



## **Deliverable D1.15**

**Implemented drafts version of metadata per country of meteorological stations selected for this project, including the length of record and observed parameters per station**

Contract number: OJEU 2010/S 110-166082

Deliverable: D1.15

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Date: 28.11.2011

Version: Final version

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### **1. Introduction**

According to the service contract and the proposed deliverables D1.13 and D1.14 an operative tool was designed for metadata storage serving for homogenization and interpolation procedures.

### **2. Metadata gathering and completion**

Metadata gathering products consisted from two independent parts:

- Station properties
- Variables properties

There were two xls files both with 3 sheets designed for this action; in the first one were general station/variable attributes and properties, in the second the station/variable changes and in the third was a brief help for better understanding of some shortages and acronyms.

#### **2.1 Station properties**

Station properties file consists from 3 sheets:

- Station
- ChangeStationPosition
- Help

In the Station sheet are completed data on meteorological station:

- NameStation - Station name
- NatID - National ID of the station
- Country - Country (Country code/abbreviation)
- Actual Latitude - Latitude of up to date position station in WGS84
- Actual Longitude - Longitude of up to date position station in WGS84
- Actual Altitude - Altitude of up to date position station in meters a.s.l.
- NatHyps - National hypsometric system
- Basin - Partial basin
- StatSurr - Overall character of the surroundings
- StationType - Data from station type
- StationCat - Station category
- BegMonStat - Beginning of monitoring station
- EndMonStat - End of monitoring station
- Variables
  - Maximum air temperature - Yes or No
  - Minimum air temperature - Yes or No
  - Accumulated total precipitation - Yes or No
  - 10m wind direction - Yes or No
  - 10m horizontal wind speed - Yes or No
  - Sunshine duration - Yes or No
  - Cloud cover - Yes or No
  - Global radiation - Yes or No
  - Relative humidity - Yes or No
  - Surface vapour pressure - Yes or No
  - Surface air pressure - Yes or No
  - Snow depth - Yes or No

In the ChangeStationPosition sheet changes of climatological/precipitation station position are documented:

- NameStation - Station name
- NatID - National ID of the station
- DateChange - Date of change
- Original Longitude - Longitude before change position station in WGS84
- Original Latitude - Latitude before change position station in WGS84
- Original Altitude - Altitude before change position station in meters a.s.l.
- New Longitude - Longitude after change position station in WGS84

- New Latitude - Latitude after change position station in WGS84
- New Altitude - Altitude after change position station in meters a.s.l.
- Comment - Comment of the change position

In the Help sheet instruction for data completion are stored.

## 2.2 Variables properties

Variables properties file consists from 3 sheets:

- VariablesProperties
- ChangeVariables
- Help

In the VariablesProperties sheet the availability, completeness and quality of the individual variables are completed.

Following parameters are detected:

- NameStation - Station name
- NatID - National ID of the station
- Variables - Variables name
- Paper Sheets Data Start - Beginning observation variable on the station all available data including paper sheets
- Paper Sheets Data End - Ending observation variable on the station all available data including paper sheets
- Database Data Start - Beginning observation variable on the station only data in the database (digitalized data)
- Database Data End - Ending observation variable on the station only data in the database (digitalized data)
- Database Type Data - Type of data in the database
- Completeness - Yes/No
- Quality Control - Yes/No
- Observing Time1 - Time of observation in the morning in the mean local time

- Observing Time2 - Time of observation in the midday in the mean local time
- Observing Time3 - Time of observation in the evening in the mean local time
- Observing Time4 - Time of observation in the night (if practiced)in the mean local time
- Observing Height - Height of the observing instrument relative to the surface in meters
- Observing Instrument - Type of the observing instrument
- Observing Type - Data from station type

In the ChangeVariables sheet the changes in time series of the individual variables are recorded.

- NameStation - Station name
- NatID - National ID of the station
- Variables - Variables name
- Change Type - Type of change
- Change Date - Date of change
- Comment - Comments on the change

In the Help sheet instruction for data completion are stored.

### **3. Metada on data rescue and homogenization**

Metadata on data rescue and homogenization are added value to overall metadata system. With the help of them we are able to identify some artificial elements and procedures in data creation namely the homogenization procedures and results.

#### **3.1. Metadata on data rescue**

In the Metadata on data rescue sheet the station or variable identification will be primary. The data rescue sheets should be completed with data based on climatological/precipitation station hierarchy:

- NameStation - Station name
- NatID - National ID of the station
- Variable i - Variable name

- Time interval - Time interval of rescued data
- Source of data - Data sources (paper sheets, paper strips, year books, other)
- Completeness - Completeness of rescued data
- Quality check - Information on QC (Y/N)
- Comment(s)

### **3.2. Metadata on data homogenization**

Metadata on data homogenisation sheet serves for identification if original or homogenized data are used in the atlas creation. All the data should enable to identify type of procedure and other necessary informations for possible repetition of the homogenization technique step by step and including all relevant information to trace back the processing executed in order to arrive at the current datasets.

The Data homogenization sheets will be completed with data based on meteorological station hierarchy:

- NameStation - Station name
- NatID - National ID of the station
- Variable i - Variables name
- Homogenization procedure - Information on homogenization procedure used (MASH, other)
- Homogenization type - Type of homogenization (manual, automatic)
  - Reference station(s) - Information on reference station used in homogenization procedure
- Comment(s) - Other useful information (break point(s), significance level)

### **4. Schema of the database**

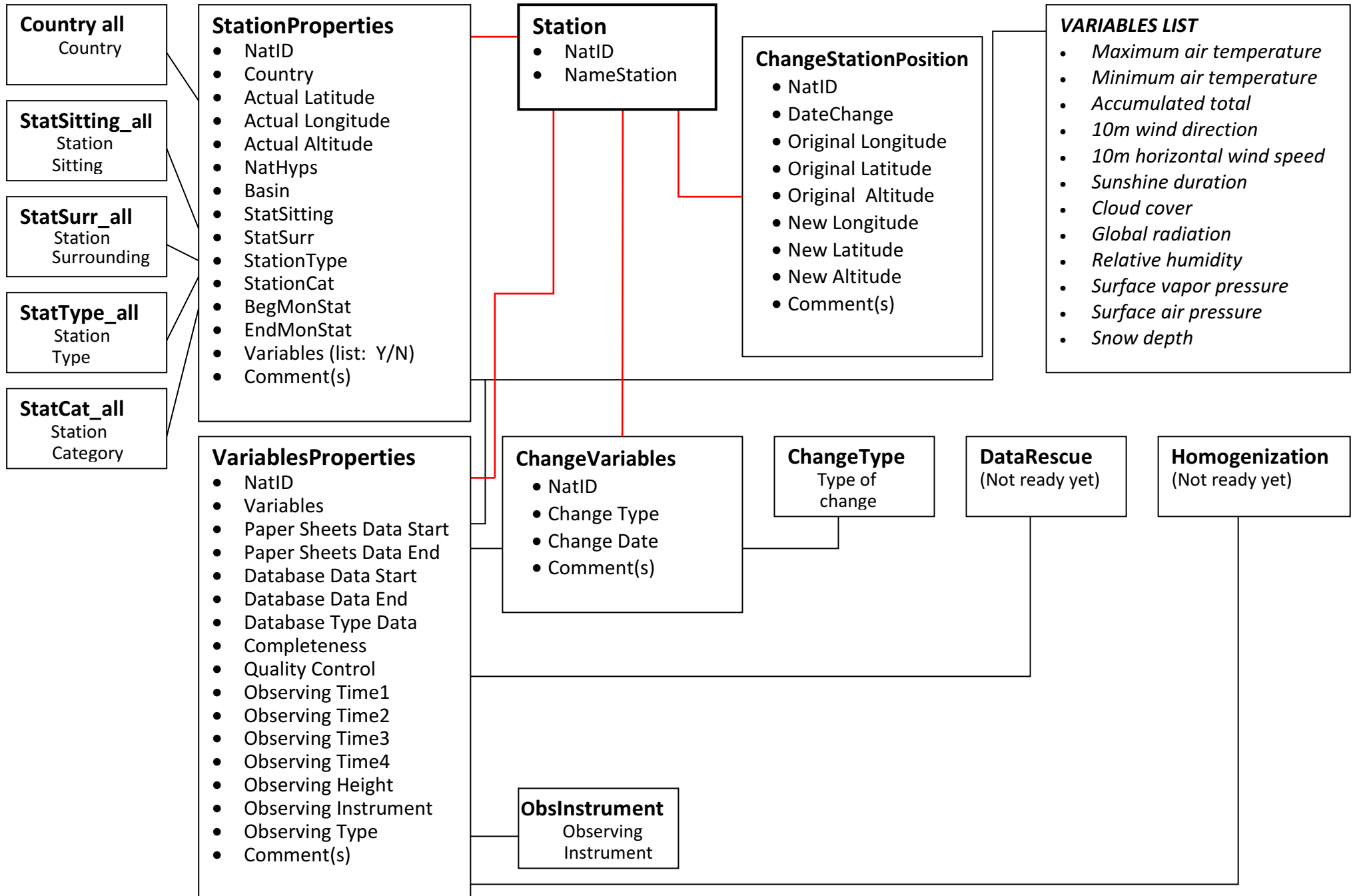
The schema of the database contains all the basic elements and station attributes that describe station from the view of position, type, data availability, quality and changes in time and space. In the same importance we can obtain useful information on individual variables and changes in the observations/measurements. The same attitude have the metadata on some artificial steps in the data management needed for quality of time series rise or completeness of data namely data rescue and homogenization. In the time of the deliverable D1.15 preparation the actual information on procedures and results are not complete (see Annex 1), so we don't include those specific metadata into the schema of the database, but in parts 3.1 and 3.2 we suggest some structure of them.

The metadata database will be filled up with standardised xls files of metadata for stations/variables per country (see Annex 2a – 3c).

## **5. References**

- D1.7 Proposal for quality control tests to be performed for all observational time series, Submitted to JRC.
- D1.8 Proposal for homogenization methods to be applied to all observational time series, Submitted to JRC.
- D1.13 Proposal of the metadata profile to be applied to all metadata generated during the project, Submitted to JRC.
- D1.14 Implemented drafts version of metadata per country of meteorological stations selected for this project, including the length of record and observed parameters per station, Submitted to JRC.
- EN ISO 19115:2003: Geographic information – Metadata
- INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119, v. 1.1
- WMO Core Metadata Profile version 1.2, Guidelines on the use of Metadata for WIS, Geneva, 2010

## Annex 1. Metadata database scheme





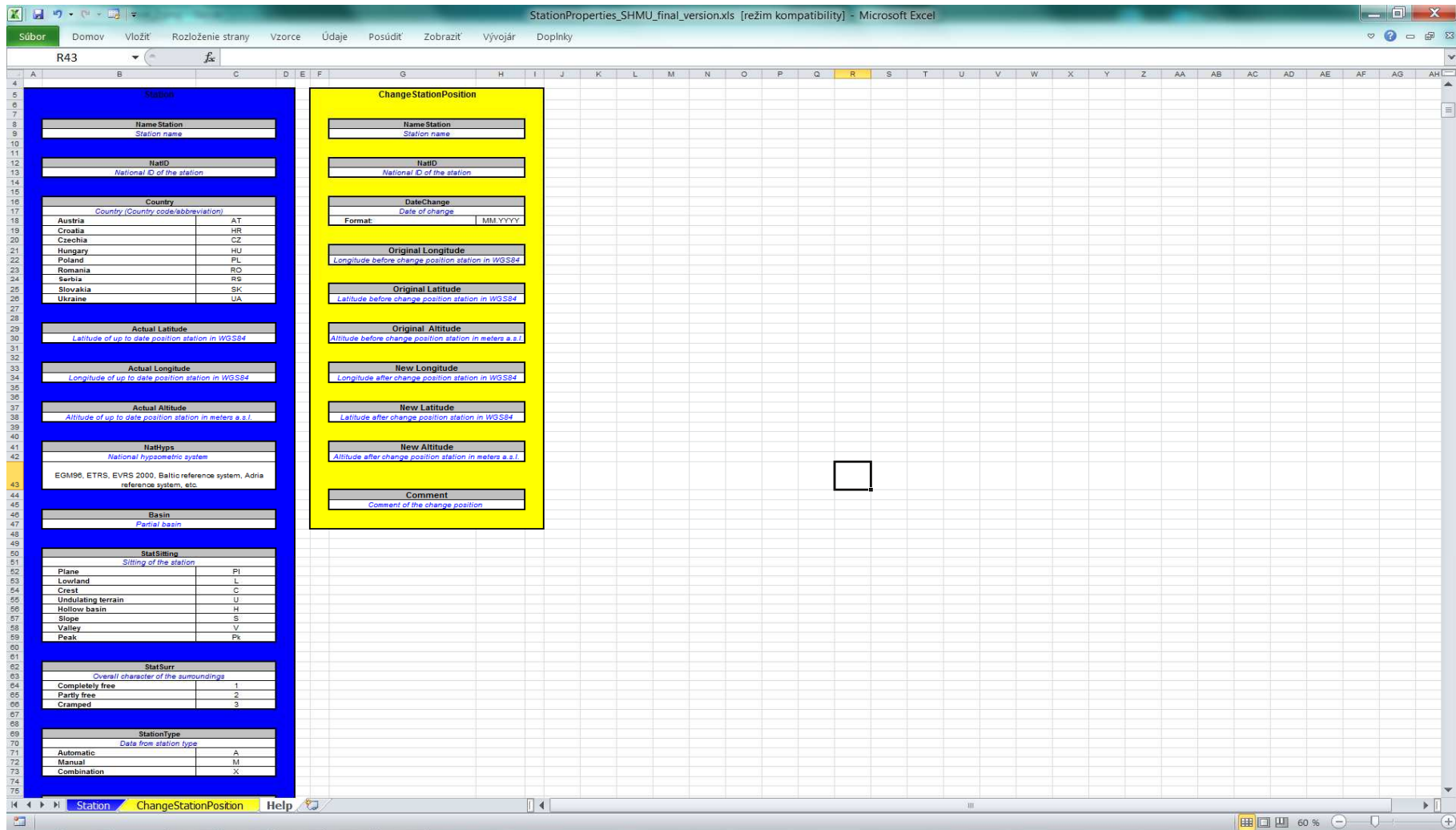
# Annex 2a: Station properties xls file, "Station" sheet – example

StationProperties\_SHMU\_final\_verson.xls [režim kompatibility] - Microsoft Excel

Súbor Domov Vložiť Rozloženie strany Vzorce Údaje Posúdiť Zobrazit' Vývojár Doplnky

AC61														Variables												
Name Station	NatID	Country	Actual Latitude	Actual Longitude	Actual Altitude	NatHyps	Basin	StatSitting	StatSurr	StationType	StationCat	BeoMonStat	EndMonStat	Maximum air Temperature	Minimum air Temperature	Precipitation	Wind Direction	Wind Speed	Sunshine duration	Cloud Cover	Global Radiation	Relative Humidity	Surface Vapor	Surface Air Pressure	Snow Depth	
3	Myjava	11806	SK	48.7539	17.5617	349	Baltic	Norava	U	2	M	C	01.1923	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Braňská - koliba	11813	SK	48.1666	17.1106	286	Baltic	Dunaj	C	2	X	C	01.1950	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Jaslovská Bohunice	11819	SK	48.4867	17.6708	175	Baltic	Váh	L	1	X	C	01.1959	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Hurbanovo	11858	SK	47.8733	18.1944	115	Baltic	Dunaj	L	2	X	C	01.1872	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Čadca	11866	SK	49.4361	18.7658	468	Baltic	Váh	U	2	M	C	12.1950	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
8	Oravská Lesná	11868	SK	49.3683	19.1831	780	Baltic	Váh	V	2	M	C	01.1943	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
9	Liptovský Hrádok	11874	SK	49.0392	19.7253	640	Baltic	Váh	Pl	2	M	C	05.1881	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
10	Podbanské	11876	SK	49.1400	19.9089	978	Baltic	Váh	Pl	2	M	C	08.1955	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
11	Bzovík	11902	SK	48.3192	19.0939	355	Baltic	lpeř	Pl	2	M	C	01.1954	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
12	Sliač	11903	SK	48.6425	19.1419	313	Baltic	Hron	H	2	X	C	01.1944	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
13	Lom nad Rimavicou	11910	SK	48.6442	19.6508	1018	Baltic	Slaná	U	2	M	C	06.1981	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
14	Lučenec - Boľkovce	11927	SK	48.3389	19.7364	210	Baltic	lpeř	Pl	1	X	C	04.1960	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
15	Skahané Pleso	11931	SK	49.1894	20.2344	1778	Baltic	Poprad	U	2	M	C	01.1941	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
16	Prievidza	11867	SK	48.7700	18.5940	260	Baltic	Nitra	H	2	X	C	01.1873	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
17	Talár	11936	SK	48.2468	20.1892	901	Baltic	Hron	U	2	X	C	01.1943	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
18	Štá - kúpele	11946	SK	47.7161	20.7975	580	Baltic	Bodva	U	3	M	C	10.1929	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
19	Plaveč nad Popradom	11961	SK	49.2603	20.8428	485	Baltic	Poprad	U	3	M	C	05.1954	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
20	Košice - letisko	11968	SK	48.6722	21.2225	230	Baltic	Hornád	Pl	1	X	C	01.1922	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
21	Medzilaborce	11977	SK	49.2531	21.9119	304	Baltic	Bodrog	V	2	M	C	01.1943	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
22	Mihosťov	11978	SK	48.6631	21.7239	105	Baltic	Bodrog	L	1	X	C	10.1976	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	Kamenica nad Cirochou	11993	SK	48.9347	21.5942	173	Baltic	Bodrog	L	1	X	C	01.1944	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
24	Trenčín	11803	SK	48.8763	18.0453	295	Baltic	Váh	U	2	M	C	01.1939	12.2010	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes
25	Reľov	11080	SK	49.2983	20.3850	723	Baltic	Poprad	U	2	M	P	01.1928	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
26	Červený Kláštor	11120	SK	49.3872	20.4242	469	Baltic	Poprad	V	2	M	C	05.1954	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
27	Poprad	12040	SK	49.0681	20.2494	693	Baltic	Poprad	H	2	X	C	02.1908	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
28	Lomnický štít	12100	SK	49.1953	20.2150	2635	Baltic	Poprad	Pk	1	X	C	10.1940	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
29	Kežmarok	12180	SK	49.1297	20.4394	628	Baltic	Poprad	U	2	M	P	01.1920	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
30	Gbeľ	14060	SK	48.7150	17.1280	204	Baltic	Norava	Pl	2	M	P	01.1922	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
31	Senica	15140	SK	48.6894	17.4050	232	Baltic	Norava	U	2	M	P	01.1990	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
32	Malacky	16160	SK	48.4519	17.0328	279	Baltic	Norava	Pl	2	M	P	01.1944	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
33	Veľké Blahovo	17540	SK	48.0160	17.5790	116	Baltic	Dunaj	L	2	M	P	01.1906	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
34	Zhárce	17680	SK	48.0703	17.8819	111	Baltic	Dunaj	L	2	M	P	01.1953	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
35	Kráľová pri Senci	18040	SK	48.2000	17.2747	119	Baltic	Váh	L	2	M	P	08.1953	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
36	Štrbské Pleso	20080	SK	49.1178	20.0622	1523	Baltic	Váh	U	2	X	P	01.1902	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	Chopok	21080	SK	48.9439	19.5922	2095	Baltic	Váh	C	1	X	P	01.1955	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
38	Huty	21180	SK	49.2189	19.5650	808	Baltic	Váh	U	1	M	P	01.1925	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
39	Liptovská Teplá	21320	SK	49.1003	19.4117	509	Baltic	Váh	H	2	M	P	01.1896	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
40	Trstená	23100	SK	49.3608	19.6110	608	Baltic	Váh	U	2	M	P	01.1919	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
41	Martin-Vrútky	24300	SK	49.1090	18.9190	502	Baltic	Váh	Pl	2	M	P	1.1.1924	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
42	Javorina	11020	SK	49.2631	20.1436	1013	Baltic	Poprad	U	2	M	P	01.1946	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
43	Makov	25060	SK	49.3725	18.4861	574	Baltic	Váh	U	2	M	P	01.1924	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
44	Skalité	25140	SK	49.4958	18.8994	540	Baltic	Váh	U	2	M	P	01.1950	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
45	Dolný Hričov	26040	SK	49.2322	16.6142	309	Baltic	Váh	Pl	1	M	P	01.1940	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
46	Beľuša	27040	SK	49.0661	18.3181	254	Baltic	Váh	V	2	M	P	01.1962	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
47	Zubák	27080	SK	49.1500	18.2170	423	Baltic	Váh	U	2	M	P	01.1902	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
48	Plešňany	28200	SK	48.6131	17.8328	163	Baltic	Váh	L	1	X	P	01.1926	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	Rybná	30500	SK	48.6692	18.2591	187	Baltic	Nitra	U	2	M	P	1.1.1949	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
50	Zlatno	32140	SK	48.4660	18.3140	329	Baltic	Nitra	U	2	M	P	1.1.1929	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
51	Podhájska	32280	SK	48.1075	18.3392	140	Baltic	Nitra	L	2	M	P	05.1952	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
52	Pohorelá	33060	SK	48.8611	20.0208	749	Baltic	Hron	U	1	M	P	01.1896	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
53	Pohronská Polhora	33160	SK	48.7550	19.8022	618	Baltic	Hron	U	2	M	P	01.1950	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
54	Mýto pod Dumbierom	34040	SK	48.8572	19.6350	630	Baltic	Hron	V	2	M	P	01.1927	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
55	Brušno	34080	SK	48.7911	19.3658	406	Baltic	Hron	U	2	M	P	01.1909	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
56	Hájska	34140	SK	48.7103	19.2350	459	Baltic	Hron	U	2	M	P	01.1932	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
57	Motýšsky	34180	SK	48.8619	19.1796	688	Baltic	Hron	U	2	M	P	01.1899	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
58	Detviarska Huta	35060	SK	48.5650	19.5917	825	Baltic	Hron	U	2	M	P	01.1924	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
59	Víglia - Pstruša	35140	SK	48.5442	19.3219	368	Baltic	Hron	H	2	M	P	01.1883	12.2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
60	Janova Lehota	36160	SK	48.6592	18.7831	422	Baltic	Hron	Pl	2	M	P	01.1949	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
61	Sklené Teplice	36200	SK	48.5292	18.8722	368	Baltic	Hron	V	2	M	P	01.1949	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
62	Jur nad Hronom	37040	SK	48.1259	18.6347	145	Baltic	Hron	L	2	M	P	01.1946	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
63	Púchov	37060	SK	48.3547	18.2772	369	Baltic	Hron	U	2	M	P	01.1967	12.2010	No	No	Yes	No	No	No	No	No	No	No	No	Yes
64	Žamberovec	37120	SK	48.2622	18.7392	469	Balt																			





Annex 3a: Variables properties xls file, “VariablesProperties” sheet – example

VariablesPropertiesWithHelp-NHMS of Serbia - NEW.xls [režim kompatibiliti] - Microsoft Excel

Súbor Domov Vložit Rozloženie strany Vzorce Údaje Posúdiť Zobrazit' Vytvorit' Doplnky

A1	Name Station																	R	S	T	U	V	W	X	Y	Z	AA	AB
	Name Station	NatID	Variables	Paper Sheets Data Start	Database Data Start	Paper Sheets Data End	Database Data End	Datatypes Data	Completeness	Quality Control	Observing Time1	Observing Time2	Observing Time3	Observing Time4	Observing Height	Observing Instrument	Observing Type											
1	Palič	13067	Tmin	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
2	Palič	13067	Tmax	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
3	Palič	13067	Prec	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
4	Palič	13067	WD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
5	Palič	13067	WS	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
6	Palič	13067	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
7	Palič	13067	CC	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
8	Palič	13067	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
9	Palič	13067	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
10	Palič	13067	PA	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1 meter	Mercury barometer	M											
11	Palič	13067	SD	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	-	Snow stake	M											
12	Sombor	13180	Tmin	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
13	Sombor	13180	Tmax	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
14	Sombor	13180	Prec	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
15	Sombor	13180	WD	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
16	Sombor	13180	WS	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
17	Sombor	13180	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
18	Sombor	13180	CC	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
19	Sombor	13180	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
20	Sombor	13180	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
21	Sombor	13180	PA	06.1976	12.2010	06.1976	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	Mercury barometer	M											
22	Sombor	13180	SD	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	-	Snow stake	M											
23	Novi Sad	13168	Tmin	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
24	Novi Sad	13168	Tmax	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
25	Novi Sad	13168	Prec	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
26	Novi Sad	13168	WD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
27	Novi Sad	13168	WS	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
28	Novi Sad	13168	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
29	Novi Sad	13168	CC	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
30	Novi Sad	13168	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
31	Novi Sad	13168	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
32	Novi Sad	13168	PA	01.1987	12.2010	01.1987	12.2010	asc	No	No	07.00	14.00	21.00	-	1 meter	Mercury barometer	M											
33	Novi Sad	13168	SD	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	-	Snow stake	M											
34	Zrenjanin	13173	Tmin	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
35	Zrenjanin	13173	Tmax	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
36	Zrenjanin	13173	Prec	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
37	Zrenjanin	13173	WD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
38	Zrenjanin	13173	WS	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
39	Zrenjanin	13173	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
40	Zrenjanin	13173	CC	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
41	Zrenjanin	13173	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
42	Zrenjanin	13173	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
43	Zrenjanin	13173	PA	03.1982	12.2010	03.1982	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	Mercury barometer	M											
44	Zrenjanin	13173	SD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	Snow stake	M											
45	Kikinda	13174	Tmin	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
46	Kikinda	13174	Tmax	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
47	Kikinda	13174	Prec	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
48	Kikinda	13174	WD	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
49	Kikinda	13174	WS	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
50	Kikinda	13174	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
51	Kikinda	13174	CC	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	-	-	M											
52	Kikinda	13174	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
53	Kikinda	13174	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
54	Kikinda	13174	PA	01.1977	12.2010	03.1977	12.2010	asc	No	No	07.00	14.00	21.00	-	1 meter	Mercury barometer	M											
55	Kikinda	13174	SD	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	-	Snow stake	M											
56	Vršac	13183	Tmin	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
57	Vršac	13183	Tmax	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
58	Vršac	13183	Prec	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
59	Vršac	13183	WD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
60	Vršac	13183	WS	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
61	Vršac	13183	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
62	Vršac	13183	CC	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
63	Vršac	13183	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
64	Vršac	13183	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
65	Vršac	13183	PA	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	0.84 meters	Mercury barometer	M											
66	Vršac	13183	SD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	Snow stake	M											
67	Loznica	13262	Tmin	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	alcohol thermometer	M											
68	Loznica	13262	Tmax	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	2 meters	Mercury thermometer	M											
69	Loznica	13262	Prec	01.1981	12.2010	01.1981	12.2010	asc	Yes	No	07.00	14.00	21.00	-	1 meter	rain gauge	M											
70	Loznica	13262	WD	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
71	Loznica	13262	WS	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	10 meters	Fuess anemograph	M											
72	Loznica	13262	SN	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	1.5 meters	heliograph	M											
73	Loznica	13262	CC	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
74	Loznica	13262	RH	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											
75	Loznica	13262	PV	01.1981	12.2010	01.1981	12.2010	asc	No	No	07.00	14.00	21.00	-	-	-	M											

VariablesProperties ChangeVariables Help

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Annex 3b: Variables properties xls file, "ChangeVariables" sheet – example



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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI			
	Name Station	NetID	Variables	Change Type	Change Date	Comment																																
1	Palić	13087	Tmin	Instrument	07.1984																																	
2	Palić	13087	Tmin	Instrument	02.1991																																	
3	Palić	13087	Prec	Instrument	12.1983	ombrograph Lambrecht changed with Russian one																																
4	Palić	13087	WD	Instrument	12.1985	Junkalor																																
5	Palić	13087	WS	Instrument	12.1978	anemograph Fuess																																
6	Palić	13087	WS	Instrument	12.1985	Junkalor																																
7	Palić	13087	WS	Instrument	12.1978	anemograph Fuess																																
8	Palić	13087	RH	Instrument	02.1991																																	
9	Sombor	13160	WD	Instrument	01.1969	anemograph Siap																																
10	Sombor	13160	WD	Instrument	10.1980	anemograph Fuess																																
11	Sombor	13160	WS	Instrument	01.1982	Russian																																
12	Sombor	13160	WS	Instrument	01.1969	anemograph Siap																																
13	Sombor	13160	WS	Instrument	10.1980	anemograph Fuess																																
14	Sombor	13160	SN	Instrument	04.1975																																	
15	Sombor	13160	RH	Instrument	01.1982	Aspirator Lambrecht																																
16	Sombor	13160	PA	Instrument	04.1975	added Mercury barometer Lambert																																
17	Rimski Sancevi	13188	Prec	Instrument	03.1979	new one																																
18	Rimski Sancevi	13188	WD	Instrument	12.1981	anemograph Fuess																																
19	Rimski Sancevi	13188	WS	Instrument	12.1981	anemograph Fuess																																
20	Rimski Sancevi	13188	RH	Instrument	01.1987	electrical aspirator																																
21	Zrenjanin	13173	WD	Instrument	09.1987	anemograph Meopta																																
22	Zrenjanin	13173	WD	Instrument	12.1981	anemograph Fuess																																
23	Zrenjanin	13173	WS	Instrument	09.1987	anemograph Meopta																																
24	Zrenjanin	13173	WS	Instrument	01.1989	Russian manual																																
25	Zrenjanin	13173	WS	Instrument	12.1981	anemograph Fuess																																
26	Zrenjanin	13173	RH	Instrument	01.1987	electrical aspirator																																
27	Zrenjanin	13173	PA	Instrument	01.1980	added Mercury barometer Lambert																																
28	Kikinda	13174	WD	Instrument	01.1977	anemograph																																
29	Kikinda	13174	WD	Instrument	12.1981	anemograph Fuess																																
30	Kikinda	13174	WS	Instrument	07.1984	Russian manual																																
31	Kikinda	13174	WS	Instrument	01.1977	anemograph																																
32	Kikinda	13174	WS	Instrument	12.1981	anemograph Fuess																																
33	Kikinda	13174	RH	Instrument	01.1987	electrical aspirator																																
34	Kikinda	13174	PA	Instrument	11.1979	added Mercury barometer																																
35	Vrsac	13183	Prec	Instrument	01.1981	ombrograf-lambrecht																																
36	Vrsac	13183	Prec	Instrument	01.1988	ombrograf-Ruski																																
37	Vrsac	13183	WS	Instrument	02.1981	Fuess manual-not opreted																																
38	Vrsac	13183	RH	Instrument	11.1984																																	
39	Vrsac	13188	RH	Instrument	01.1987	aspirator electrical																																
40	Loznica	13282	Tmin	Instrument	09.1973																																	
41	Loznica	13282	Tmax	Instrument	09.1973																																	
42	Loznica	13282	Prec	Instrument	12.1988	Ombrograph Lambrecht																																
43	Loznica	13282	Prec	Instrument	01.1989	Ombrograph Russian																																
44	Loznica	13282	WD	Instrument	12.1984	Anemograph																																
45	Loznica	13282	WD	Instrument	04.1989	Anemograph																																
46	Loznica	13282	WS	Instrument	10.1982	Fuess																																
47	Loznica	13282	WS	Instrument	12.1984	Anemograph																																
48	Loznica	13282	WS	Instrument	04.1989	Anemograph																																
49	Loznica	13282	RH	Instrument	09.1973																																	
50	Sremska Mitrovica	13286	WD	Instrument	02.1988	anemograph Fuess																																
51	Sremska Mitrovica	13286	WS	Instrument	02.1982	Fuess-manual																																
52	Sremska Mitrovica	13286	WS	Instrument	02.1988	anemograph Fuess																																
53	Sremska Mitrovica	13286	RH	Instrument	06.1982	thermometer Lambrecht																																
54	Sremska Mitrovica	13286	PA	Instrument	01.1988	added Mercury barometer Lambert																																
55	Valjevo	13289	Tmin	Instrument	09.1973																																	
56	Valjevo	13289	Tmax	Instrument	09.1973																																	
57	Valjevo	13289	Prec	Instrument	08.1982	Ombrograph																																
58	Valjevo	13289	Prec	Instrument	04.1983	Ombrograph Lambrecht																																
59	Valjevo	13289	Prec	Instrument	09.1983	Ombrograph Russian																																
60	Valjevo	13289	WD	Instrument	12.1984	Anemograph																																
61	Valjevo	13289	WD	Instrument	12.1988	Anemograph Siap																																
62	Valjevo	13289	WD	Instrument	01.1982	Lambrecht																																
63	Valjevo	13289	WS	Instrument	02.1982	Lambrecht																																
64	Valjevo	13289	WS	Instrument	04.1984	Lambrecht																																
65	Valjevo	13289	WS	Instrument	08.1984																																	

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VariablesProperties		ChangeVariables	
<b>NameStation</b> <i>Station name</i>		<b>NameStation</b> <i>Station name</i>	
<b>NatID</b> <i>National ID of the station</i>		<b>NatID</b> <i>National ID of the station</i>	
<b>Variables</b>		<b>Variables</b>	
Minimum air temperature	Tmin	Minimum air temperature	Tmin
Maximum air temperature	Tmax	Maximum air temperature	Tmax
Accumulated total precipitation	Prec	Accumulated total precipitation	Prec
10m wind direction	WD	10m wind direction	WD
10m horizontal wind speed	WS	10m horizontal wind speed	WS
Sunshine duration	SN	Sunshine duration	SN
Cloud cover	CC	Cloud cover	CC
Global radiation	GR	Global radiation	GR
Relative humidity	RH	Relative humidity	RH
Surface vapor pressure	PV	Surface vapor pressure	PV
Surface air pressure	PA	Surface air pressure	PA
Snow depth	SD	Snow depth	SD
<b>Paper Sheets Data Start</b> <i>Beginning observation variable on the station all available data including paper sheets</i>		<b>Change Type</b> <i>Type of change</i>	
Format:	MM.YYYY	Methodic	
<b>Paper Sheets Data End</b> <i>Ending observation variable on the station all available data including paper sheets</i>		Type of observation (manual → automatic)	
Format:	MM.YYYY	Surroundings	
<b>Database Data Start</b> <i>Beginning observation variable on the station only data in the database (digitalized data)</i>		Instrument	
Format:	MM.YYYY	Instrument position	
<b>Database Data End</b> <i>Ending observation variable on the station only data in the database (digitalized data)</i>		Time of observation	
Format:	MM.YYYY	Other	
<b>Database Type Data</b> <i>Type of data in the database</i>		<b>Change Date</b> <i>Date of change</i>	
For example:	asc	Format:	MM.YYYY
<b>Completeness</b> Yes / No		<b>Comment</b> <i>Your comments on the change</i>	
<b>Quality Control</b> Yes / No			
<b>Observing Time1</b> <i>Time of observation in the morning in the mean local time</i>			
Format:	hh:mm		
<b>Observing Time2</b> <i>Time of observation in the midday in the mean local time</i>			
Format:	hh:mm		

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