



# Observations Programme Management EUCOS Quality Improvement

1<sup>st</sup> Monitoring Workshop  
Reading, 3<sup>rd</sup> – 4<sup>th</sup> July 2013

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# Content

- EUCOS Performance Standards
- EUCOS Quality Monitoring
- Fault Reporting
- Reporting on QM

# EUCOS Performance Standards

- First established in 2002
- Last revision in June 2009 by PB-OBS19 (Version 5.2)
- Describes Performance Standards, Monitoring and Change Control Procedures for all EUCOS networks **besides E-GVAP and OPERA**
- Defining targets on
  - Percentage of observations received from Network
  - Percentage received by HH+100 Threshold target.
  - Percentage received by HH+50 Breakthrough target.
  - Accuracy targets of particular parameters  
(e.g. temperature, wind speed and direction, pressure, humidity)

# EUCOS Performance Standards - example

## 2.5 EUCOS Designated Surface Land Stations

Observations cycle / resolution: As defined by the initial surface design (the latest version of which is available within [Ref:7]). Automatic surface synoptic stations are expected to carry out hourly observations. Manned surface synoptic stations are expected to carry out three hourly observations.

Table 5: EUCOS Designated Land Based Surface Stations		
Parameter	Target	Comment
Pressure (hPa)	1.0 hPa	Threshold requirement
Temperature (°K)	1.0 °K	
Wind Vector (m/s)	5.0 m/s	
Specific Humidity (%)	10 %	
Precipitation	Yes / No	Rainfall rate to be obtained from Weather RADAR networks
Percentage of observations received from Network	95%	Total monthly availability from EUCOS nominated network, based on either 3 hourly or hourly observations.
Percentage received by HH+100 Threshold target.	95%	Targets relates to percentage of data actually received, not expected.
Percentage received by HH+50 Breakthrough target.	90%	
Targets stated in EUCOS Performance Standards Document EUCOS/PRG/102/Ver5.2		

# New table on EUCOS Performance Standards

- Data availability target: scientific target
- A financial constraint target might be added

Current status

New requirements

Network component	Operational Service	Station type	Data availability			EUCOS		Timeliness		SRNWP/F PM	
			EUCOS	ECMWF	SRNWP/F PM	EUCOS	ECMWF	ECMWF	SRNWP/F PM		
Terrestrial segment	Observations Programme	Surface stations	Target: 95%		Target: 98%	HH+50 Target: 90%	HH+100 Target: 95%	HH+50	HH+100	HH+10 Target: 90%	HH+20 Target: 95%
		Radiosonde stations	Target: 95%		Target: 95%	TEMP AB in HH+50 Target: 75%	CD HH+100 Target: 95%	TEMP AB in HH+50	CD HH+100	TEMP AB in HH+50 Target: 75%	CD HH+100 Target: 95%
Aeronautical segment	E-AMДАР	AMДАР aircraft	Annual target: 11 Mio. obs		Annual target: 11 Mio. obs	HH+50 Target: 90%	HH+100 Target: 95%	HH+50	HH+100	HH+10 Target: 90%	HH+20 Target: 95%
		Mode-S EHS			?					HH+10 Target: 90%	HH+30 Target: 95%
Oceanic segment	E-ASAP	ASAP units	Annual target: 4100 obs			TEMP AB in HH+50 Target: 75%	CD HH+100 Target: 95%	TEMP AB in HH+50	CD HH+100		
	E-SURFMAR	Moored buoys	Target: 90%			HH+50 Target: 90%	HH+100 Target: 95%	HH+50	HH+100		
		Drifting buoys	Target: 88%			HH+50 Target: 90%	HH+100 Target: 95%	HH+50	HH+100		
		Automated VOS ships	Daily avg target: 1,000 obs			HH+50 Target: 90%	HH+100 Target: 95%	HH+50	HH+100		
		Conventional VOS ships	Daily avg target: 250 obs			HH+50 Target: 90%	HH+100 Target: 95%	HH+50	HH+100		
Remote sensing segment	E-GVAP	GNSS sites					HH+90 Target: 90%	HH+50	HH+100	HH+10 Target: 90%	HH+60 Target: 95%
	E-PROFILE	Wind profiler	Target: 85%		Target: 90%	HH+60 Target: 85%		HH+50	HH+100	HH+10 Target: 85%	HH+60 Target: 95%
		Weather radars	No target defined*		No target defined*	HH+60 Target: 85%		HH+50	HH+100	HH+10 Target: 85%	HH+60 Target: 95%
	OPERA	Incoming radar data				ICD HH+08 Target: 90%	ICD HH+10 Target: 95%	HH+50	HH+100	ICD HH+05 Target: 90%	ICD HH+08 Target: 95%
		Composite products				Composites HH+15 Target: 90%	Composites HH+20 Target: 95%	HH+50	HH+100	Composites HH+10 Target: 90%	Composites HH+15 Target: 95%
		Volume products					HH+50	HH+100	HH+10 Target: 90%	HH+15 Target: 95%	
		Reflectivity			Target: 90%			HH+50	HH+100	HH+10 Target: 90%	HH+15 Target: 95%
		Volume products						HH+50	HH+100	HH+10 Target: 90%	HH+15 Target: 95%
		Radial wind			Target: 90%			HH+50	HH+100	HH+10 Target: 90%	HH+15 Target: 95%

# EUMETNET Quality Monitoring Website

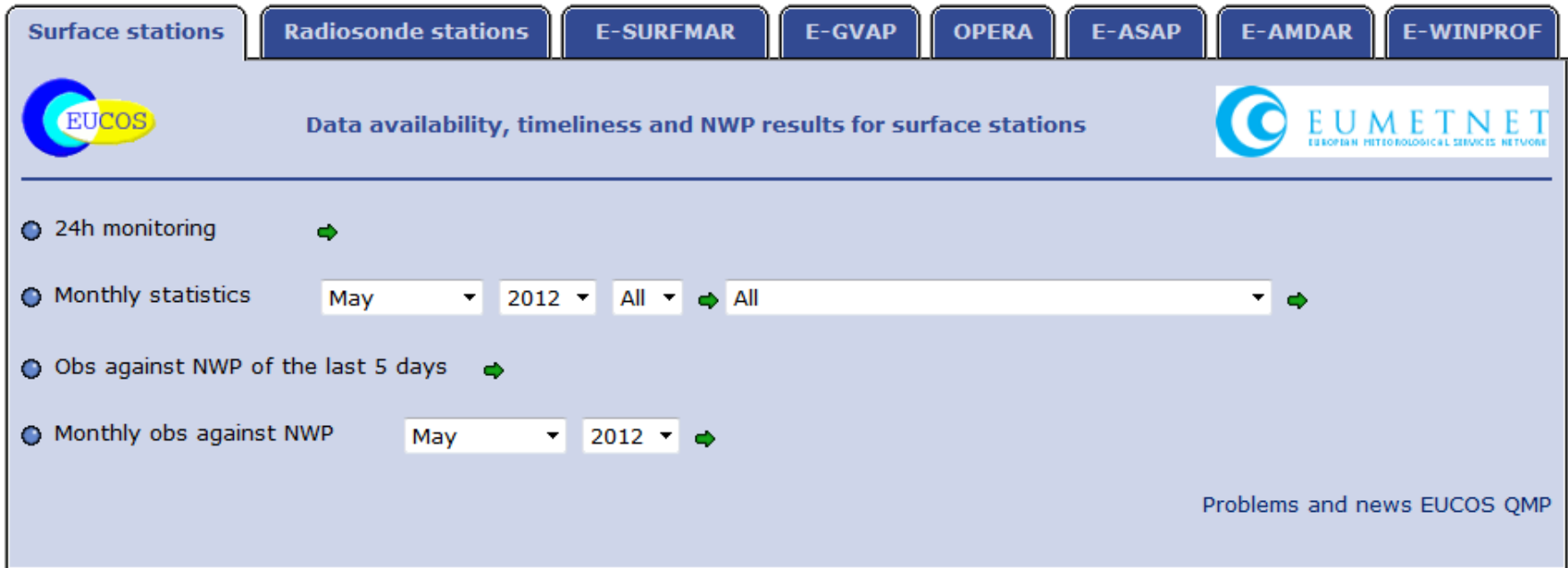


The screenshot shows the EUMETNET Observations Quality Monitoring website. At the top, there is a header with the EUMETNET logo on the left, a central image of a sky with clouds, and the DWD (Deutscher Wetterdienst) logo on the right with the text "Deutscher Wetterdienst Wetter und Klima aus einer Hand". Below the header is a navigation bar with the title "EUMETNET Observations Quality Monitoring" and a power icon. The main content area features a series of tabs: "Surface stations", "Radiosonde stations", "E-SURFMAR", "E-GVAP", "OPERA", "E-ASAP", "E-AMДАР", and "E-PROFILE". The "E-ASAP" tab is selected, displaying "Data availability, timeliness and NWP results for E-ASAP stations". This section includes several interactive elements: "Station map" with a right arrow, "Weekly statistics" with a right arrow, "5 days statistics" with a dropdown menu set to "ASDE01 (ASDE01)" and a right arrow, "Monthly statistics" with dropdowns for "June", "2013", and "All", and a checkbox for "only burst height" with a right arrow, "Obs against NWP of the last 5 days" with a right arrow, and "Monthly obs against NWP" with dropdowns for "June" and "2013" and a right arrow. A link "Problems and news EUCOS QMP" is located at the bottom right of the main content area. The footer contains links for "Imprint", "Privacy", and "Contact".

- In near future the EUCOS QMP will be accessible via a EUMETNET Observations Quality Monitoring welcome page
- Link to EUCOS QMP, RA VI QMP, E-AMДАР Portal and probably further tools in future

# EUCOS QMP ( [www.dwd.de/eucos](http://www.dwd.de/eucos) )

## EUCOS Quality Monitoring Portal



The screenshot shows the EUCOS Quality Monitoring Portal interface. At the top, there are navigation tabs for different station types: Surface stations (selected), Radiosonde stations, E-SURFMAR, E-GVAP, OPERA, E-ASAP, E-AMDAR, and E-WINPROF. Below the tabs, the main content area features the EUCOS logo on the left and the EUMETNET logo on the right. The central text reads "Data availability, timeliness and NWP results for surface stations". Below this, there are four main sections, each with a radio button and a green arrow icon:

- 24h monitoring
- Monthly statistics: Includes dropdown menus for "May", "2012", "All", and a search field containing "All".
- Obs against NWP of the last 5 days
- Monthly obs against NWP: Includes dropdown menus for "May" and "2012".

At the bottom right of the interface, there is a link for "Problems and news EUCOS QMP".

Contact: [EUCOS.PMT@dwd.de](mailto:EUCOS.PMT@dwd.de)

Monitoring of all EUCOS networks on

- Data availability and timeliness (radiosonde stations additionally burst heights) daily and monthly statistics basing on DWD database
- Daily average NWP comparison results OBS-MOD first guess fields of ECMWF model since October 2012 (before DWDs COSMO-EU)

# Information provided in EUCOS QMP (I)

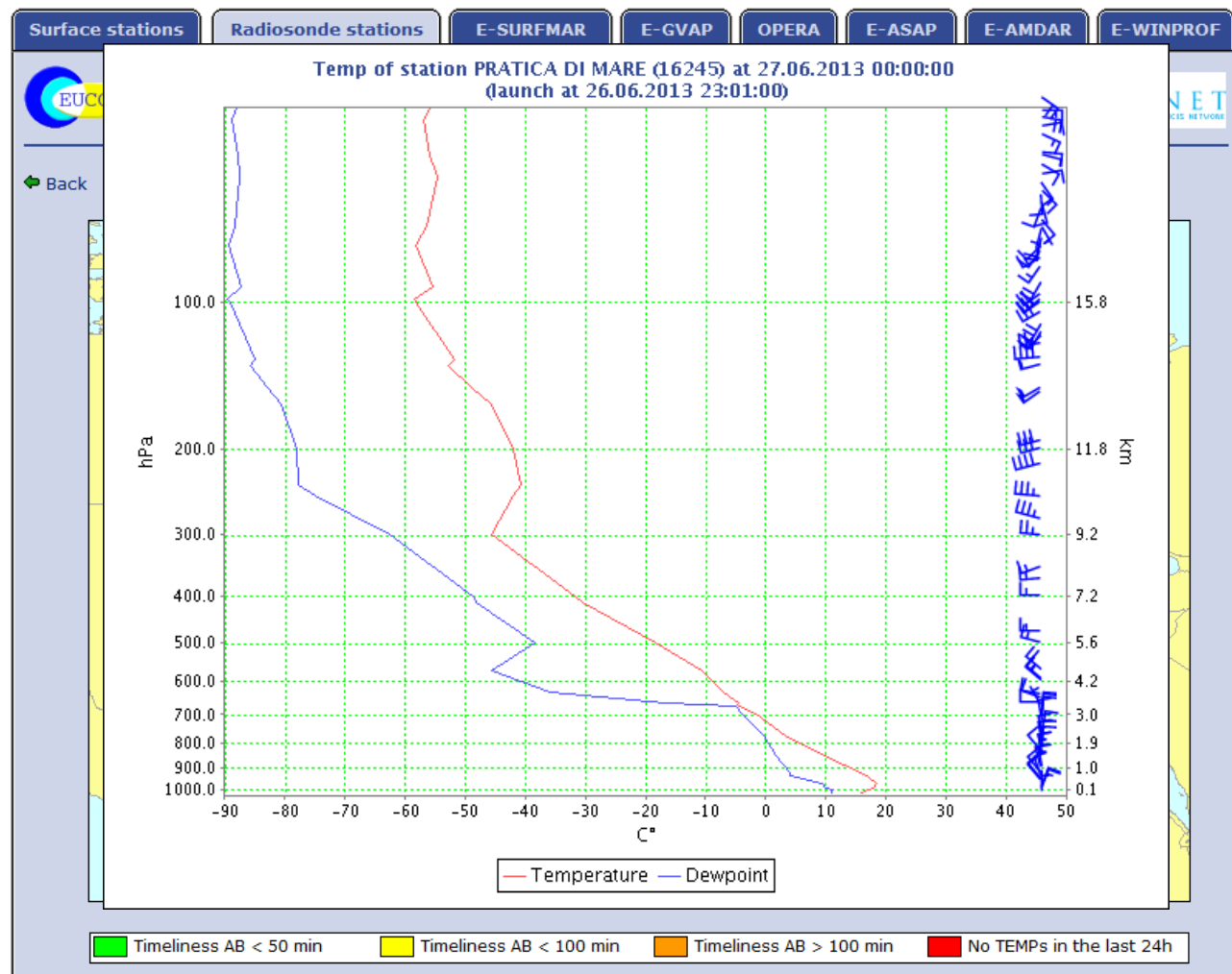
## Example radiosonde land station network:

General overview on data availability and timeliness in station map

- **Green:** timeliness TEMP AB < 50 min
- **Yellow:** timeliness TEMP AB < 100 min
- **Orange:** timeliness TEMP AB > 100 min
- **Red:** no data available in the last 24 hours

Display of TEMP diagram when selecting a particular station

### EUCOS Quality Monitoring Portal



Contact: EUCOS.PMT@dwd.de



# Information provided in EUCOS QMP (II)

Surface stations | Radiosonde stations | E-SURFMAR | E-GVAP | OPERA | E-ASAP | E-AMDR | E-WINPROF

**EUCOS** Monthly statistic of EUCOS radiosonde data (06 / 2013)  
WMO block nr.: ALL station: All

Back | Export as CSV | 92 stations found.

Identifier	Station	21	22	23	24	25	26	27	28	29	30	0	Σ	%					
01001	JAN MAYEN	2	17	2	19	2	19	2	18	2	17	2	19	2	19	54	22	100	
		21	61	27	62	22	57	22	57	27	62	27	56	22	52	22	58	100	100
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	53	98	98
01004	NY-ALESUND	1	10	1	9	1	14	1	10	1	7	1	10	1	10	27	40	88	
		49	49	49	49	50	50	65	65	64	64	49	49	50	50	51	51	70	100
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	27	100
01028	BJORNOYA	2	23	2	20	2	18	2	24	2	18	2	18	2	23	54	32	100	
		21	51	21	47	22	62	22	57	32	62	22	51	26	52	25	61	100	98
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	53	49	98
01152	BODOE VI	2	19	2	20	2	18	2	18	2	17	2	15	2	15	46	22	85	
		21	51	21	52	22	57	22	52	22	52	22	56	22	57	22	52	100	100
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	46	44	100
01241	ORLAND III	2	20	2	19	2	25	2	19	2	20	2	22	2	28	50	30	93	
		32	67	30	67	28	52	27	55	22	47	22	49	22	40	25	46	100	100
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	50	48	100
01400	EKOFISK	2	40	2	45	2	38	2	43	2	43	1	50	1	47	51	58	94	
		47	70	37	52	30	53	48	65	32	50	43	57	53	67	41	73	67	88
		2	2	2	2	2	2	2	2	2	2	1	1	1	1	49	48	96	94
01415	STAVANGER SOLA	2	19	2	18	2	19	2	29	2	25	2	19	2	19	50	25	93	
		32	62	27	62	35	62	32	52	25	52	37	66	22	57	26	54	98	100
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	50	48	100
02185	LULEA-KALLAX	-	-	1	44	1	30	-	-	-	-	1	50	1	30	23	48	43	
		-	-	137	137	144	144	-	-	-	-	140	140	478	478	118	119	48	70
		-	-	1	1	1	1	-	-	-	-	1	1	1	1	22	19	96	83

**Data availability:**  
Total number of TEMP parts AB/CD  
Percentage of target achieved (2 ascents per day)

**Timeliness:**  
Average timeliness of TEMP parts AB/CD  
Percentage of target achieved (HH+50/HH+100)

**Achieving burst height:**  
Total number of ascents achieving 100 and 50 hPa  
Percentage of target achieved

# Information provided in EUCOS QMP (III)

Surface stations | Radiosonde sta

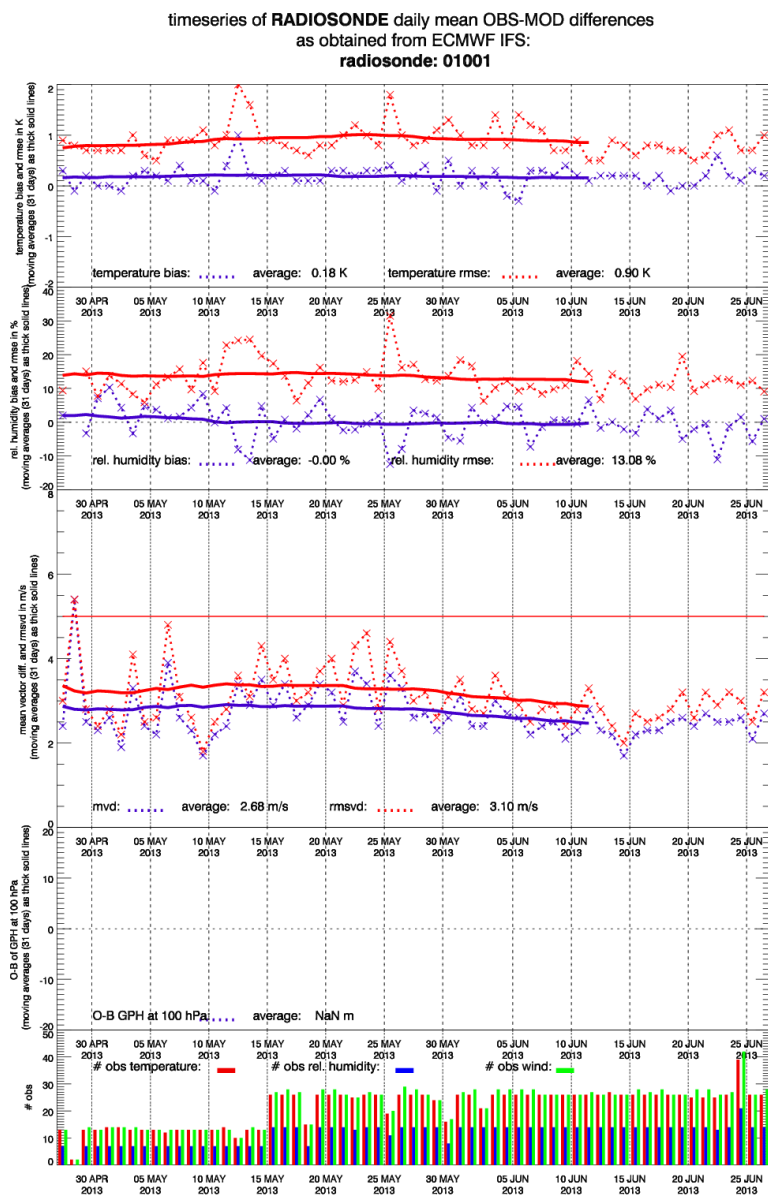
EUCOS Radiosonde

Back

Export as CSV

74 stations found.

Identifier	01	0
	26	2
	0.3	0.
	0.8	0.
	28	2
	2.4	2.
	2.8	2.
	14	1
	12.8	5.
	16.7	6.
	0	0
	-	-
	13	1
	-0.1	-0.
	0.7	0.
	14	1
	2.5	1.
01004	2.7	2.
	7	7
	12.6	9.
	17.0	11
	0	0
	-	-
	26	1
	-0.2	0.
	0.5	0.
	28	1
	2.0	2.
01028	2.4	2.
	14	7
	8.5	5.



E-WINPROF

ETNET  
EUROPEAN METEOROLOGICAL SERVICES NETWORK

Legend

	Ø
0	Ø
5	25.5
2	0.2
9	1.0
5	26.5
3	2.5
8	2.8
4	14.0
2	8.3
2	11.3
1	0.0
	0.0
3	13.6
2	0.0
2	1.1
3	14.8
5	3.1
8	3.6
	7.0
1	9.2
6	11.4
	0.0
	0.0
5	24.2
1	0.1
8	0.9
5	25.0
1	2.4
3	2.7
4	13.2
8	7.9

## Accuracy statistics:

- Daily/monthly averages of ECMWF biases/ RMSE of temp., MVD, specific humidity and O-B GPH displayed per site
- Figures exceeding EUCOS targets are color-coded
- Display of 60-days time series when selecting a particular station

# E-AMDAR Portal ( [www.eucos.net/eamdar](http://www.eucos.net/eamdar) )



The screenshot shows the E-AMDAR Portal interface. At the top, there is a header with the EUMETNET logo on the left, a central image of a sky with clouds, and the logo of the Deutscher Wetterdienst (DWD) on the right. Below the header, the page is titled "E-AMDAR-Monitoring" and "E-AMDAR Portal". The main content area contains several interactive elements:

- Coverage map**: A button with a right-pointing arrow.
- 24h raw data**: A dropdown menu showing "EU0001" and a right-pointing arrow.
- Profile data**: A checkbox for "monthly", a date selector for "30 August 2012", a dropdown for "All", a dropdown for "Reports by phase of flight", and a right-pointing arrow.
- Wind profiles**: A dropdown menu showing "AALBORG" and a right-pointing arrow.
- ACFT activity**: A button with a right-pointing arrow.
- Observation totals**: A date selector for "August 2012" and a right-pointing arrow.
- Transmission time**: A dropdown menu showing "10d" and a right-pointing arrow.
- Fault reports QEvC**: A dropdown menu showing "ALL" and a right-pointing arrow.
- Go to:**: A dropdown menu showing "KNMI QEvC" and a right-pointing arrow.

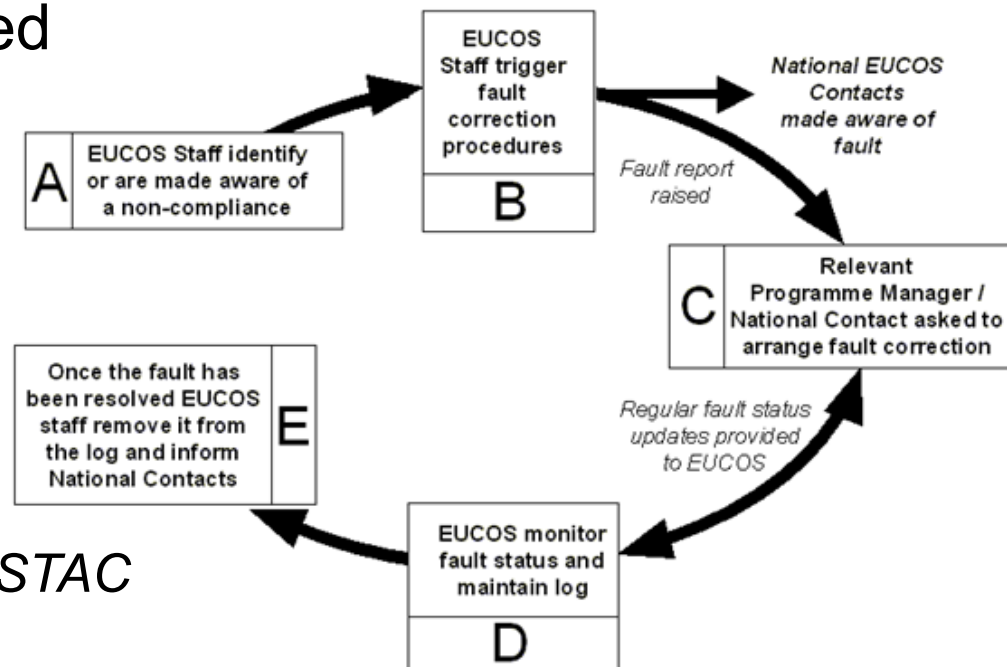
At the bottom of the page, there are links for "Imprint", "Privacy", and "Contact".

## Monitoring of AMDAR observations and profile generation

- Coverage maps and 24h raw data
- Profile data (per airport, list of all profiles per day/month)
- Observation totals (E-ADAS, DWD)
- Daily average NWP comparison results OBS-MOD of AMDAR observations (ECMWF model provided by QEvC)

# Fault reporting procedure

- Defined in the EUCOS Performance Standards
- Currently manual fault reporting process basing on monitoring statistics provided in the EUCOS QMP
- OBS PMT considers the implementation of an automated fault reporting procedure in this phase
- Definitions when automated fault reports shall be distributed have to be agreed (e.g. no data since x days)
- Work has been started to define a fault correction escalation process  
→ *escalation to Heads of Obs, STAC*



# Quarterly and annual QM reporting

- Quarterly and annual quality monitoring reports provide information on the EUCOS network performances compared to the EUCOS Performance Standards
- Summary on main targets per network  
→ Data availability, Timeliness, Burst heights (RS), Accuracy
- Performance summary per network and per country highlighting issues at particular sites/stations
- Describe status of BUFR migration

Networks of Member:	Obs. totals	Data availability	Timeliness HH+50	Timeliness HH+100	Achieving 100 hPa	Achieving 50 hPa	T RMSE	WIND RMSVD	HUM dq/q*	P RMSE/ O-B gph	Availability BUFR data
Germany											
Territorial network											
Surface network	32,400	100.0%	100.0%	100.0%			2.1K	2.4m/s	11.7%	0.4hPa	BUFR available
Radiosonde network	2,866	96.5%	99.0%	99.4%	98.4%	92.6%	1.0K	3.4m/s	8.4%	-	HR BUFR
E-ASAP fleet	293		93.8%	93.8%	79.2%	72.6%	1.0K	3.7m/s	8.9%	-	HR BUFR
E-PROFILE			HH+60								
Wind profilers	29,670	98.1%	99.9%					2.8m/s			BUFR available
Weather radars WRWP	317,354		99.9%				Currently no OBS-NWP data available				BUFR available
E-SURFMAR											
Automated VOS	26,435		99.1%	99.6%			1.2K	2.6m/s	6.9%	1.7hPa	no BUFR data
Conventional VOS	7,855		81.1%	93.5%			1.7K	4.3m/s	11.1%	1.2hPa	no BUFR data
Moored buoys											
OPERA			HH+08		HH+10						
Weather radar ICD	345,536	82.6%	100.0%	100.0%							
Weather radar PPD	100,745	89.6%									

# Network performance table

Q1 2013 Network	Data availability	Timeliness HH+50 (Radiosondes: TEM P AB)	Timeliness HH+100 (Radiosondes: TEM P CD)	Achieving 100 hPa	Achieving 50 hPa	Individual targets subprogrammes
<b>Territorial networks</b>						
Surface stations	Target: 95% 94.4% →	Target: 90% 99.3% →	Target: 95% 99.8% →	---	---	---
Radiosonde stations (incl. new sites of UANR)	Target: 95% 82.7% ↓	Target: 75% 72.5% ↓	Target: 95% 93.4% ↓	Target: 97% 97.6% →	Target: 95% 91.2% ↓	---
<b>E-AMDAR</b>						
AMDAR aircraft	Annual target: 11 Mio. obs 3.52 Mio. obs (equals 32%)	Target: 90% 96.3% ↑	Target: 95% 98.5% ↑	---	---	<i>Profile distribution</i> daily profiles Target: 718 831 ↑ Visited 3h airports Target: 37 44 ↑ daily airports Target: 129 163 ↑
<b>E-ASAP</b>						
ASAP units	Annual target: 4,700 obs 1,061 obs (equals 23%)	Target: 75% 85.6% →	Target: 95% 93.9% ↓	Target: 90% 81.5% ↓	Target: 75% 75.3% ↓	---
<b>E-GVAP</b>		<b>Timeliness HH+90</b>				
at least one ZTD timely	Work is in progress to incorporate E-GVAP quality monitoring.					
Super sites						
All sites/Acs						
<b>E-PROFILE</b>		<b>Timeliness HH+60</b>				
Wind profilers (WP)	Target: 85%	Target: 85%				
Total WP network	86.2% ↑	97.4% ↑				
21 operational WP	94.5% ↑	99.8% →				
11 non-operational WP	68.2% ↓	90.6% ↑				
Weather radars (WRWP)	No target defined**	Target: 85%				
Total WRWP network	78.8% ↑	99.9% ↑				
56 operational WRWP	81.5% ↑	99.8% →				
49 non-operational WRWP	75.6% ↑	100.0% ↑				
<b>E-SURFMAR</b>						

Questions and comments?

# Contact Details

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