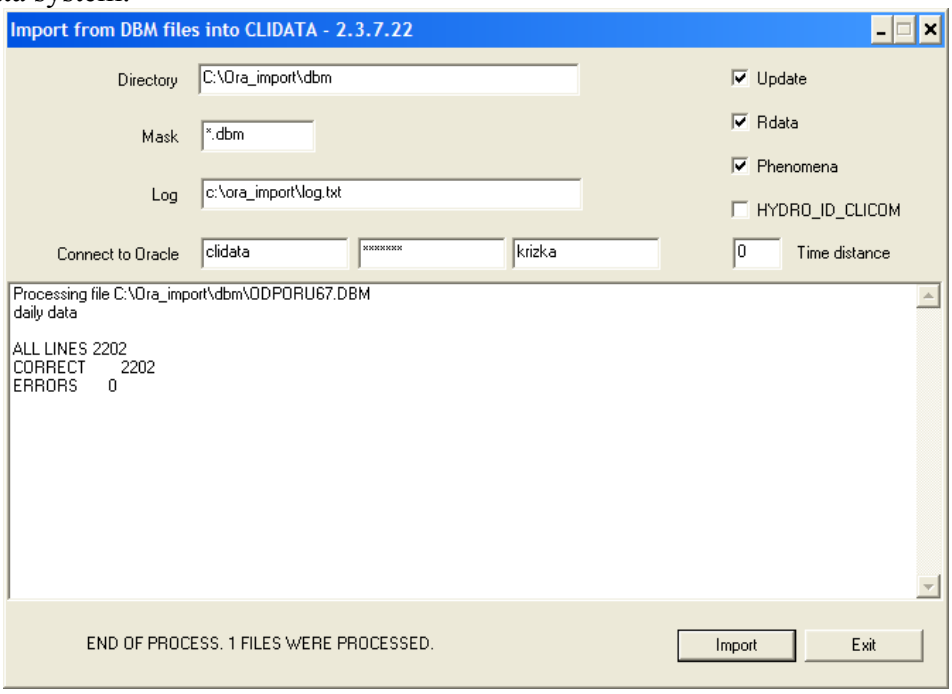


Loading CLICOM Data

For the loading of data from the previous Clicom system a special program has been developed. At present, this program is the part of the Clidata application. The program automatically recognizes the content of the Clicom data file and thus it allows direct import of the Clicom data files.



To allow the loading of the Clicom data files the stations and their observation schemes must be predefined. The definition of the stations can be imported directly from the Clicom system. The codes of elements used in old Clicom system must be assigned to the abbreviations and the times used in Clidata system.



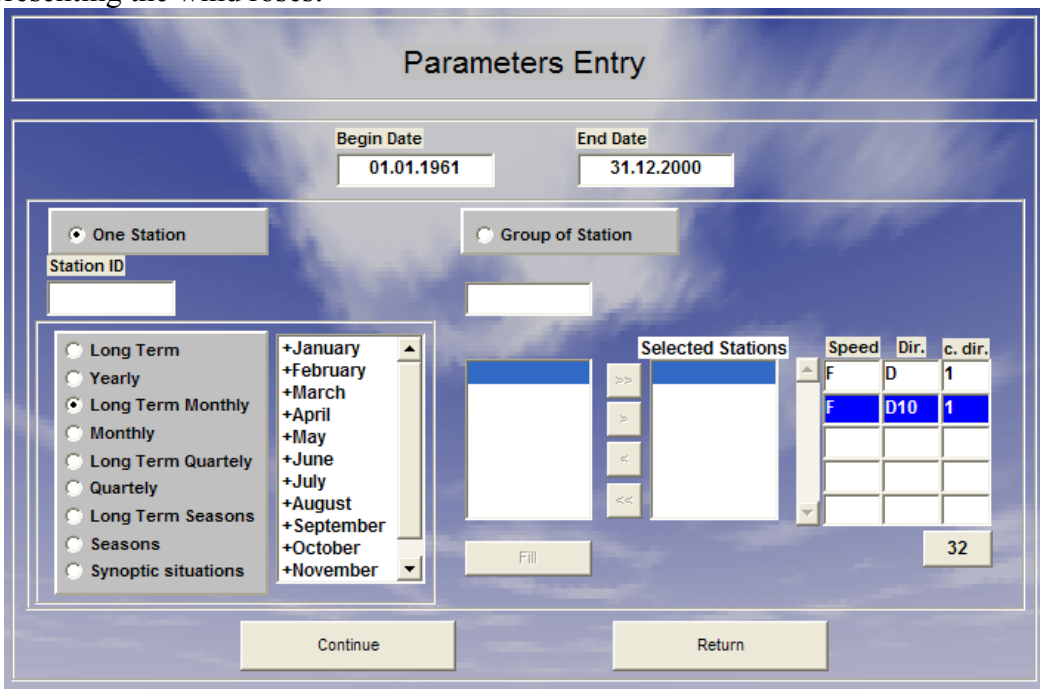
In Czech Republic, all the data from the Clicom system has been transferred to the Clidata system by means of this import program.

Wind Rose Diagrams

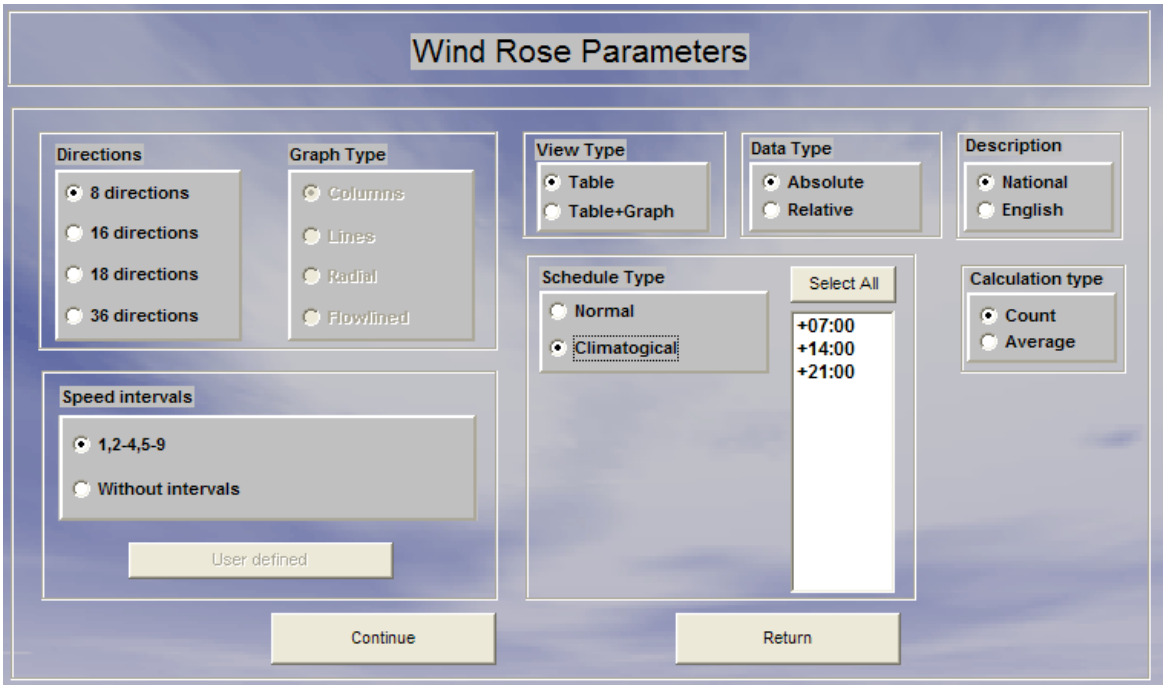
The special module for the calculation of the wind roses has been created in the Clidata system. The module calculates the wind roses from wind direction and wind speed (two elements stored in the database). The module calculates two basic characteristics:

- The number of occurrences of the wind speed for the certain wind direction
- The average wind speed for each wind direction

It is possible to calculate 8, 16, 18 and 36 direction wind roses and it is possible to draw 4 special charts representing the wind roses.

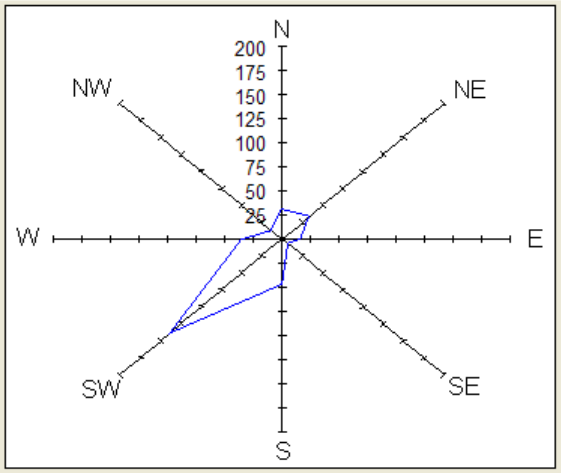


The wind roses can be calculated for different combinations of stations and months, years, seasons and quarters. For example the wind rose for January 1990-2000 can be calculated.



The wind roses can be divided into several user defined wind speed intervals.

Station ID	Period	Interval	N	NE	E	SE	S	SW	W	NW
O1MOSN01	2000	5-9	8.3	3.7	0	.8	13.3	53.1	7.4	3.6
O1MOSN01	2000	10 and >	0	0	0	0	.5	4.5	0	0
O1MOSN01	2000	Summary	31.6	33.4	14.9	6.6	47.1	139.8	35.2	13.4



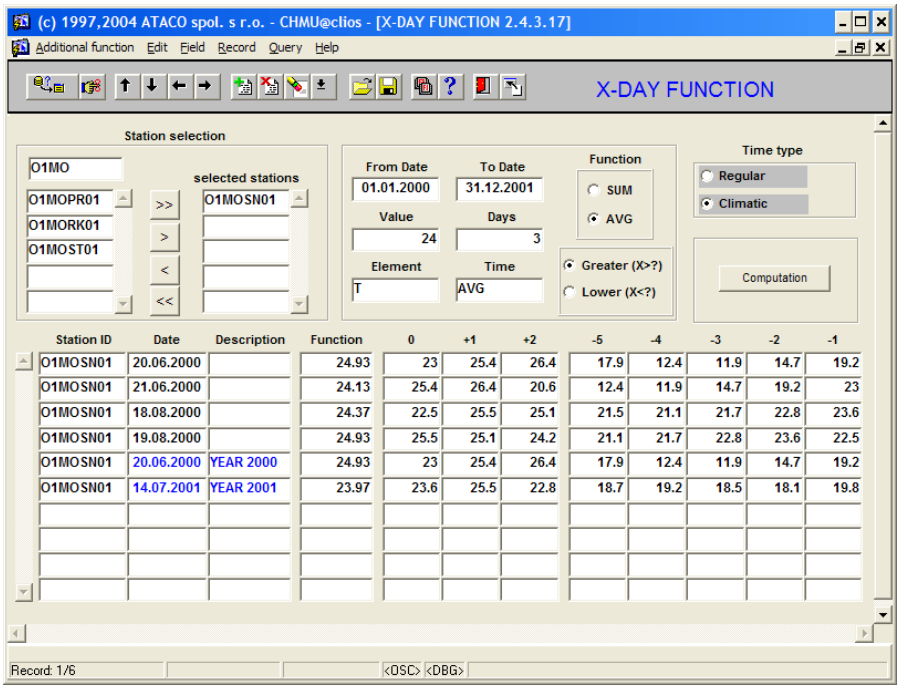
8 Directions Wind Rose

Case : Absolute Count of Wind Directions
Station : O1MOSN01
Period : 2000
Locality : Mošnov
District : Nový Jičín

Save chart | Chart Summary

X-day Summaries

The possibility of automated X-day summaries or averages is offered by this module. For the X-day function you can define the selective conditions. For example you can find the dates in the year 1990 in which the 5-day average temperature was greater than 20 °C, or perhaps the dates during the period 1990-2000 the 3-day accumulated precipitation total was greater than 500 mm.

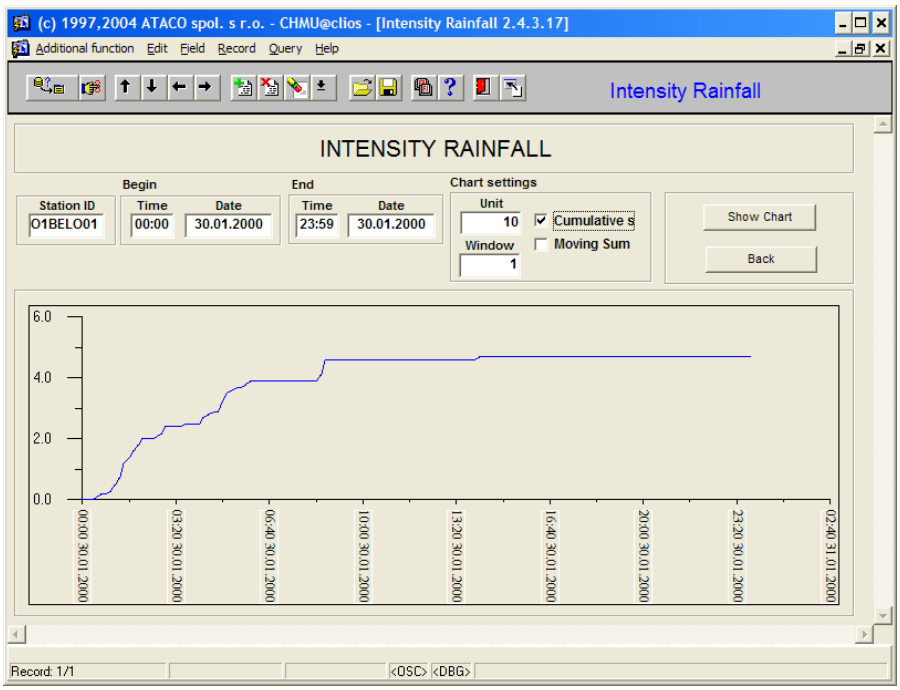


Rainfall Intensity Charts

This module of the Clidata application is used for the display and calculation of the chart, in which the progress of the rainfall is drawn. The progress of the rainfall is recorded in the database by means of one minute rainfall data.

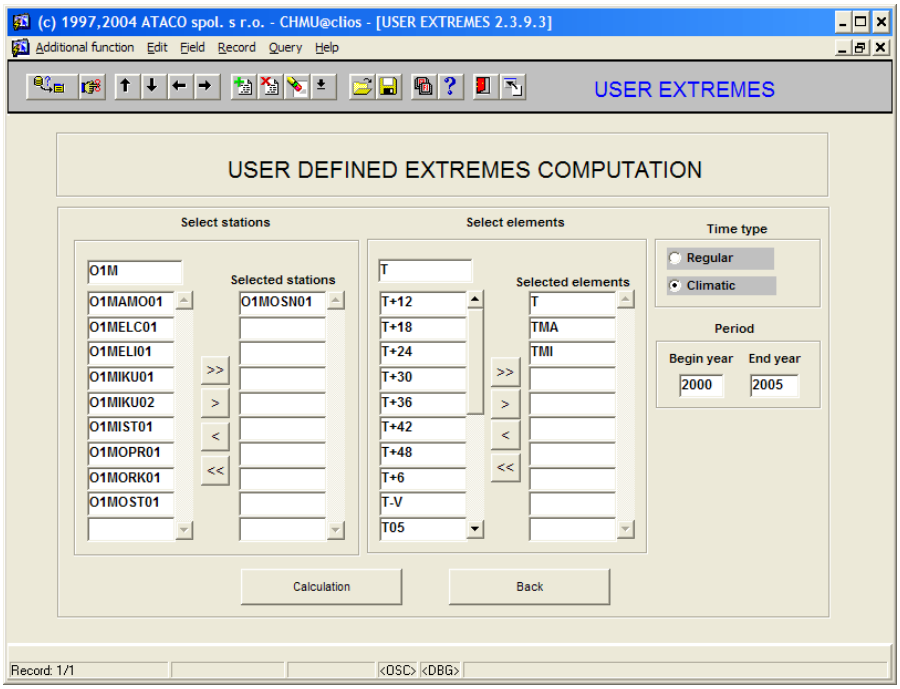
The user can set the scale of the data resolution. Besides one minute data the user can alter the scale, e.g. to one hour or a day (generally to x-minutes).

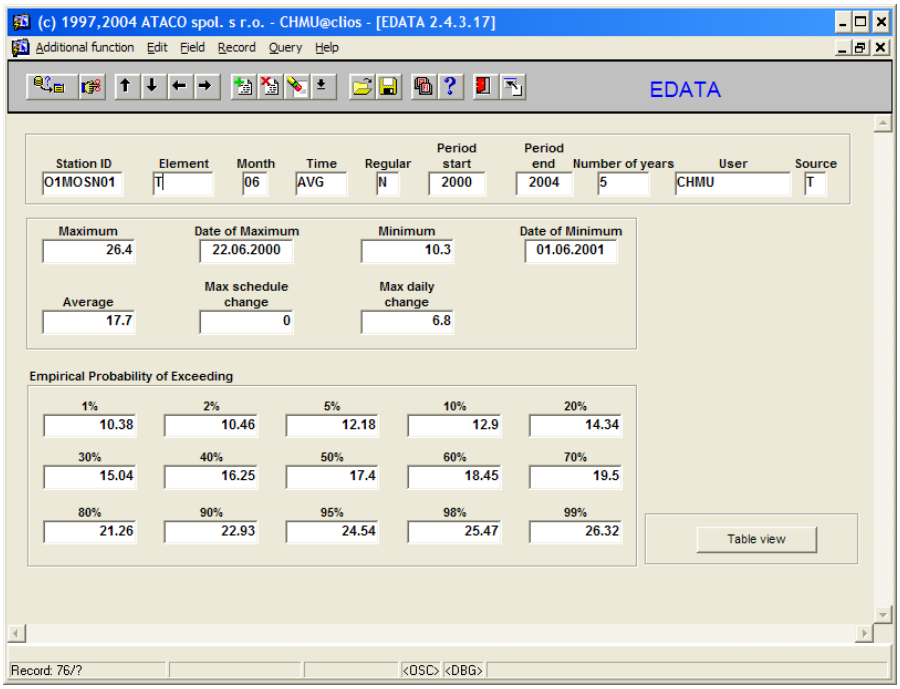
The chart can be modified by selection of the cumulative or moving sum option.



Custom Extremes

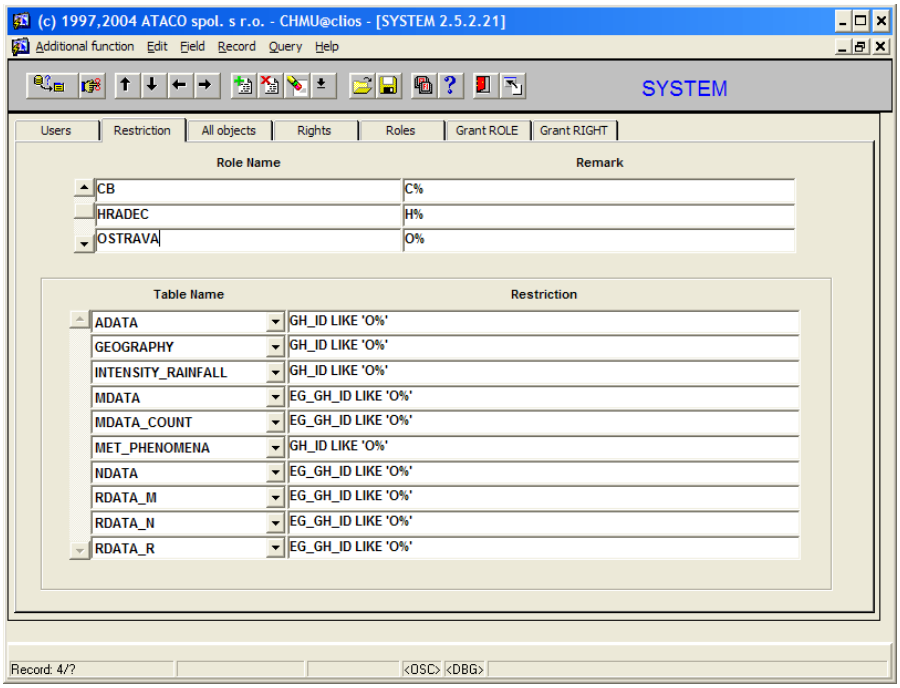
Besides standard extremes, which are calculated automatically by the system, each user can define custom periods for the calculation of extremes. The standard calculation is carried out only if at least 10 years of the data are available. The user definition is not limited and thus the user can calculate the extremes for differing periods, e.g. 5 years.



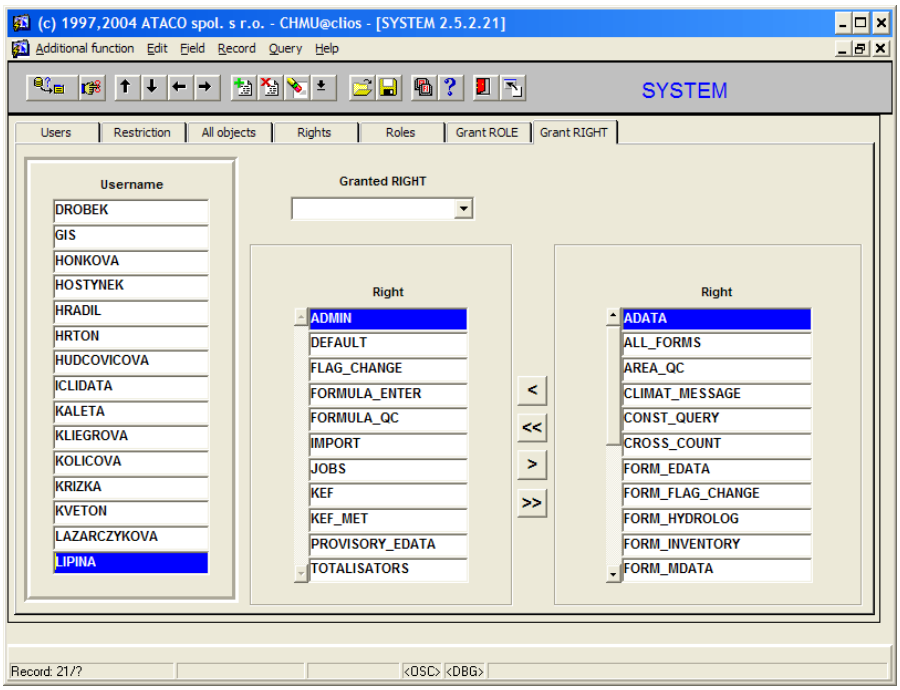


Data Security and User Privileges

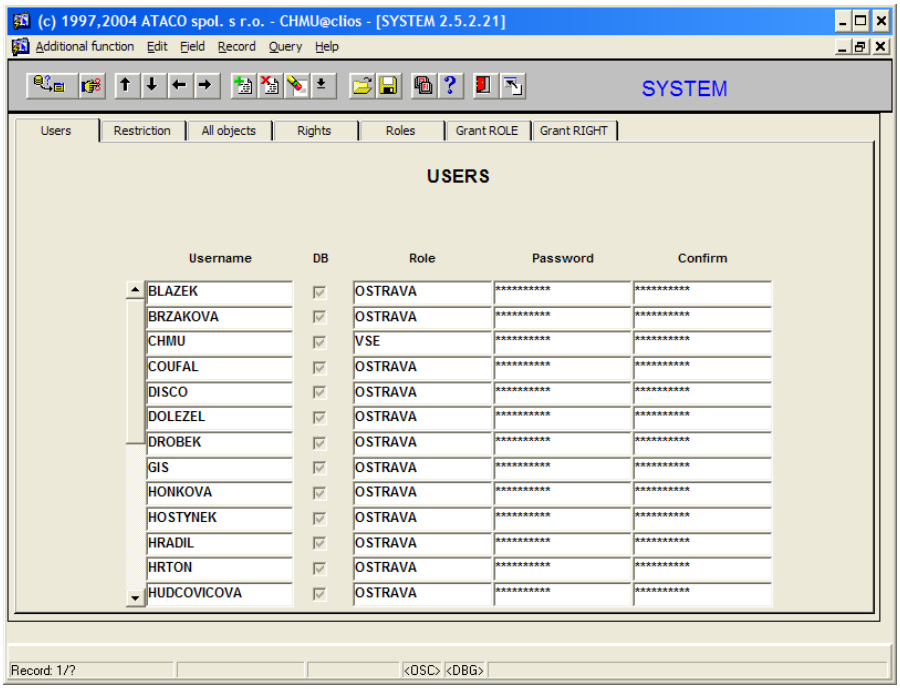
The Clidata system provides two kinds of the security. The first is the restriction of the users in accessing data and the second is the definition of rights for different parts of the Clidata application.



In the restriction definition, the administrator defines the conditions for the data access for each of the users. The user is not allowed to change the data to which he has not been granted access.



In the definition of user rights, the administrator defines access to each of the modules of the Clidata application. The user rights can be grouped into the roles, so for example, the user can work with the station geography but can't key data.


(c) 1997,2004 ATACO spol. s r.o. - CHMU@clios - [SYSTEM 2.5.2.21]
Additional function Edit Field Record Query Help
SYSTEM
Users Restriction All objects Rights Roles Grant ROLE Grant RIGHT
USERS
Username DB Role Password Confirm
BLAZEK OSTRAVA
BRZAKOVA OSTRAVA
CHMU VSE
COUFAL OSTRAVA
DISCO OSTRAVA
DOLEZEL OSTRAVA
DROBEK OSTRAVA
GIS OSTRAVA
HONKOVA OSTRAVA
HOSTYNEK OSTRAVA
HRADIL OSTRAVA
HRTON OSTRAVA
HUDCOVICOVA OSTRAVA
Record: 1/?
<OSC> <DBG>

System Requirements

The Clidata system was developed for Oracle version 8.1.5. or above.

The system can be set up for different operation systems and for different hardware configurations.

In Czech Republic, the Clidata system is operated on seven Sun Solaris servers. A replication system works between these servers, so that all servers can share the same data. In fact, only the central server collects all the data, the others have only the data required by their regional users.

The Clidata system can also be operated on small computers with MS Windows operating system.

We recommend installation of the Clidata system on server with a minimum Pentium 4 processor, 1 GB of operational memory and 10 GB of free disk space. Of course, for less data (smaller network) the system can be operated on less powerful hardware.

Automated Data Emails

The automatic sending of regular messages is also part of the Clidata application.

The data queried directly from the database can be attached to email messages. The data to be sent by email are specified by means of a general SQL command (wizard-driven construction using Oracle Discoverer). In this way the user can select actual observed data, or a set of alerts can be defined if data satisfy some predefined condition, to be sent on a routine basis. The administrators of the database use the automated emails to monitor database performance.

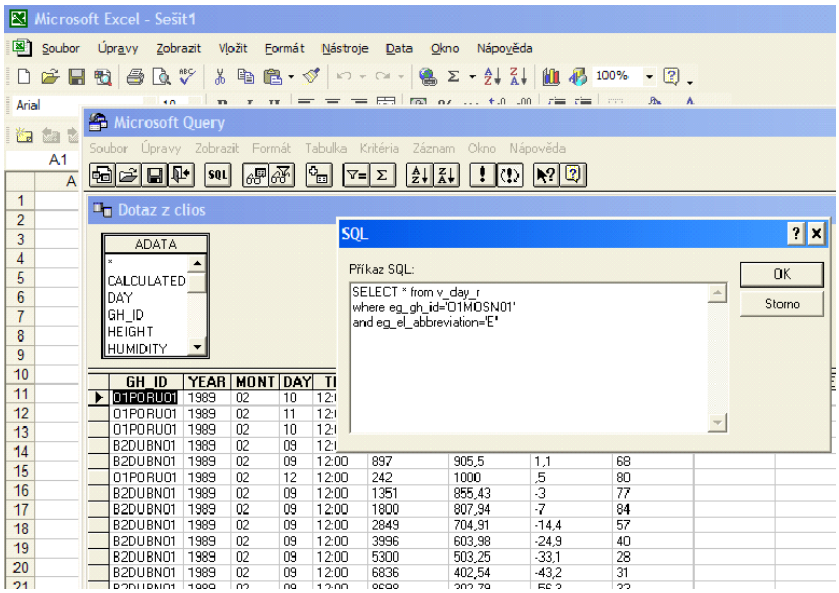
Automatic FTP Transfer

This module of the Clidata system is used generally for the transfer of the data files at regular intervals. This module can be used for both exporting and importing data. The data for export can be selected by general SQL query.

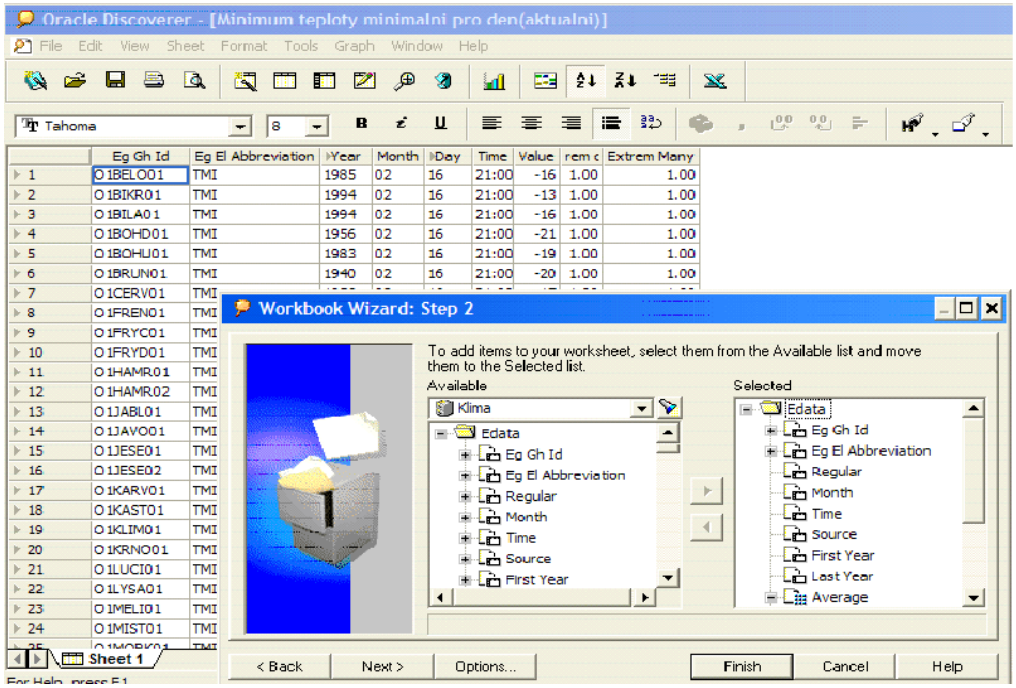
Data Extraction Alternatives

The data stored in the Clidata database can be extracted by wide range of programs and tools. Some of the more popular tools are:

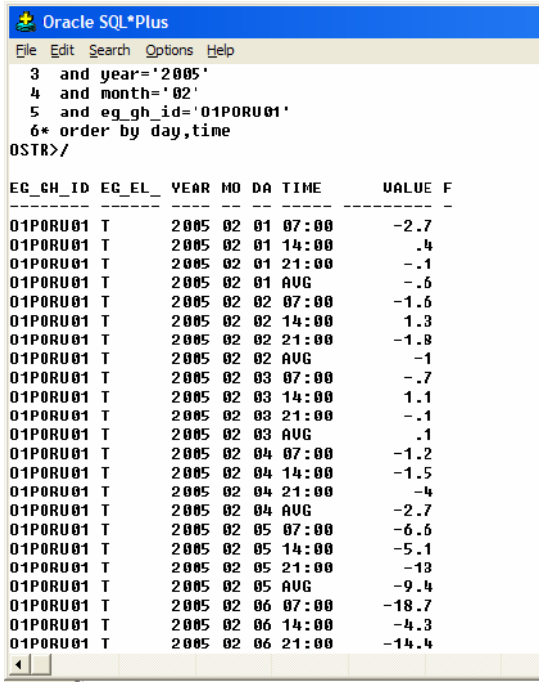
MS Excel – the data can be directly selected into the MS Excel worksheets. The user only needs to define the connection to the database (e.g. by ODBC driver or other). The user can select the data by means of direct SQL statements or take advantage of MS Query, in which the user can construct queries with visual tools.



Oracle Discoverer – the data mining tool provided by Oracle. This tool is used for creation of the data worksheets like in MS Excel. Oracle Discoverer eases finding the desired data. You can view the data quickly, without waiting for the computer to search the entire database. Views of the data are easily comprehended, accessible and user friendly. You can analyse the data using a wide range of methods especially data meeting the required conditions or falling within a certain specified interval. You can sort and compare the data as well as share it with other users, or export it to other applications.



SQL*Plus or other SQL interpreter – tools using the SQL language for extraction of data. The SQL*Plus program is the SQL interpreter provided by Oracle. This is a very powerful tool for extracting data in text formats. Other SQL interpret programs (e.g. Quest SQL Navigator) can be found on the Internet. Each of these programs has its specific advantages and disadvantages..



Other programs – because the data are within an Oracle database any program which can connect to the database can be used for data extraction. The developers of the Clidata system provide customers with comprehensive documentation of the database structure, so that users can work directly with the data tables if as required/preferred.