

Training Workshop for Regional WIGOS Centres functions and tools in RA VI

Santander, Spain, 20-22 November 2023

Role and Status of RWCs (RWC-EUMETNET)

Stuart Matthews

EUCOS Operations and Development Manager



Readiness Status

- Internal organization/Structure of RWC
 - *RWC manager: Stuart Matthews*
 - *Context/integration to NMHS/organization: EUMETNET...
Building on existing capability within EUMETNET*
 - *Relevant NFPs: NFPS (WDQMS, OSCAR/Surface, WIGOS) of EUMETNET Members, plus national network contact points*
- Readiness status
 - *Technical infrastructure - Infrastructure, Tools and Resources already established and operational under current EUCOS Network management*
 - *Human resources for RWC operations –
 - *Met Office (UK) and DWD (Germany)**

Readiness Status

- Support to Members
 - *Functions - Mandatory functions*
 - *Geographic coverage EUMETNET Members within EUCOS Area*
 - *Language English*
- Additional information, remarks, questions, suggestions
 - **IMS...** Suggest wider use beyond NFPs and RWCs. For example...
 - Those responsible for the day-to-day operational running of the observing network
 - Users of observations data, e.g., NWP Centres
 - Possibility for RWC to also keep these contacts up to date
 - **Stations** GBON or all stations exchanged via WIS included within RWC responsibility?

Organisation – Part of the EUMETNET Observations Capability Area

RWC Project manager – Stuart Matthews (UK, Met Office)

RWC Project Executive – Jacqueline Sugier

EUMETNET Observations Capability Area Manager (UK, Met Office)

Project team includes...

Alex Priestley, EUCOS Network manager (UK, Met Office)

Tanja Kleinert (Germany, DWD)

EUMETNET has undertaken similar activities to those of a RWC for more than 10 years
Known as EUMETNET Composite Observing Systems (EUCOS) Network Management
Funded by EUMETNET and activities approved by EUMETNET Assembly

**Formal Approval from EUMETNET to continue,
until at least the end of 2028, expected next month**



Functions – Metadata management

EUMETNET has established several Programmes, Expert Teams, Working Groups and Task Teams related to observation networks. Including...

- Task Team on WIGOS IDs and Working Group on WIGOS implementation
- Each EUCOS Network has an Expert Team or Working Group
 - discuss and share knowledge
 - including common WIGOS implementation experiences

Plan to establish a new EUMETNET RWC-ET next year
The individual network ETs and WGs will continue

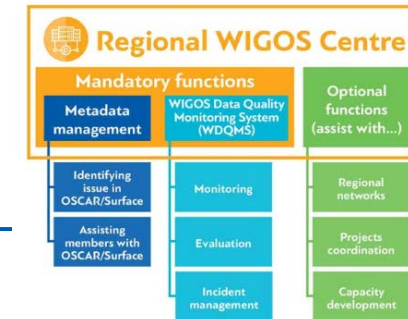
EUCOS Networks
Surface Synoptic Land (WG)
Land Upper Air – Radiosonde (WG)
Marine surface (ET)
GNSS water vapour (ET)
Aircraft based observations (ET)
Ship launched Upper Air (ET)
Profilers (Wind, LIDAR, etc) (ET)
Weather radar (ET)



Function - Quality Monitoring, Evaluation and Incident Management

Partnership between Members and RWC Team

- Daily tasks primarily undertaken at a national level
- RWC Team check for new incidents once or twice a week
- RWC focus on identifying long term trends and assisting to rectify persistent problems, rather than short term incidents.
- Users primarily contact Members, small number contact OBS CA MP first



Functions – Quality Monitoring - Reports

EUMETNET produces performance reports for all its network every quarter

Report generation is largely automated

Focus on countries and the whole (sub) Region, rather on individual stations (300+ land surface stations, 90+ Upper air)

Individual station performance available from Quality Monitoring Platform (QMP)

Report includes

Information for all EUCOS Networks

Availability, timeliness and quality performance against OSCAR RRR standards

Significant events, incidents, problems, changes and news included in the reports

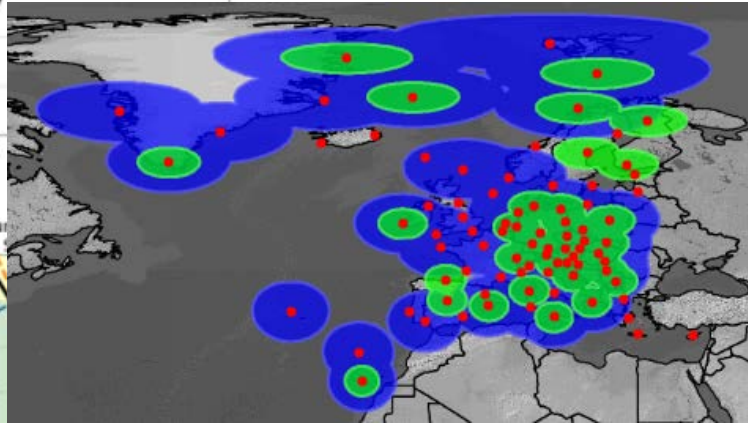
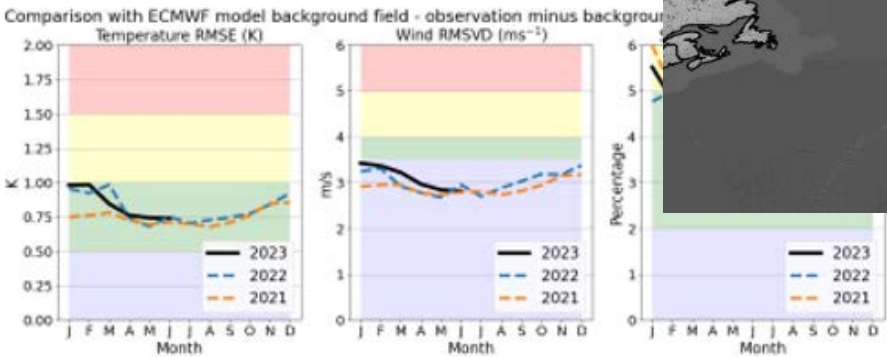
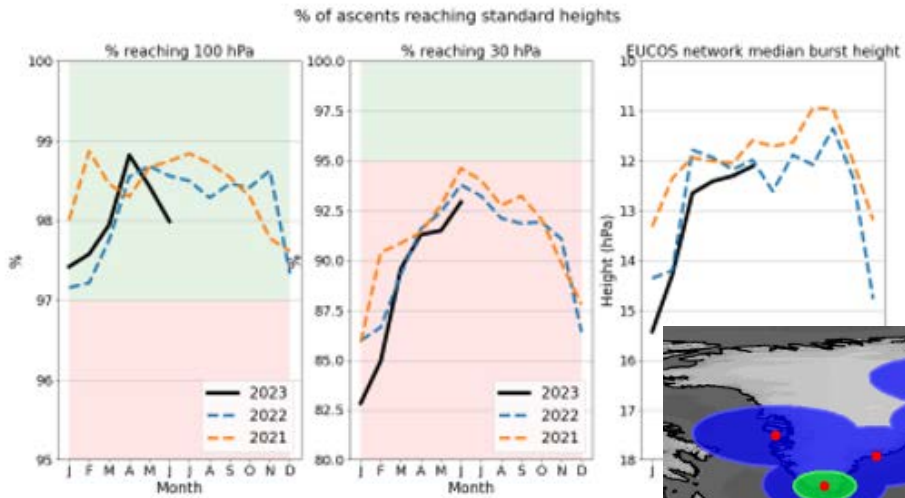
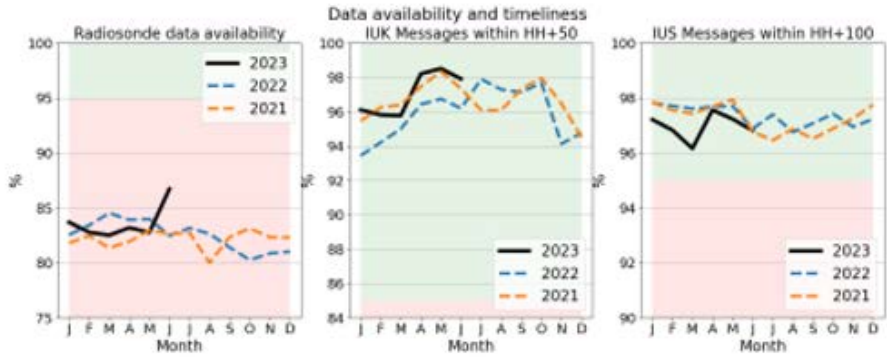
Graphs (for whole network) on trends in performance (several years available)

Recently introduced spatial coverage maps based on GBON targets

**Plan to continue generating these reports for RWC-EUMETNET,
but they will evolve as requirements change**

Upper Air

EUCOS Land Radiosonde Network Dashboard



- EUCOS radiosonde station
- Additional RA VI radiosonde station
- 500 km diameter area around radiosonde launch station reaching 30 hPa twice a day.
- 1000 km diameter area around radiosonde launch station reaching 10 hPa once a day.

EUCOS Land Radiosonde Network Incidents Reported during 2023 Q2

Country	Identifier	Issue Description
Croatia	Zadar 14430	Missing data from most of May 2023, then sporadic missing launches caused by faulty autosonde.
Sweden	02591 Visby Aerologiska Station	Ascents resumed on 25th April after prolonged outage due to hydrogen safety issues
Sweden	02185 Lulea-Kallax	Military station with long-term hydrogen safety problems. Currently excluded from performance statistics.
Portugal	08508 Lajes	Ascents suspended due to lack of gas on 5 April 2023. Ascents recommenced w/c 17 April 2023
UK	03238 Albemarle	Compressor fault 6/4/23. Ascents resumed 20/4/23.
All	All	We are aware that the percentage of ascents reaching 100hPa drops off markedly in May and June. We are monitoring this and will update in Q3 if this is a longer term trend.
Sweden	Goteborg/Landvetter (02527)	No ascents during June - removed from statistics
Denmark	Thorshavn 06011	Reduced to one sounding per day (12Z) from 27/6/23
Italy	S. PIETRO CAPOFUME MOLINELLA (BOLOGNA) 16144	Missing data 14-31 May. Caused by water damage during intense rainfall on 13th May.
UK	Albemarle 03238	Data missing 2-6th June due to comms issue.
Norway	Oriand 01241	Data missing 6-9th May due to internet outage at site.

Radiosonde issue information are li

EUCOS Land Radiosonde Network 2023 Q2

	Median Burst Height	Data Availability	HH+50	HH+100	100 hPa	30 hPa
EUCOS Targets	No Target	95.0	85.0	95.0	97.0	95.0
Network Averages	12.3	84.2	98.2	97.2	98.4	91.9

EUCOS Targets

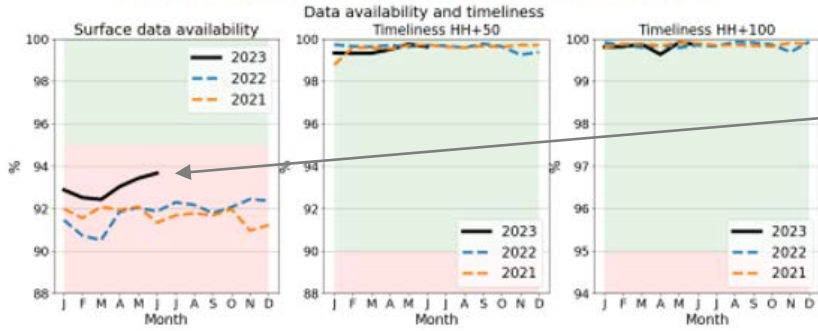
	Temp. RMSE	Wind speed RMSVD	Humidity dq/q*
Goal	0.5	3.5	2.0
Breakthrough	1.0	4.0	5.0
Threshold	1.5	5.0	10.0
No Target Met			
Network Averages	0.7	2.9	4.5

NWP Targets

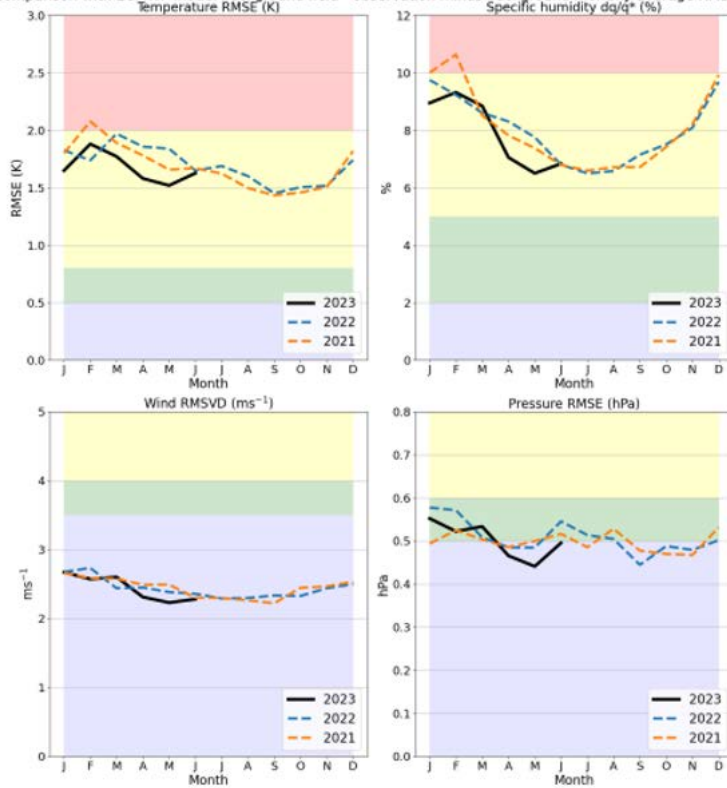
	Total Ascents	Median Burst Height	Data Availability	HH+50	HH+100	100 hPa	30 hPa	Temp. RMSE	Wind speed RMSVD	Humidity dq/q*
Austria	445	22.4	61.1	99.6	98.9	97.1	74.6	0.7	2.9	5.1
Belgium	90	31.7	49.5	50.0	37.2	98.9	48.9	0.6	2.3	7.2
Croatia	235	12.9	77.6	97.9	98.7	98.3	94.9	0.9	3.2	4.9
Cyprus	133	17.7	73.0	100.0	100.0	99.3	82.7	0.8	3.6	4.8
Czechia	459	6.7	100.0	99.3	98.9	99.8	99.3	0.7	3.0	3.6
Denmark	1074	6.2	98.3	100.0	98.6	98.0	95.9	0.8	2.7	6.2
Estonia	91	26.4	50.0	100.0	100.0	100.0	69.2	0.5	2.4	3.9
Finland	550	11.9	100.0	99.5	94.7	99.3	96.2	0.7	2.8	2.6
France	993	9.2	90.9	96.6	95.1	98.0	93.0	0.8	2.9	6.8
Germany	1679	8.2	99.8	99.9	99.3	99.9	98.6	0.7	2.7	3.7
Greece	342	27.7	62.4	96.4	97.0	97.1	67.8	0.7	3.2	5.4
Hungary	363	9.0	99.5	100.0	100.0	99.7	97.8	0.7	2.9	5.3
Iceland	214	20.2	70.6	98.1	99.1	97.7	79.0	0.7	2.7	5.0
Ireland	182	7.0	100.0	98.4	98.4	99.5	98.3	0.6	2.7	6.1
Italy	1305	8.4	88.5	98.0	97.3	98.3	87.5	0.8	2.7	3.5

Land Surface

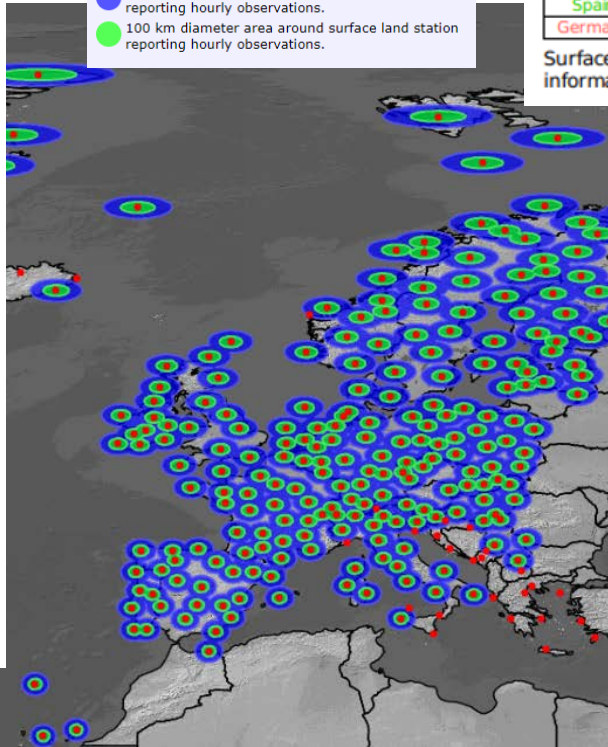
EUCOS Surface Land Stations Network Dashboard



Comparison with ECMWF model background field - observation minus background monthly average RMS error



- Legend**
- EUCOS surface land station
 - Additional RA VI surface land station
 - No data received in period
 - 200 km diameter area around surface land station reporting hourly observations.
 - 100 km diameter area around surface land station reporting hourly observations.



EUCOS Surface Land Stations Network Incidents Reported during 2023 Q2

Country	Identifier	Issue Description
Slovakia	Kosice (11968)	Large pressure error 25th June caused by probable manual input error.
All	All	The marked increase in data availability this quarter is mostly due to a change in the stations monitored in Portugal which includes more stations that report hourly.
Switzerland	Sion (06720)	Higher than usual P RMSE gradual drift - under investigation
Montenegro	Plevlja (13363) and Niksic (13459)	Several short periods with P RMSE of 20-30hPa in April and May. Under investigation.
Italy	Capo Caccia (16522)	Large pressure error 30th June - station removed for June. Planned rollout of new software should stop repeat issues.
Serbia	Pozega (13370)	Large pressure error 24th June due to manual input error
Italy	Capo Mele (16153) and Ponza (16280)	Large P RMSE May 2023 caused by software issues. Planned rollout of new software should stop repeat issues.
North Macedonia	Stip (13591)	Large pressure RMSE 30th May 2023 caused by manual input error.
Portugal	Sagres (08538/08533)	No data received from 08538, new station now 08533
UK	Lyneham (03740) and Stornoway (03026)	Persistent pressure bias and error, under investigation.
Sweden	Ostersund Frosön (02226)	Long term large pressure bias and RMSE. Site operated by Swedish Air Force. Error in barometric height being fixed June 2023.
Italy	Torino (16061)	Large pressure error 28th June - station removed for June. Planned rollout of new software should stop repeat issues.
Italy	San Valentino Alla Muta (16008)	Large P RMSE 2nd June caused by software issues. Planned rollout of new software should stop repeat issues.
Malta	Luqa (16597)	Malta (Luqa) reports only in FM12 format
Spain	Lleida (08171)	Missing data for periods in May due to power fault.
Germany		

EUCOS Surface Land Stations Network 2023 Q2

	Data Availability	HH+50	HH+100
EUCOS Targets	95.0	90.0	95.0
Network Averages	93.4	99.6	99.8

EUCOS Targets

	Temp. RMSE (K)	Wind speed RMSVD (m/s)	Humidity dq/q* (%)	Pressure RMSE (hPa)
Goal	0.5	3.5	2.0	0.5
Breakthrough	0.8	4.0	5.0	0.6
Threshold	2.0	5.0	10.0	1.0
No Target Met				

Network Averages	1.6	2.3	6.8	0.5
------------------	-----	-----	-----	-----

NWP Targets

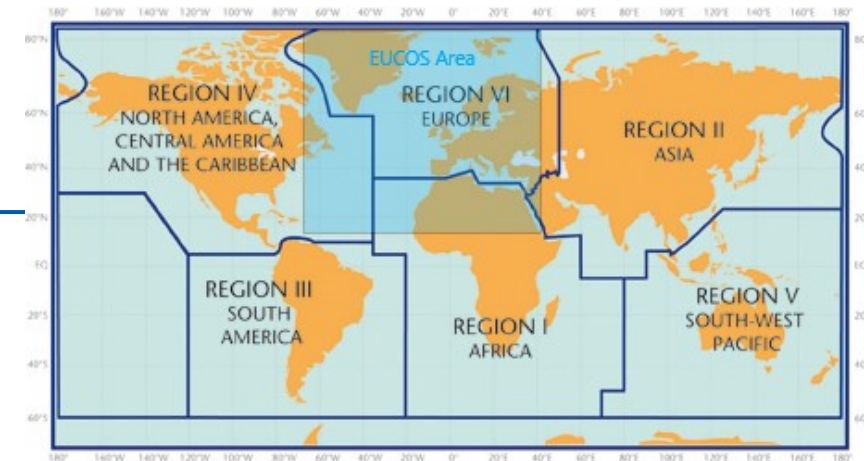
	Obs. totals	Data Availability	HH+50	HH+100	Temp. RMSE (K)	Wind speed RMSVD (m/s)	Humidity dq/q*	Pressure RMSE (hPa)
Austria	6548	100.0	100.0	100.0	2.4	3.0	12.5	0.4
Belgium	6501	99.2	100.0	100.0	1.1	2.3	6.0	0.4
Croatia	8730	66.6	100.0	100.0	1.9	2.2	6.1	0.5
Cyprus	6539	99.8	99.9	100.0	2.1	2.7	7.2	0.7
Czechia	8735	100.0	100.0	100.0	1.6	2.4	5.8	0.4
Denmark	37888	91.3	99.0	99.8	1.8	2.9	9.7	0.5
Estonia	6552	100.0	100.0	100.0	1.5	1.7	6.1	0.3
Finland	39092	99.5	100.0	100.0	1.9	1.7	6.2	0.3
France	50166	99.9	99.6	99.6	1.5	2.1	5.6	0.4
Germany	32654	99.7	99.8	99.8	1.6	2.3	6.8	0.3
Greece	6502	33.1	99.1	99.4	1.5	2.6	7.6	0.7
Hungary	8732	100.0	100.0	100.0	1.4	1.9	5.7	0.4
Iceland	5950	54.5	99.9	100.0	1.6	3.4	6.6	0.6
Ireland	19644	99.9	100.0	100.0	1.1	2.1	5.3	0.3
Italy	38672	85.7	98.7	99.0	2.1	3.0	11.7	1.1



Geographic Coverage

RWC-EUMETNET will be responsible for the networks of the 31 EUMETNET Members

EUMETNET Members (31)			
Austria	France	Luxembourg	Serbia
Belgium	Germany	Malta	Slovakia
Croatia	Greece	Montenegro	Slovenia
Cyprus	Hungary	Netherlands	Spain
Czechia	Iceland	North Macedonia	Sweden
Denmark	Ireland	Norway	Switzerland
Estonia	Italy	Poland	UK
Finland	Latvia	Portugal	



EUCOS: Geographic domain

EUCOS Network Management slightly wider domain than RAVI

- EUCOS domain (10°N–90°N, 70°W–40°E)
- Stations operated by EUMETNET Members
 - Normally, do not consider 3rd party operated stations (e.g., some military sites)
- A small number of EUCOS stations are in RA I and RA IV
 - E.g., Canary Islands and Guadeloupe

Plan to continue to be responsible to observing networks within this domain

Infrastructure and Tools

OSCAR Surface and WDQMS

QMP – Quality Monitoring Portal (QMP) hosted by DWD

WMO (RA-VI and GCOS stations); EUCOS Stations; E-AMDAR

E-PAP – EUMETNET Tool for visualising summary performance statistics and the generation of performance reports, managed by the Met Office, hosted on Amazon Web Services (AWS)

IMS's – National IMS are the primary tools within RWC-EUMETNET area

– Very basic IMS operated by EUCOS

Other - Use of EUMETNET Microsoft SharePoint applications for document management, meetings, etc.

IMS - Plan to start using the WMO IMS during the Pilot phase

Thank you



WORLD
METEOROLOGICAL
ORGANIZATION



wmo.int