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EUCOS Operational Programme

Manual on the RA VI Quality Monitoring Portal

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To: *RA VI Members*

Summary: This document gives an overview of the information provided in the RA VI Quality Monitoring Portal.

Action required: *For information*

Distribution: Public

Reference	Date	Author(s)	Version	Content
EUCOS/TSC/2008-004	20.10.2008	Tanja Kleinert	1	Draft version
EUCOS/TSC/2008-004	10.12.2008	Tanja Kleinert	2	Update

Manual on the RA VI Quality Monitoring Portal

Content

Manual on the RA VI Quality Monitoring Portal

1. Introduction

One of the tasks of the EUCOS Programme Management Team is to monitor EUCOS meteorological data regarding agreed EUCOS performance standards and to provide quarterly quality monitoring reports. It was agreed that quality monitoring information on RA VI data will also be provided by the EUCOS Team.

To issue monitoring results on a daily and monthly basis to the RA VI members the RA VI Quality Monitoring Portal has been developed. The portal presents detailed monitoring information of all RA VI RBSN and radiosonde stations on the basis of meta data archived in DWD database.

The portal provides information regarding

- data availability
- timeliness
- geopotential height and
- comparison results against NWP model outputs

of surface stations and radiosonde stations.

The quality monitoring portal is integrated into the EUCOS pages within DWDs website and is intended to be used as a working platform. The information is provided in extensive tables. To simplify the first visits the main functions of the RA VI Quality Monitoring Portal are described in this manual.

Manual on the RA VI Quality Monitoring Portal

2. General information

2.1 Access

The **RA VI Quality Monitoring Portal** (Figure 2) is accessible via www.dwd.de/eucos (Figure 1). The RA VI QM Portal is open to the public.

Alternatively the EUCOS pages are accessible by selecting the following topics:

Special Users → International Organisations & Meteorological Services → International Cooperations → EUCOS

On the EUCOS web pages please select the portlet "RA VI Quality Monitoring Portal" (Figure 1, red circle).

Figure 1: EUCOS web pages within DWD website (Login as user "ra6")

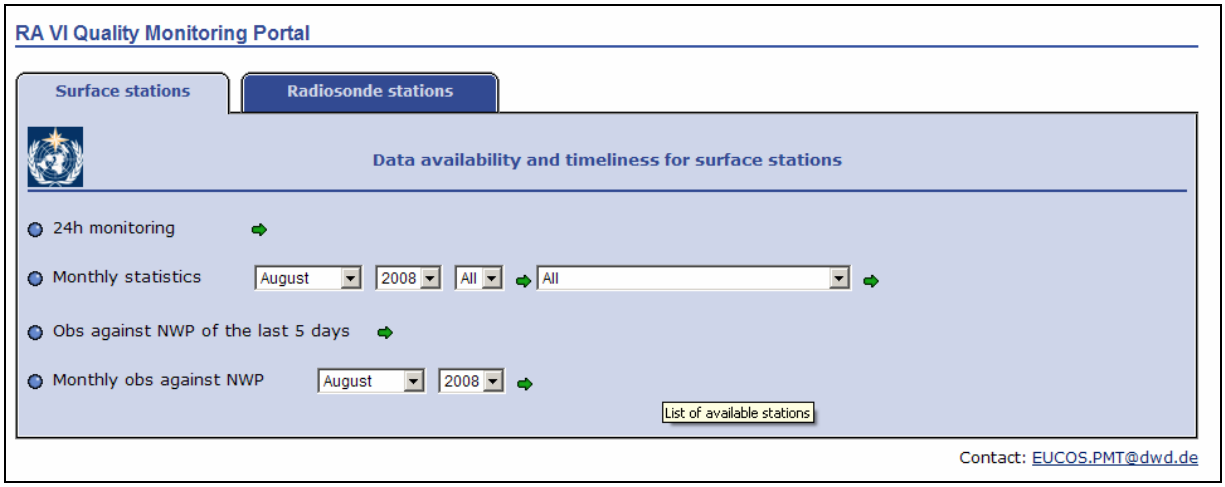


Figure 2: front page RA VI Quality Monitoring Portal

Manual on the RA VI Quality Monitoring Portal

On the official EUCOS website (www.eucos.net) a link to the RA VI Quality Monitoring Portal is inserted under the item *RA VI Quality Monitoring*.

2.2 Data sources

The provided information bases on DWD database queries. Thus observations which have not been received at DWD database are not displayed in the portal. The monitoring information on data availability and timeliness for RBSN surface and radiosonde stations base on meta data and therefore are provided without considering meteorological information. To monitor the performance on achieving geopotential height of radiosonde stations burst heights are extracted from the TEMP messages.

All monitoring statistics base on similar data presentation routines. Each table on data availability and timeliness displays identifiers and station names.

Data is provided within the area 10°N - 90°N, 75°W - 55°E.

2.2.1 Timeliness

Information on timeliness is calculated by comparing the difference between the observation date (encoded reference date) and the decode date of the database. The delay between receiving data at DWD from the GTS and data decoding in the data base is marginal.

For timeliness statistics of radiosonde stations always the first messages of TEMP parts AB and CD received in the data base are used for calculation. The observation time is attributed to the main and intermediate hours (i.e. 00, 03, 06, 09, 12, 15, 18 and 21 UTC). Therefore the timeliness is not calculated against the reference date but the official observation time. For statistics on achieving geopotential heights and burst heights second ascents are taken into account.

Buttons on main and intermediate hours in monthly statistics of radiosonde data:
Due to the decision to attribute the radiosonde ascents to the main and intermediate synoptic hours a routine had to be developed to decide to which main or intermediate synoptic hour an encoded reference date has to be attributed to. Generally radiosonde stations start the soundings on main synoptic hours (00, 06, 12 and 18 UTC). In this case a time period of ±180 min. attributes all reference dates to the main synoptic hour. Also late arriving soundings will be attributed to the correct main synoptic hour. But some radiosonde stations start soundings to intermediate synoptic hours. In this case the time period ±180 min. would possibly attribute the encoded reference date to the wrong main synoptic hour. Therefore a time period of ± 90 min. allows the correct attribution to the main and intermediate synoptic hours. But late arriving soundings will probably not be displayed in the portal.

To assure that the user may decide which information shall be displayed 3 buttons allow the selection of the different timeliness approach (below the monthly statistic tables):

Main synoptic hours with ΔT ± 180 minutes	Main synoptic hours with ΔT ± 90 minutes	Main and intermediate synoptic hours with ΔT ± 90 minutes

In the annex an example on the different possibilities of interpretation is described.

2.2.2 Comparison of observations against NWP model output

NWP results base on comparisons of observations against the first guess fields of the DWD model **COSMO-EU**. Due to the fact that COSMO-EU does not cover the whole EUCOS and RA VI area some stations might not be available in the NWP results (Figure 3). The figures on comparisons of observations against NWP model output show a daily average regarding the agreed parameters of the different station types. It is intended to provide observation comparisons against ECMWF model outputs in the future (scheduled for beginning of 2009).

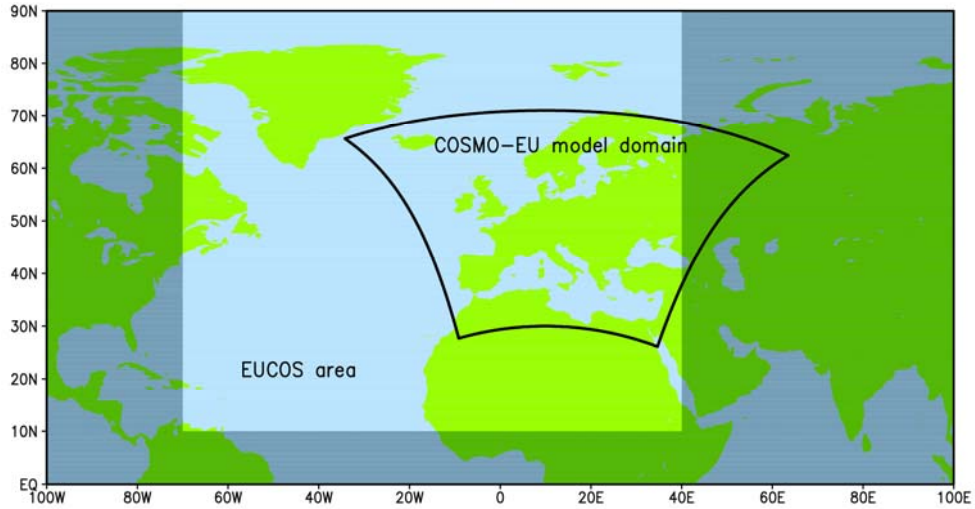
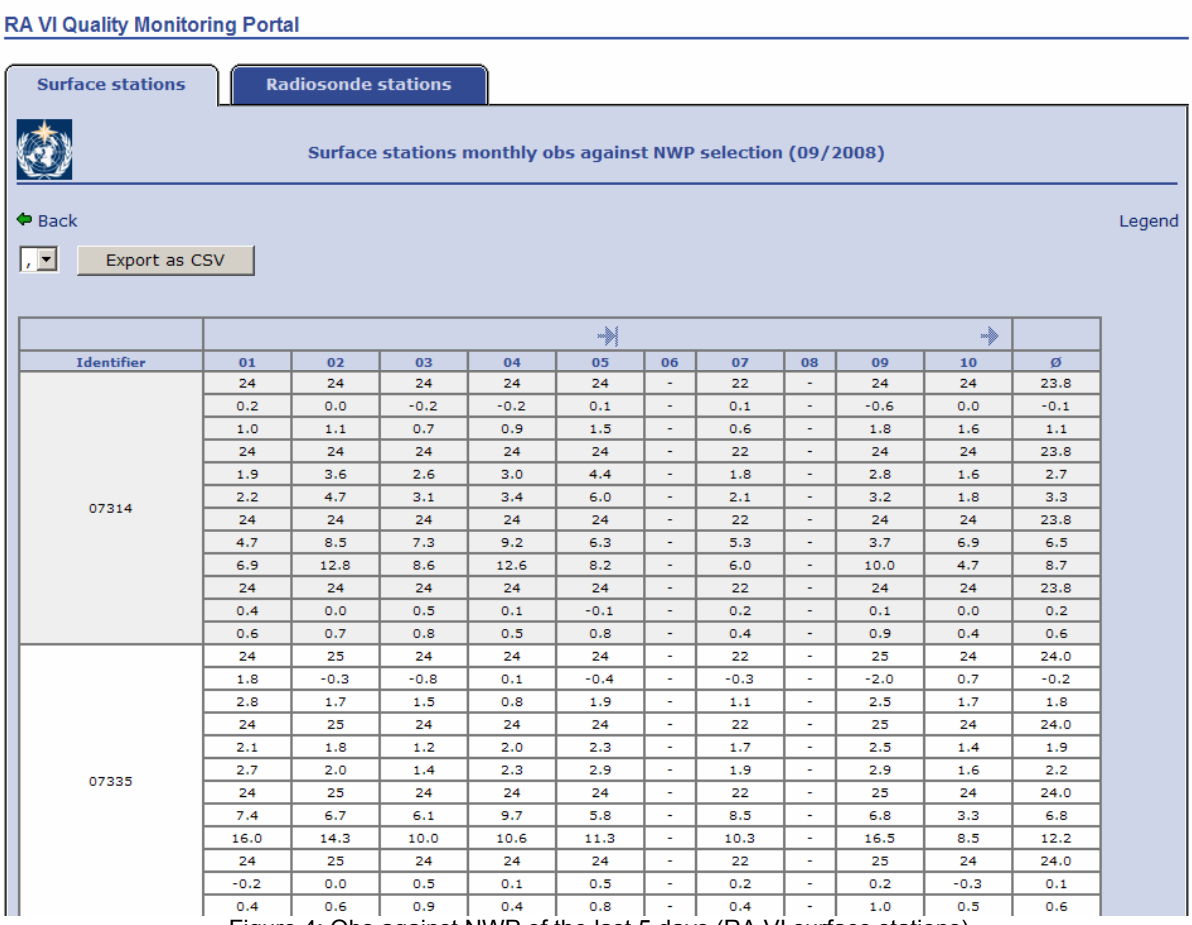


Figure 3: COSMO-EU model domain

The NWP results are available as 5 days review and as monthly statistics in which also averages are calculated. The NWP results of the previous day are always available around 08 UTC.

All NWP results are displayed en block for each station and day. For each parameter the number of observations compared to the model is presented (e.g. T count) on top followed by biases and RMS errors of this parameter.

By holding the cursor on a figure in the NWP results tables a short description of the parameter is displayed (Figure 4).



Identifier	01	02	03	04	05	06	07	08	09	10	Ø
07314	24	24	24	24	24	-	22	-	24	24	23.8
	0.2	0.0	-0.2	-0.2	0.1	-	0.1	-	-0.6	0.0	-0.1
	1.0	1.1	0.7	0.9	1.5	-	0.6	-	1.8	1.6	1.1
	24	24	24	24	24	-	22	-	24	24	23.8
	1.9	3.6	2.6	3.0	4.4	-	1.8	-	2.8	1.6	2.7
	2.2	4.7	3.1	3.4	6.0	-	2.1	-	3.2	1.8	3.3
	24	24	24	24	24	-	22	-	24	24	23.8
	4.7	8.5	7.3	9.2	6.3	-	5.3	-	3.7	6.9	6.5
	6.9	12.8	8.6	12.6	8.2	-	6.0	-	10.0	4.7	8.7
	24	24	24	24	24	-	22	-	24	24	23.8
	0.4	0.0	0.5	0.1	-0.1	-	0.2	-	0.1	0.0	0.2
	0.6	0.7	0.8	0.5	0.8	-	0.4	-	0.9	0.4	0.6
07335	24	25	24	24	24	-	22	-	25	24	24.0
	1.8	-0.3	-0.8	0.1	-0.4	-	-0.3	-	-2.0	0.7	-0.2
	2.8	1.7	1.5	0.8	1.9	-	1.1	-	2.5	1.7	1.8
	24	25	24	24	24	-	22	-	25	24	24.0
	2.1	1.8	1.2	2.0	2.3	-	1.7	-	2.5	1.4	1.9
	2.7	2.0	1.4	2.3	2.9	-	1.9	-	2.9	1.6	2.2
	24	25	24	24	24	-	22	-	25	24	24.0
	7.4	6.7	6.1	9.7	5.8	-	8.5	-	6.8	3.3	6.8
	16.0	14.3	10.0	10.6	11.3	-	10.3	-	16.5	8.5	12.2
	24	25	24	24	24	-	22	-	25	24	24.0
	-0.2	0.0	0.5	0.1	0.5	-	0.2	-	0.2	-0.3	0.1
	0.4	0.6	0.9	0.4	0.8	-	0.4	-	1.0	0.5	0.6

Figure 4: Obs against NWP of the last 5 days (RA VI surface stations)

2.3 Performance figures and legends

2.3.1 Update cycle

The information on data availability and timeliness is updated every hour, NWP results once a day. The data provided in the portals shall be available for dates starting on 01st January 2008. The archived data are not available yet but will be included into the portals till October 2008. The data will be stored in the portal for at least 12 months. Please select the appropriate month and year by using the pull down menus.

2.3.2 Station selection

The user may switch between the different networks by clicking on the different network flags. The portal will provide station identifier of each network to allow a selection of stations.

To view monthly statistics on data availability and timeliness the user may select all stations, a particular WMO block number as well as a particular station besides the month and year. By pressing the green arrow on the right of this pull down menu the list of available stations will be updated and only issue the stations belonging to the selected WMO block number.

In default always all stations is selected.

Please note that the selection of WMO block numbers is only available for monthly statistics but not for 24 hour monitoring, weekly statistics or NWP results.

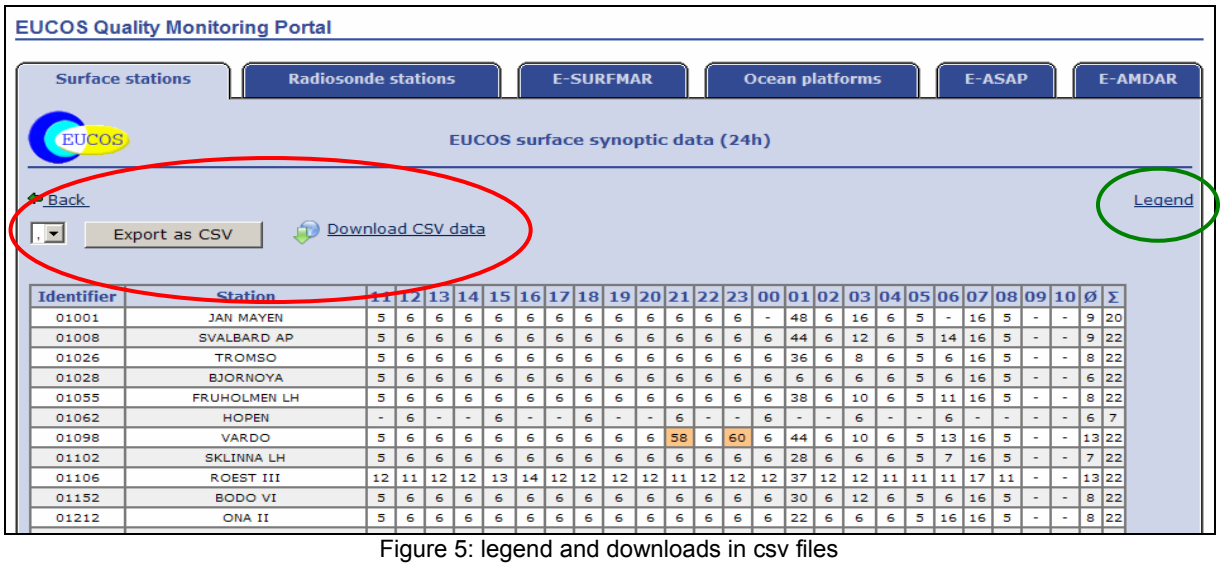
To proceed to the monitoring information please press the green arrow on the very right (next to the pull down menu of station names).

2.3.3 Paging function

It occurs that the information provided in the monthly statistics is too extensive for displaying it on one page. Then you will find paging buttons on top of a table which enables the switch between the information. Tables with paging function always display the days 1-10 in the first table, 11-20 in the second table and 21-31 in the last table. Use to go to the next page or to go to the previous page. Use to switch to the last page or to switch to the first page. Averages and totals which are displayed in the monthly statistic tables (data availability/timeliness and NWP results) are always provided starting from the first day of the month till the last displayed day (i.e. if the user selects the days 11th till 20th of NWP results by using the paging function; the averages of the errors are calculated for the period 1st till 20th of the selected month).

2.3.4 Legends

Separate legends are available on the upper right corner of each table to explain the provided information (Figure 5, green circle). The legends are also included in this manual.



Identifier	Station	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	Ø	Σ
01001	JAN MAYEN	5	6	6	6	6	6	6	6	6	6	6	6	6	-	48	6	16	6	5	-	16	5	-	-	9	20
01008	SVALBARD AP	5	6	6	6	6	6	6	6	6	6	6	6	6	6	44	6	12	6	5	14	16	5	-	-	9	22
01026	TROMSO	5	6	6	6	6	6	6	6	6	6	6	6	6	6	36	6	8	6	5	6	16	5	-	-	8	22
01028	BJORNOYA	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	16	5	-	-	6	22
01055	FRUHOLMEN LH	5	6	6	6	6	6	6	6	6	6	6	6	6	6	38	6	10	6	5	11	16	5	-	-	8	22
01062	HOPEN	-	6	-	-	6	-	-	6	-	-	6	-	-	6	-	-	6	-	-	6	-	-	-	-	6	7
01098	VARDO	5	6	6	6	6	6	6	6	6	6	58	6	60	6	44	6	10	6	5	13	16	5	-	-	13	22
01102	SKLINNA LH	5	6	6	6	6	6	6	6	6	6	6	6	6	6	28	6	6	6	5	7	16	5	-	-	7	22
01106	ROEST III	12	11	12	12	13	14	12	12	12	12	11	12	12	12	37	12	12	11	11	11	17	11	-	-	13	22
01152	BODO VI	5	6	6	6	6	6	6	6	6	6	6	6	6	6	30	6	12	6	5	6	16	5	-	-	8	22
01212	ONA II	5	6	6	6	6	6	6	6	6	6	6	6	6	6	22	6	6	6	5	16	16	5	-	-	8	22

Figure 5: legend and downloads in csv files

2.4 Downloads

Each table provided in the portal can be downloaded as csv file (Figure 5, red circle). The user is asked to select the preferred divider (, / ; / :). The csv files are created individually for each **displayed table** by pressing the button *"Export as CSV"*. In a second step the link *"Download CSV data"* will pop up which allows the user to either open or save the csv file in

a local folder. When the paging function is provided currently 3 downloads are necessary to save a complete month.

The download of the csv files offers a file name which contains following information:

- ravi_csv_export_station type_type of statistic_date.csv

Station type
10 = RA VI surface stations
11 = RA VI radiosonde stations

The codes on station types are attributed to the internal identification within DWD data base.

Type of statistic	
day =	24 hour monitoring of surface stations providing the date and the first displayed observation time as reference (i.e. ravi_csv_export_01_day_2008090710.csv)
week =	weekly statistics of radiosonde stations providing the date of the first displayed day as reference date (i.e. ravi_csv_export_11_week_20080804.csv)
Month =	monthly statistics of all station types containing the displayed year and month as reference (i.e. ravi_csv_export_10_month_200809.csv)
5days_nwp =	5 days statistics of NWP results containing the first displayed day as reference date (i.e. ravi_csv_export_01_5days_nwp_20080903.csv)
Month_nwp =	monthly statistics of NWP results containing the displayed year and month as reference (i.e. ravi_csv_export_02_month_nwp_200809.csv)

If only one particular station was selected the station identifier is also attached to the csv file name (i.e. ravi_csv_export_01_month_200809_02287.csv).

2.5 Administration tool

The EUCOS team is able to make changes in station lists, observation areas, performance targets, colour coding and legends by editing this information in an administration tool.

3. RA VI Quality Monitoring Portal

The RA VI Quality Monitoring Portal generally provides monitoring statistics of RBSN stations of the Regional Association VI (surface and radiosonde stations). To allow EUCOS members to monitor all radiosonde stations of their meteorological service in one portal the EUCOS team decided to integrate all radiosonde stations which are marked “checked” in the WMO radiosonde catalogue into the RA VI Quality Monitoring Portal.

The EUCOS team offers the EUCOS members also to monitor all surface stations of their meteorological service in the RA VI Quality Monitoring Portal. To integrate further stations into the RA VI Quality Monitoring Portal the EUCOS member is asked to provide the station meta data in advance (WMO-ID, station name, daily observation target, latitude and longitude).

4.1 RA VI Surface Stations

The following quality monitoring statistics are available for RA VI surface stations (see also Figure 6):

- 24 hour monitoring
- Monthly statistics on data availability and timeliness
- NWP comparison results on a 5 days and monthly basis.

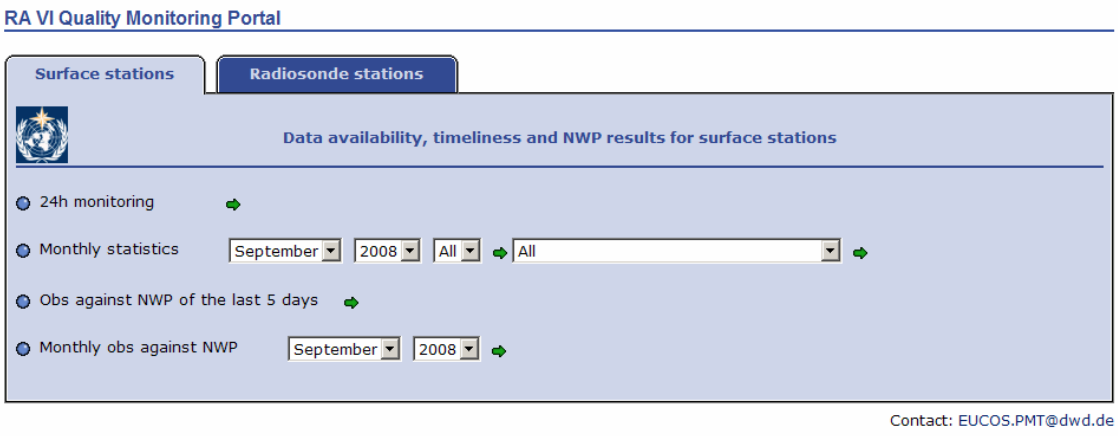
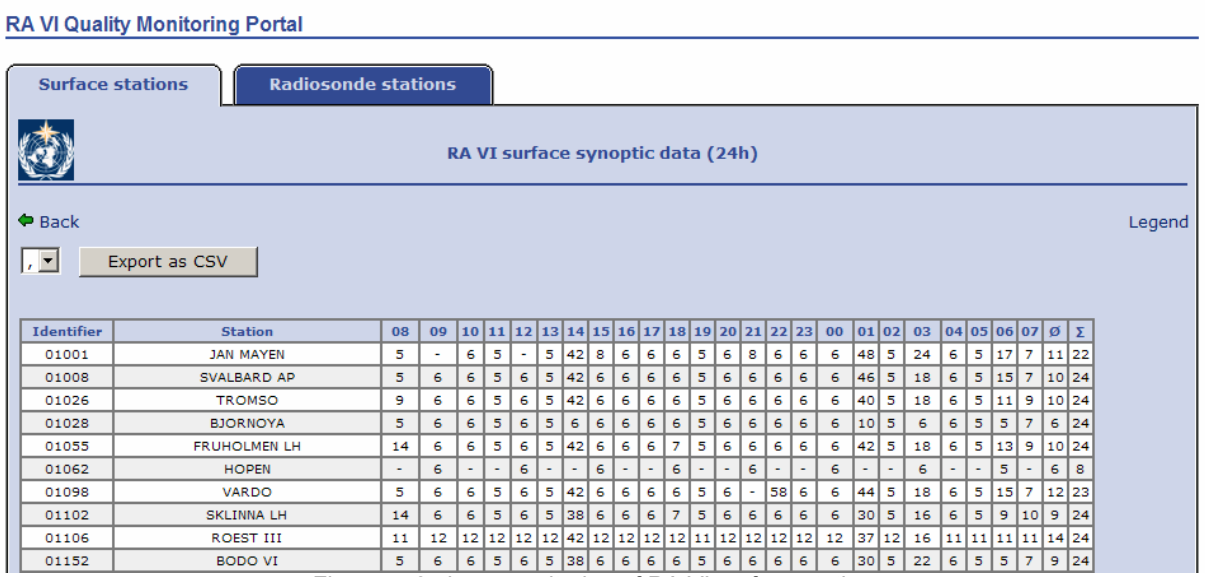


Figure 6: front page of RA VI surface stations

4.1.1 24h monitoring

The 24h monitoring table (Figure 7) displays the timeliness of synop messages for all defined RA VI surface stations within the last 24 hours. The first 2 columns display the WMO identifier and station name. The following columns display the timeliness of the hourly synop messages within the last 24 hours. The second last column (header: Ø) provides the 24 hour average of timeliness, the last column (header: Σ) displays the total number of synop messages received and archived at DWD within the last 24 hours. See also Legend 1 below.



Identifier	Station	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	Ø	Σ
01001	JAN MAYEN	5	-	6	5	-	5	42	8	6	6	6	5	6	8	6	6	6	48	5	24	6	5	17	7	11	22
01008	SVALBARD AP	5	6	6	5	6	5	42	6	6	6	6	5	6	6	6	6	6	46	5	18	6	5	15	7	10	24
01026	TROMSO	9	6	6	5	6	5	42	6	6	6	6	5	6	6	6	6	6	40	5	18	6	5	11	9	10	24
01028	BJORNOYA	5	6	6	5	6	5	6	6	6	6	6	5	6	6	6	6	6	10	5	6	6	5	5	7	6	24
01055	FRUHOLMEN LH	14	6	6	5	6	5	42	6	6	6	7	5	6	6	6	6	6	42	5	18	6	5	13	9	10	24
01062	HOPEN	-	6	-	-	6	-	-	6	-	-	6	-	-	6	-	-	6	-	-	6	-	-	5	-	6	8
01098	VARDO	5	6	6	5	6	5	42	6	6	6	6	5	6	-	58	6	6	44	5	18	6	5	15	7	12	23
01102	SKLINNA LH	14	6	6	5	6	5	38	6	6	6	7	5	6	6	6	6	6	30	5	16	6	5	9	10	9	24
01106	ROEST III	11	12	12	12	12	12	42	12	12	12	12	11	12	12	12	12	12	37	12	16	11	11	11	11	14	24
01152	BODO VI	5	6	6	5	6	5	38	6	6	6	6	5	6	6	6	6	6	30	5	22	6	5	5	7	9	24

Figure 7: 24 hour monitoring of RA VI surface stations

24h monitoring of all RA VI surface synoptic stations

Time in UTC	Ø	Σ
Timeliness (min)	Daily average timeliness (min)	Daily total number of synoptic messages

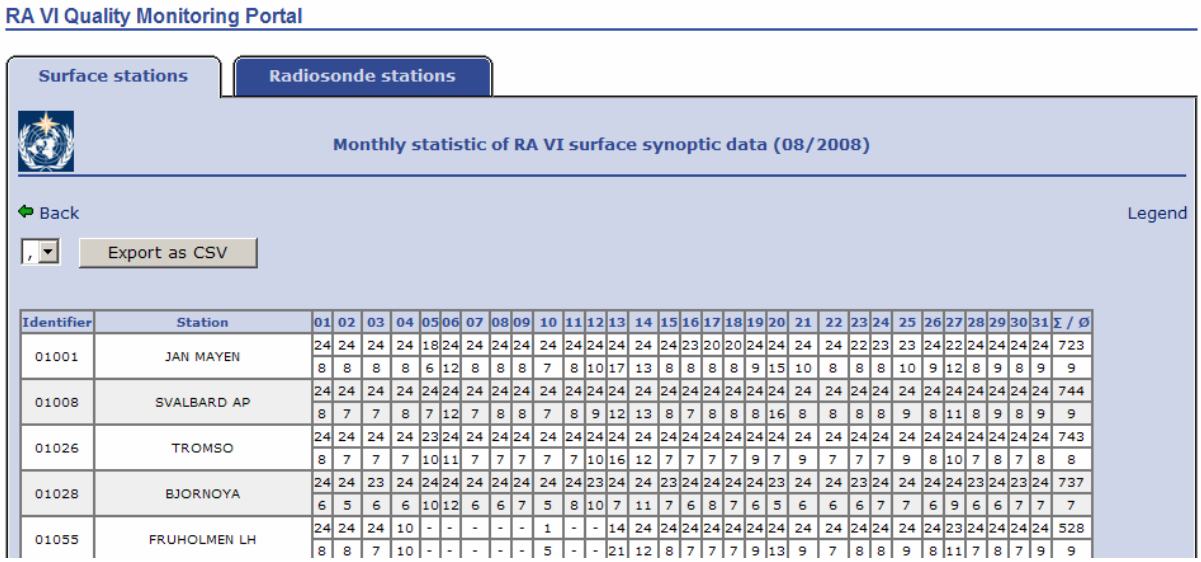
Legend 1: 24 hour monitoring of RA VI surface stations

4.1.2 Monthly statistics

To view the monthly statistics of RA VI surface stations the user may select the month and year as well as the stations which shall be displayed (default ALL).

The monthly statistics provide monitoring information on data availability and timeliness for the selected month/year and the selected stations (Figure 8). The tables of all stations or stations of a selected WMO block number contain the WMO identifier and station name (first 2 columns), total number of synop messages in the upper row and average timeliness in the lower row per day and station of the selected month. In the last column (header: Σ / Ø) the total number of messages (upper cell) and the average timeliness (lower cell) per month are presented. See also Legend 2 below.

Manual on the RA VI Quality Monitoring Portal



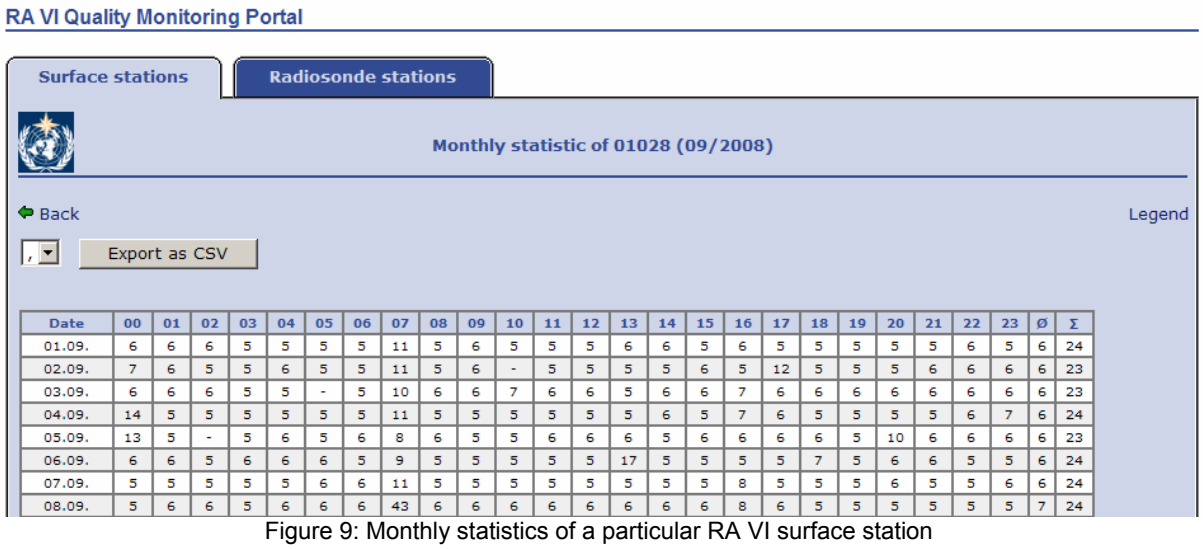
Identifier	Station	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Σ / Ø
01001	JAN MAYEN	24	24	24	24	18	24	24	24	24	24	24	24	24	24	24	23	20	20	24	24	24	24	22	23	23	24	22	24	24	24	24	723
		8	8	8	8	6	12	8	8	8	7	8	10	17	13	8	8	8	8	9	15	10	8	8	8	10	9	12	8	9	8	9	9
01008	SVALBARD AP	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	744
		8	7	7	8	7	12	7	8	8	7	8	9	12	13	8	7	8	8	8	16	8	8	8	8	9	8	11	8	9	8	9	9
01026	TROMSO	24	24	24	24	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	743
		8	7	7	7	10	11	7	7	7	7	7	10	16	12	7	7	7	7	9	7	9	7	7	7	9	8	10	7	8	7	8	8
01028	BJORNOYA	24	24	23	24	24	24	24	24	24	24	24	23	24	24	23	24	24	24	24	23	24	24	23	24	24	24	24	23	24	23	24	737
		6	5	6	6	10	12	6	6	7	5	8	10	7	11	7	6	8	7	6	5	6	6	6	7	7	6	9	6	6	7	7	7
01055	FRUHOLMEN LH	24	24	24	10	-	-	-	-	-	1	-	-	14	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	24	24	528
		8	8	7	10	-	-	-	-	-	5	-	-	21	12	8	7	7	7	9	13	9	7	8	8	9	8	11	7	8	7	9	9

Figure 8: Monthly statistics of all RA VI surface stations or selected WMO block number

Day	Ø / Σ
Daily total number of synoptic messages	Monthly total number of synoptic messages
Daily average timeliness (min)	Monthly average timeliness (min)

Legend 2: Monthly statistics of all RA VI surface stations

The tables of a particular station (Figure 9) display the timeliness of the synop messages of each hour (columns) for each day of the selected month (rows). In the second last column (header: Ø) the daily average timeliness is presented. The last column (header: Σ) provides the total number of synop messages received per day. See also Legend 3 below.



Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Ø	Σ
01.09.	6	6	6	5	5	5	5	11	5	6	5	5	5	6	6	5	6	5	5	5	5	5	6	5	6	24
02.09.	7	6	5	5	6	5	5	11	5	6	-	5	5	5	5	6	5	12	5	5	5	6	6	6	6	23
03.09.	6	6	6	5	5	-	5	10	6	6	7	6	6	5	6	6	7	6	6	6	6	6	6	6	6	23
04.09.	14	5	5	5	5	5	5	11	5	5	5	5	5	5	6	5	7	6	5	5	5	5	6	7	6	24
05.09.	13	5	-	5	6	5	6	8	6	5	5	6	6	6	5	6	6	6	6	5	10	6	6	6	6	23
06.09.	6	6	5	6	6	6	5	9	5	5	5	5	5	17	5	5	5	5	7	5	6	6	5	5	6	24
07.09.	5	5	5	5	5	6	6	11	5	5	5	5	5	5	5	5	8	5	5	5	6	5	5	6	6	24
08.09.	5	6	6	5	6	6	6	43	6	6	6	6	6	6	6	6	8	6	5	5	5	5	5	5	7	24

Figure 9: Monthly statistics of a particular RA VI surface station

Monthly statistics of a particular RA VI surface synoptic station

Time in UTC	Ø	Σ
Timeliness (min)	Daily average timeliness (min)	Daily total number of synoptic messages

Legend 3: Monthly statistics of a particular RA VI surface station

4.1.3 Obs against NWP (last 5 days and monthly)

The table *"Obs against NWP of the last 5 days"* (Figure 10) displays the comparison results of all RA VI surface station observations against the first guess fields of COSMO-EU model output of the last 5 days. As mentioned in chapter 2.2.2 some stations might not be available due to the smaller area of COSMO-EU in comparison to the RA VI area. The portal displays daily average errors on temperature, wind vector, specific humidity and pressure per station.

RA VI Quality Monitoring Portal

Surface stations | Radiosonde stations

Surface stations 5 days obs against NWP selection

Back | Legend

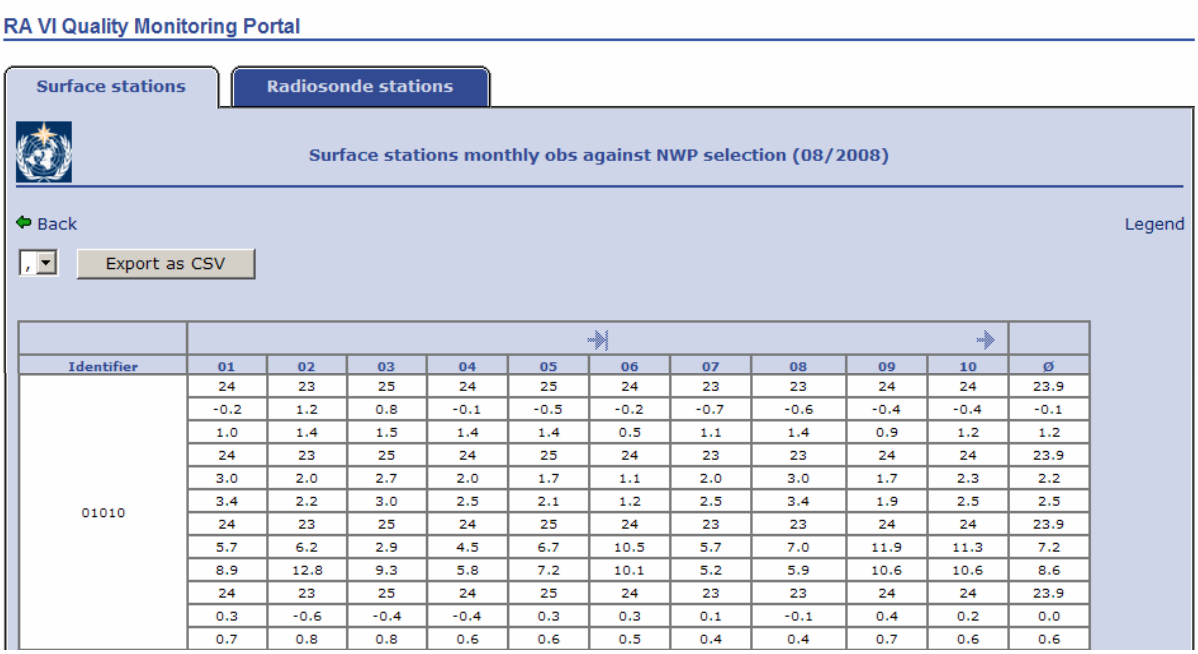
Export as CSV

Identifier	12.09.2008	13.09.2008	14.09.2008	15.09.2008	16.09.2008
01047	6	6	6	6	6
	0.2	-0.8	-1.0	-1.3	0.5
	3.2	3.3	2.6	2.2	3.1
	6	6	6	6	6
	3.4	1.1	2.2	1.9	1.6
	3.8	1.2	2.7	2.1	1.6
	6	6	6	6	6
	7.3	12.0	8.0	5.3	9.1
	11.4	9.9	7.6	9.2	14.9
	6	6	6	6	6
	-1.0	-0.5	-0.7	0.0	-0.4
	1.2	0.7	0.7	0.4	0.6

Figure 10: Obs against NWP of the last 5 days (RA VI surface stations)

The table *"Monthly obs against NWP"* (Figure 11) displays the comparison results for the selected month. In the last column of the table the average of the different parameters is displayed. As mentioned in chapter 2.3.3 the average is calculated from the 1st day of the selected month till the last day displayed in the table (10th, 20th or last day of a month). The displayed parameters are described in Legend 4.

Manual on the RA VI Quality Monitoring Portal



Identifier	01	02	03	04	05	06	07	08	09	10	Ø
01010	24	23	25	24	25	24	23	23	24	24	23.9
	-0.2	1.2	0.8	-0.1	-0.5	-0.2	-0.7	-0.6	-0.4	-0.4	-0.1
	1.0	1.4	1.5	1.4	1.4	0.5	1.1	1.4	0.9	1.2	1.2
	24	23	25	24	25	24	23	23	24	24	23.9
	3.0	2.0	2.7	2.0	1.7	1.1	2.0	3.0	1.7	2.3	2.2
	3.4	2.2	3.0	2.5	2.1	1.2	2.5	3.4	1.9	2.5	2.5
	24	23	25	24	25	24	23	23	24	24	23.9
	5.7	6.2	2.9	4.5	6.7	10.5	5.7	7.0	11.9	11.3	7.2
	8.9	12.8	9.3	5.8	7.2	10.1	5.2	5.9	10.6	10.6	8.6
	24	23	25	24	25	24	23	23	24	24	23.9
	0.3	-0.6	-0.4	-0.4	0.3	0.3	0.1	-0.1	0.4	0.2	0.0
	0.7	0.8	0.8	0.6	0.6	0.5	0.4	0.4	0.7	0.6	0.6

Figure 11: RA VI surface stations observations against NWP model output

Comparison results of RA VI surface synoptic observations against NWP

currently used model: **COSMO-EU (DWD)**

Parameter	Day
T count	Number of temperature observations compared against NWP
T bias	Temperature bias (K)
T rmse	Temperature RMSE (K)
WIND count	Number of wind observations compared against NWP
WIND mvd	Wind Mean Vector Difference (m/s)
WIND rmsvd	RMSE of Wind Mean Vector Difference (m/s)
HUM count	Number of humidity observations compared against NWP
HUM dq/q*	Specific Humidity (%)
HUM RH rmse	RMSE of Relative Humidity (%)
P count	Number of pressure observations compared against NWP
P bias	Pressure bias (hPa)
P rmse	Pressure RMSE (hPa)

Legend 4: RA VI surface stations observations against NWP model output

4.2 RA VI Radiosonde Stations

The following quality monitoring statistics are available for RA VI radiosonde stations (Figure 12):

- Weekly statistics
- Monthly statistics on data availability, timeliness and geopotential height
- NWP comparison results on a 5 days and monthly basis.

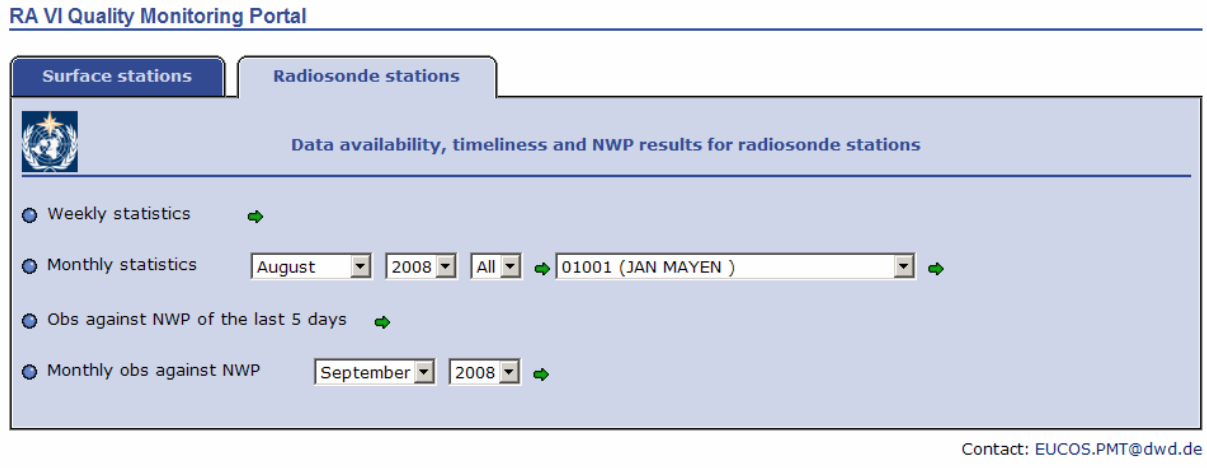


Figure 12: front page of RA VI radiosonde stations

4.2.1 Weekly statistics

The table *"Weekly statistics"* presents a list of all RA VI radiosonde stations and the available TEMP messages (Figure 14). By using the paging function it is possible to view available TEMPs up to 6 weeks in the past. The TEMP messages are attributed to the official observation times 00, 03, 06, 09, 12, 15, 18, 21 UTC. Second ascents are also displayed and marked by (1) behind the observation time.

By holding the cursor on a particular observation time the date and launch time of this ascent is displayed. By selecting a particular observation time a TEMP chart will be displayed (Figure 13).

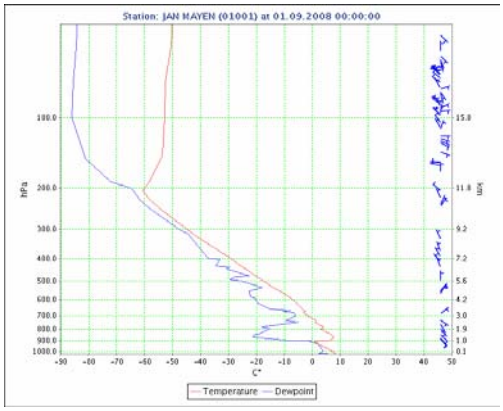
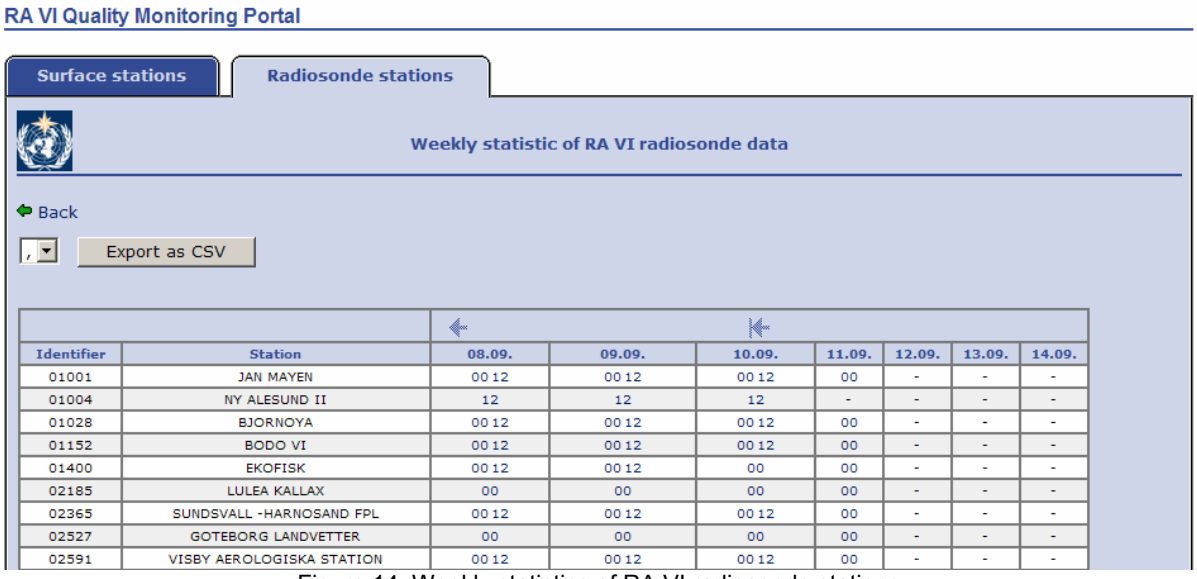


Figure 13: Example of a TEMP chart



Identifier	Station	08.09.	09.09.	10.09.	11.09.	12.09.	13.09.	14.09.
01001	JAN MAYEN	00 12	00 12	00 12	00	-	-	-
01004	NY ALESUND II	12	12	12	-	-	-	-
01028	BJORNOYA	00 12	00 12	00 12	00	-	-	-
01152	BODO VI	00 12	00 12	00 12	00	-	-	-
01400	EKOFISK	00 12	00 12	00	00	-	-	-
02185	LULEA KALLAX	00	00	00	00	-	-	-
02365	SUNDSVALL -HARNOSAND FPL	00 12	00 12	00 12	00	-	-	-
02527	GOTEBORG LANDVETTER	00	00	00	00	-	-	-
02591	VISBY AEROLOGISKA STATION	00 12	00 12	00 12	00	-	-	-

Figure 14: Weekly statistics of RA VI radiosonde stations

4.2.2 Monthly statistics

To view the monthly statistics of RA VI radiosonde stations the user may select the month and year as well as the stations which shall be displayed (default ALL).

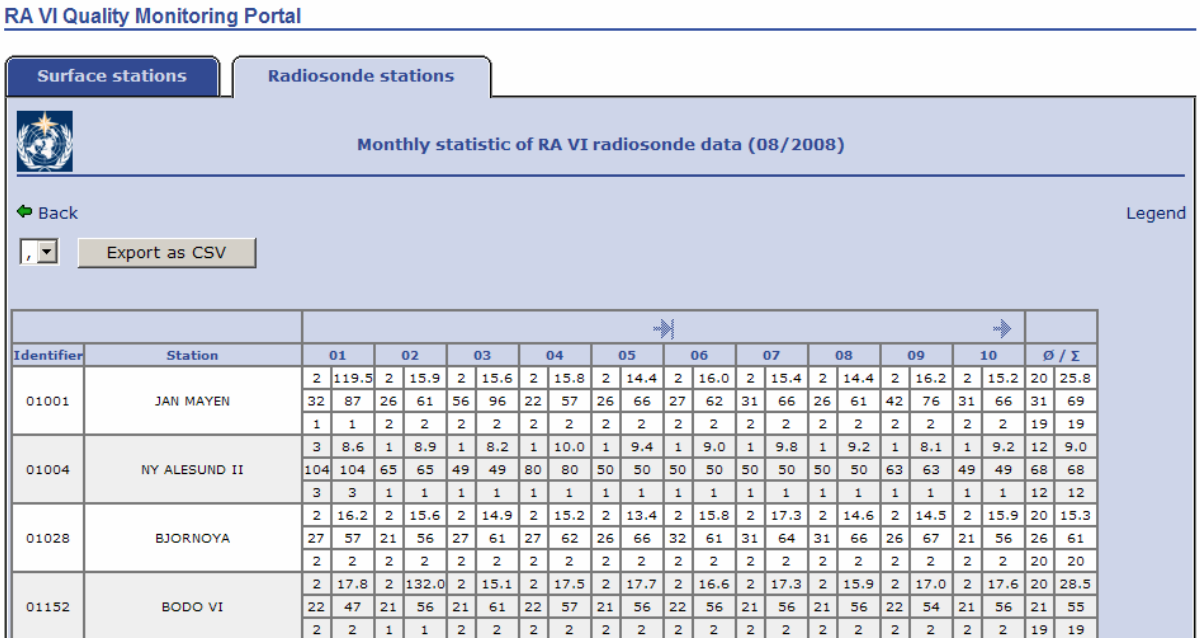
The monthly statistics provide monitoring information on data availability, timeliness and achieved geopotential height for the selected month/year and selected stations.

The tables of all stations or stations of a selected WMO block number (Figure 15) contain the WMO identifier and station name (first 2 columns). In the next columns the following information is provided per day:

Upper row: Total number of ascents (left)
Average burst height in hPa (right)
Middle row: Average timeliness TEMP parts AB (left)
Average timeliness TEMP parts CD (right)
Lower row: Number of ascents achieving 100 hPa (left)
Number of ascents achieving 50 hPa (right)

In the last column (header: Ø / Σ) the totals and averages of the above mentioned parameters from the first day of the month till the last displayed day (Figure 15: till 10th) are presented. See also Legend 5 below.

Manual on the RA VI Quality Monitoring Portal



Identifier	Station	01		02		03		04		05		06		07		08		09		10		Ø / Σ	
01001	JAN MAYEN	2	119.5	2	15.9	2	15.6	2	15.8	2	14.4	2	16.0	2	15.4	2	14.4	2	16.2	2	15.2	20	25.8
		32	87	26	61	56	96	22	57	26	66	27	62	31	66	26	61	42	76	31	66	31	69
		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	19	19
01004	NY ALESUND II	3	8.6	1	8.9	1	8.2	1	10.0	1	9.4	1	9.0	1	9.8	1	9.2	1	8.1	1	9.2	12	9.0
		104	104	65	65	49	49	80	80	50	50	50	50	50	50	50	50	63	63	49	49	68	68
		3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	12
01028	BJORNOYA	2	16.2	2	15.6	2	14.9	2	15.2	2	13.4	2	15.8	2	17.3	2	14.6	2	14.5	2	15.9	20	15.3
		27	57	21	56	27	61	27	62	26	66	32	61	31	64	31	66	26	67	21	56	26	61
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	20	20
01152	BODO VI	2	17.8	2	132.0	2	15.1	2	17.5	2	17.7	2	16.6	2	17.3	2	15.9	2	17.0	2	17.6	20	28.5
		22	47	21	56	21	61	22	57	21	56	22	56	21	56	21	56	22	54	21	56	21	55
		2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	19	19

Figure 15: Monthly statistics of all RA VI radiosonde stations or particular WMO block number

Monthly statistics of all RA VI radiosonde stations

10 days monthly

Day		Ø / Σ on a 10 days or on a monthly basis	
Daily number of ascents	Daily average burst heights (hPa)	Total number of ascents	Average burst heights (hPa)
Daily average timeliness TEMP parts AB (min)	Daily average timeliness TEMP parts CD (min)	Average timeliness TEMP parts AB (min)	Average timeliness TEMP parts CD (min)
Daily number of ascents achieving 100 hPa	Daily number of ascents achieving 50 hPa	Total number of ascents achieving 100 hPa	Total number of ascents achieving 50 hPa

Main synoptic hours with ΔT ± 180 minutes	= official observation times 00, 06, 12 and 18 UTC with timeliness ± 180 minutes
Main synoptic hours with ΔT ± 90 minutes	= official observation times 00, 06, 12 and 18 UTC with timeliness ± 90 minutes
Main and intermediate synoptic hours with ΔT ± 90 minutes	= official observation times 00, 03, 06, 09, 12, 15, 18 and 21 UTC with timeliness ± 90 minutes

Legend 5: Monthly statistics of all RA VI radiosonde stations or particular WMO block number

The tables of a particular radiosonde station (Figure 16) display soundings attributed to the main and intermediate synoptic hours (in columns) for each day of the selected month (in rows). For each sounding and day the following information is provided:

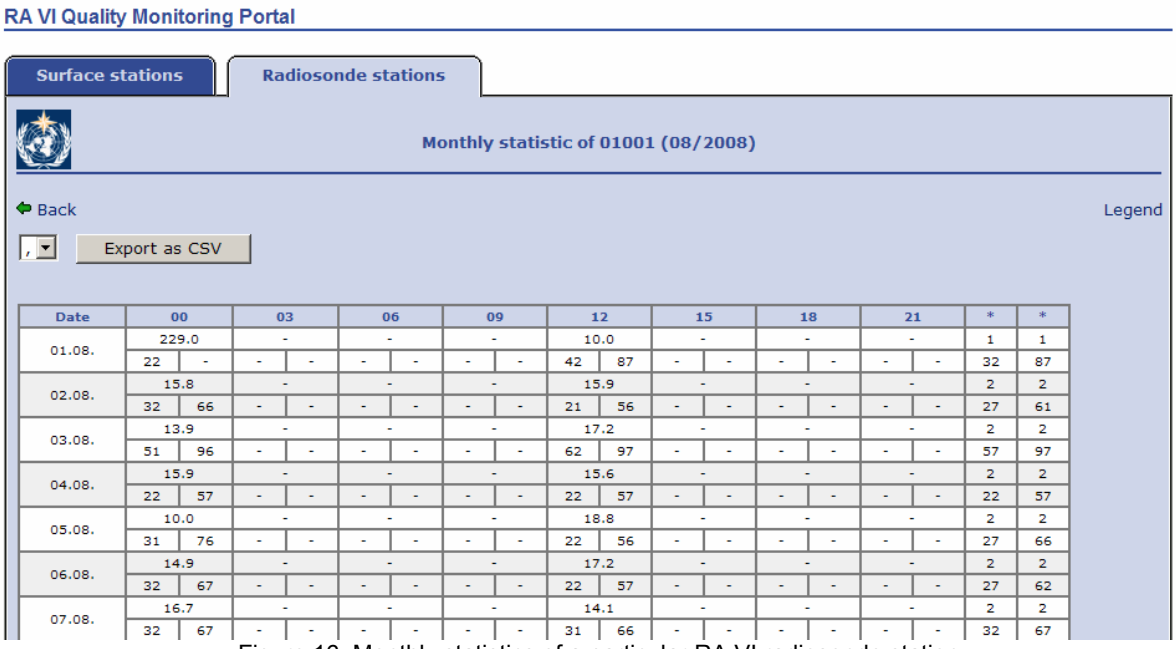
Upper row: burst height of sounding
Lower row: Timeliness TEMP parts AB (left)
Timeliness TEMP parts CD (right)

In the last 2 columns the following information is presented per day:

Upper row
Left cell: number of ascents which achieved geopotential height 100 hPa
Right cell: number of ascents which achieved geopotential height 50 hPa

Lower row
Left cell: average timeliness TEMP parts AB
Right cell: average timeliness TEMP parts CD

See also Legend 6 below.



Date	00		03		06		09		12		15		18		21		*	*
01.08.	229.0		-		-		-		10.0		-		-		-		1	1
	22	-	-	-	-	-	-	-	42	87	-	-	-	-	-	-	32	87
02.08.	15.8		-		-		-		15.9		-		-		-		2	2
	32	66	-	-	-	-	-	-	21	56	-	-	-	-	-	-	27	61
03.08.	13.9		-		-		-		17.2		-		-		-		2	2
	51	96	-	-	-	-	-	-	62	97	-	-	-	-	-	-	57	97
04.08.	15.9		-		-		-		15.6		-		-		-		2	2
	22	57	-	-	-	-	-	-	22	57	-	-	-	-	-	-	22	57
05.08.	10.0		-		-		-		18.8		-		-		-		2	2
	31	76	-	-	-	-	-	-	22	56	-	-	-	-	-	-	27	66
06.08.	14.9		-		-		-		17.2		-		-		-		2	2
	32	67	-	-	-	-	-	-	22	57	-	-	-	-	-	-	27	62
07.08.	16.7		-		-		-		14.1		-		-		-		2	2
	32	67	-	-	-	-	-	-	31	66	-	-	-	-	-	-	32	67

Figure 16: Monthly statistics of a particular RA VI radiosonde station

Monthly statistics of a particular RA VI radiosonde station

Time in UTC		*	*
Burst height (hPa)		Total number of ascents achieving 100 hPa per day	Total number of ascents achieving 50 hPa per day
Timeliness TEMP part AB (min)	Timeliness TEMP part CD (min)	Daily average timeliness TEMP parts AB (min)	Daily average timeliness TEMP parts CD (min)

Main synoptic hours with ΔT ± 180 minutes	= official observation times 00, 06, 12 and 18 UTC with timeliness ± 180 minutes
Main synoptic hours with ΔT ± 90 minutes	= official observation times 00, 06, 12 and 18 UTC with timeliness ± 90 minutes
Main and intermediate synoptic hours with ΔT ± 90 minutes	= official observation times 00, 03, 06, 09, 12, 15, 18 and 21 UTC with timeliness ± 90 minutes

Legend 6: Monthly statistics of a particular RA VI radiosonde station

4.2.3 Obs against NWP (last 5 days and monthly)

The tables *"Obs against NWP of the last 5 days"* and *"Monthly obs against NWP"* display the comparison results of all RA VI radiosonde station observations against the first guess fields of COSMO-EU model output.

The NWP results of radiosonde data are calculated by comparing observations of temperature, wind vector, specific humidity and geopotential height against NWP model outputs on 13 mandatory levels up to 50 hPa (specific humidity only 7 levels up to 300 hPa). A daily average error per parameter is presented.

The displayed parameters are described in Legend 7.

Comparison results of RA VI radiosonde observations against NWP

currently used model: **COSMO-EU (DWD)**

Parameter	Day
T count	Number of temperature observations compared against NWP
T bias	Temperature bias (K)
T rmse	Temperature RMSE (K)
WIND count	Number of wind observations compared against NWP
WIND mvd	Wind Mean Vector Difference (m/s)
WIND rmsvd	RMSE of Wind Mean Vector Difference (m/s)
HUM count	Number of humidity observations compared against NWP
HUM dq/q*	Specific Humidity (%)
HUM RH rmse	RMSE of Relative Humidity (%)
O-B GPH count	Number of 100 hPa observations compared against NWP
O-B GPH @ 100 hPa	100 hPa Geopotential Height Difference (m)

Legend 7: RA VI radiosonde stations observations against NWP model output

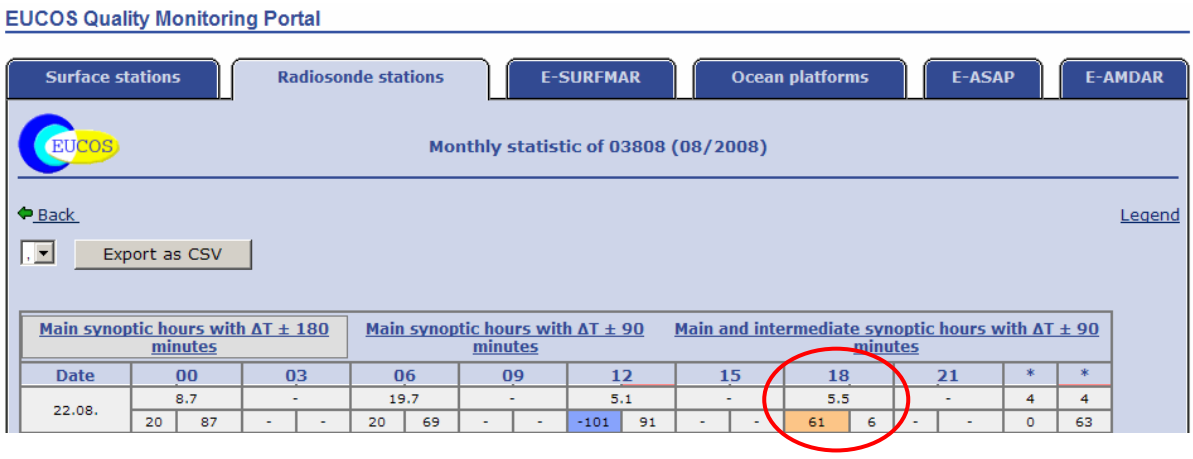
Example for different information provided by using the "Main and intermediate hours" buttons in monthly radiosonde statistics

4. ANNEX

Radiosonde station Camborne (03808) provided a radiosonde ascent on 22nd August 2008, with a launch date at 16 UTC.

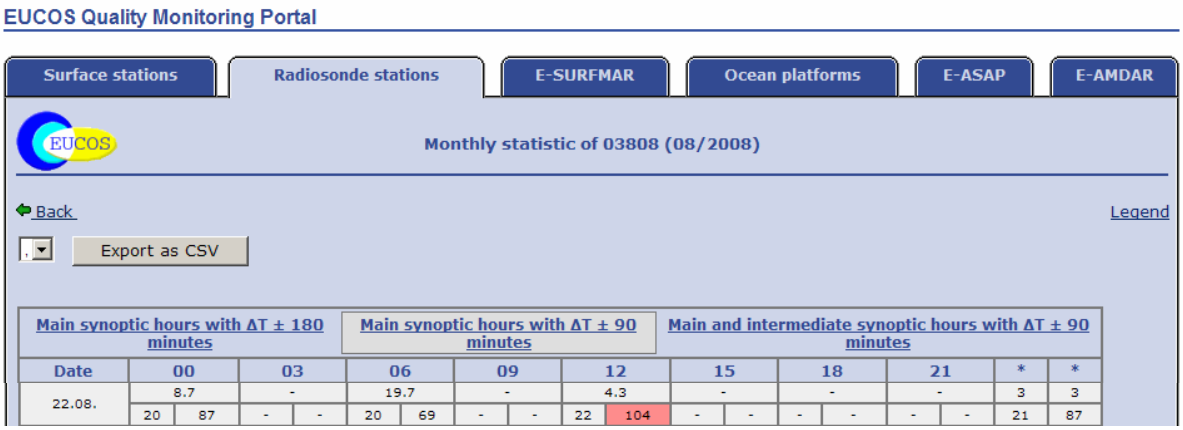
The following information is provided by selecting the different buttons (screen shots are taken from EUCOS Quality Monitoring Portal):

Monthly statistic pressed button *"Main synoptic hours ΔT ± 180 min."*



In the monthly statistic and selection *"Main synoptic hours with ΔT ± 180 min."* the ascent with launch date 16 UTC is attributed to 18 UTC main synoptic hour.

Monthly statistic pressed button *"Main synoptic hours ΔT ± 90 min."*

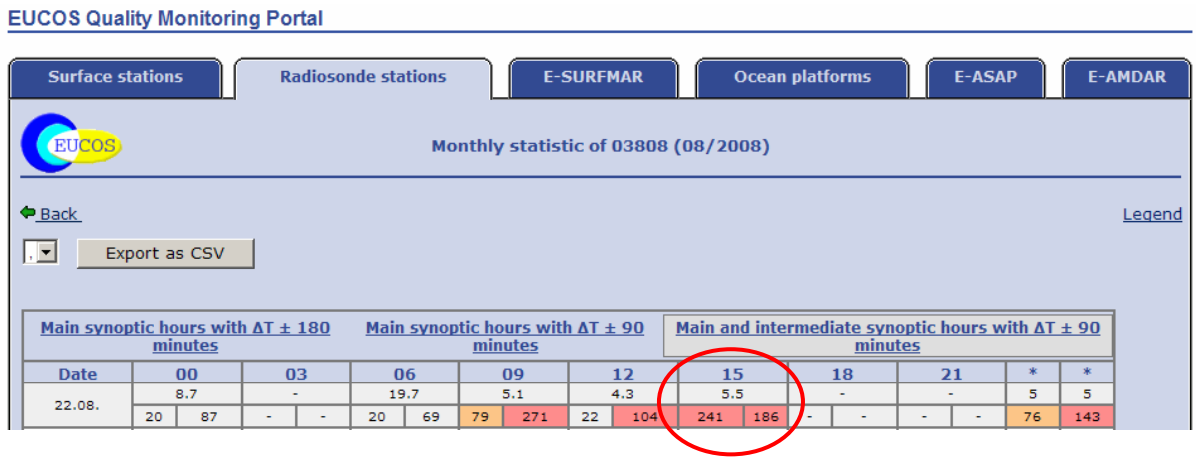


In the monthly statistic and selection *"Main synoptic hours with ΔT ± 90 min."* the ascent with launch date 16 UTC **is not displayed** because only launch dates between 16.30 and 19.30 UTC regarding 18 UTC main synoptic hour will be considered.

Example for different information provided by using the "Main and intermediate hours" buttons in monthly radiosonde statistics

---

Monthly statistic pressed button "Main and intermediate synoptic hours *ΔT* ± 90 min.



In the monthly statistics and selection *"Main and intermediate synoptic hours with ΔT ± 90 min."* the ascent with launch date 16 UTC is attributed to 15 UTC intermediate synoptic hour.