Operational DCS status report incl. EDCP implementation plans + status of implementation of best practices (EUMETSAT)

Presented to CGMS-53 WG-I session, agenda item 5.2

Coordination Group for Meteorological Satellites

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Executive summary of the WP

This presentation supports the status of the EUMETSAT Data Collection Services (DCS) paper CGMS-53-EUMETSAT-WP-03. These are currently supported Meteosat-12 (MTG) at 0° and Meteosat-9 at 45.5°E (MSG). MTGI1 took over the 0° DCS service on 25 January 2025.

The paper includes details of channel utilisation, DCP allocation, geographical distribution and DCP data dissemination mechanisms. The DCS is one of the core services operated by EUMETSAT in support of meteorology and weather prediction.

The EUMETSAT DCS currently supports both standard-rate (100bps) and high-rate (1200bps) DCPs. The prime IODC application is for the Indian Ocean Tsunami Warning Network (IOTWS). As of 10 February 2025, there are a total of 1819 DCPs allocated, with 537 actively transmitting. Out of those DCPs allocated, 743 are HRDCPs transmitting at 1200 bps (716 supported by Meteosat-10 at 0° and 27 by Meteosat-9 at 45.5°E). The remaining 1076 are Standard Rate DCPs (942 supported by Meteosat-12 (MTG) at 0° and 134 by Meteosat-9 (MSG) at 45.5°E). The EUMETSAT DCS had a reliability greater than 99% during the reporting period (from 1 January 2024 to 31 December 2024).

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Introduction

The paper CGMS-53-EUMETSAT-WP-03 presents the status of the EUMETSAT Data Collection Services (DCS) currently supported by Meteosat-12 at 0° for the prime and Meteosat-9 at 45.5°E for the IODC (Indian Ocean Data Coverage). Included are details of channel utilisation, DCP allocation, geographical distribution and DCP data dissemination mechanisms.

EUMETSAT DCS OVERVIEW

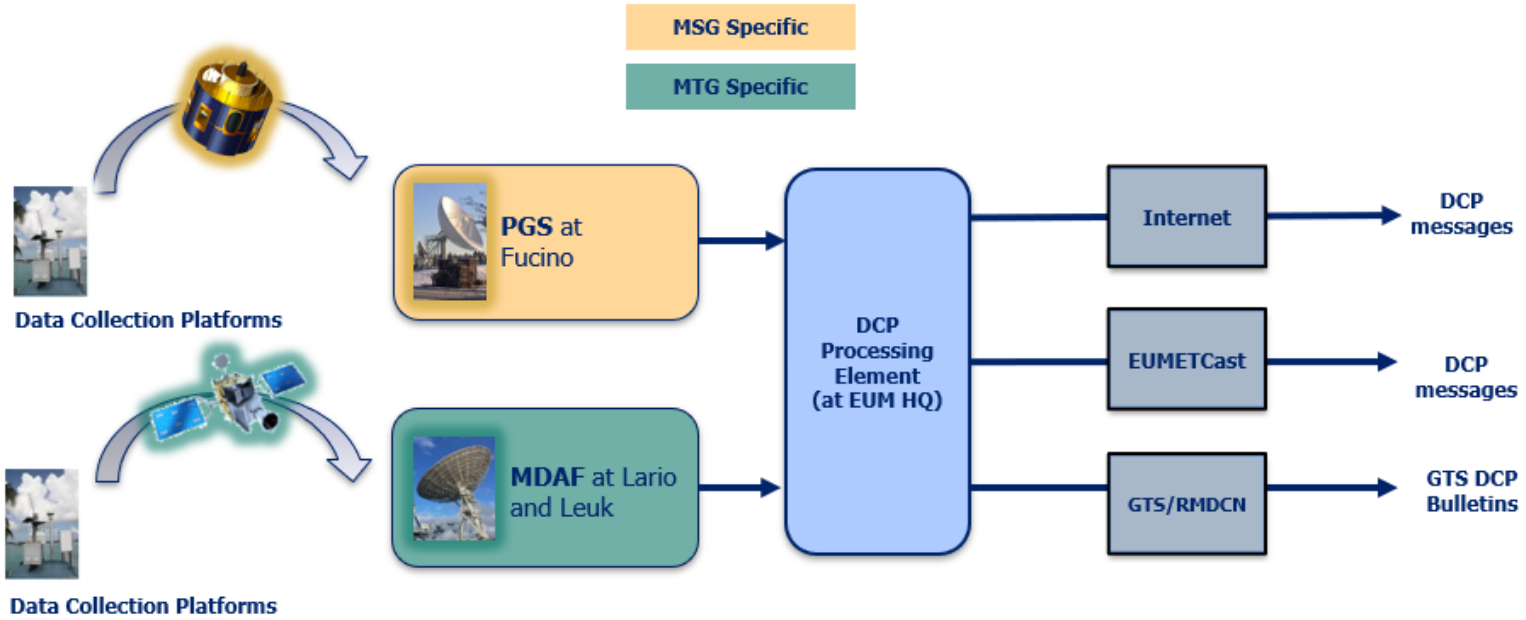
The Data Collection Service (DCS) is one of the core services operated by EUMETSAT in support of meteorology and weather prediction. The DCS serves an important role in enabling data collection platform (DCP) operators to use the Meteosat system to receive environmental data collected from DCP platforms. The DCS is particularly useful for the collection of data from remote and inhospitable locations where it may provide the only possibility for data relay.

The Meteosat DCS, initially established with the first generation of Meteosat satellites (MFG) in 1977, has continued and expanded with Meteosat Second Generation (MSG) and Meteosat Third Generation (MTG). The Data Collection Service is currently supported by Meteosat-12 (MTG) at 0° and Meteosat-9 at 45.5°E (MSG).
The Meteosat DCS supports the following functions:

- The transmission of data from DCPs to the Meteosat satellite;
- The immediate relay of the data by the satellite to the EUMETSAT Ground Station;
- Processing of the DCP data and quality checks;
- Onward transmission of selected data to the user.

Meteosat Data Collection System (DCP message and Bulletins dissemination)

MTGI1 took over the 0° DCS service on 25 January 2025; while the MSG remains supporting the IODC service. The MTG series offers an increased capacity over that of MSG. The DCP transmits its message to the assigned satellite in the UHF radio frequency band.



- For MSG, the satellite then transponds the message and transmits the data to the Primary Ground Station (PGS), for MSG this is located at Fucino, Italy, and if needed a backup ground station in Cheia, Romania. Data is then routed immediately to the DCP Processing Facility (DCPF) at the Main Control Centre (MCC) in Darmstadt.
- For MTG, the satellite digitizes the RF spectrum corresponding to the DCP reception bandwidth and transmits the digitized spectrum as packets to the Mission Data Acquisition Facility (MDAF) at Lario and Leuk. The data is similarly routed directly to the DCPF at the MCC in Darmstadt.

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Meteosat Data Collection System (DCP message and Bulletins dissemination)

At EUMETSAT HQ, the messages are compared with the master list of expected DCPs, processed and distributed to end user through three different dissemination mechanisms:

- EUMETCast - EUMETSAT's multi-service data dissemination system based on multicast technology. It uses commercial telecommunication geostationary satellites using DVB standards and research networks to multi-cast files (data and products) to a wide user community;
- Global Telecommunications System (GTS) of WMO - Used to transmit environmental data to meteorological services throughout the world. EUMETSAT disseminates DCP bulletins to the RTH in DWD Offenbach;
- Internet - manual download from the website via secure log in.

The EUMETSAT DCS had an availability greater than 99% during the reporting period.

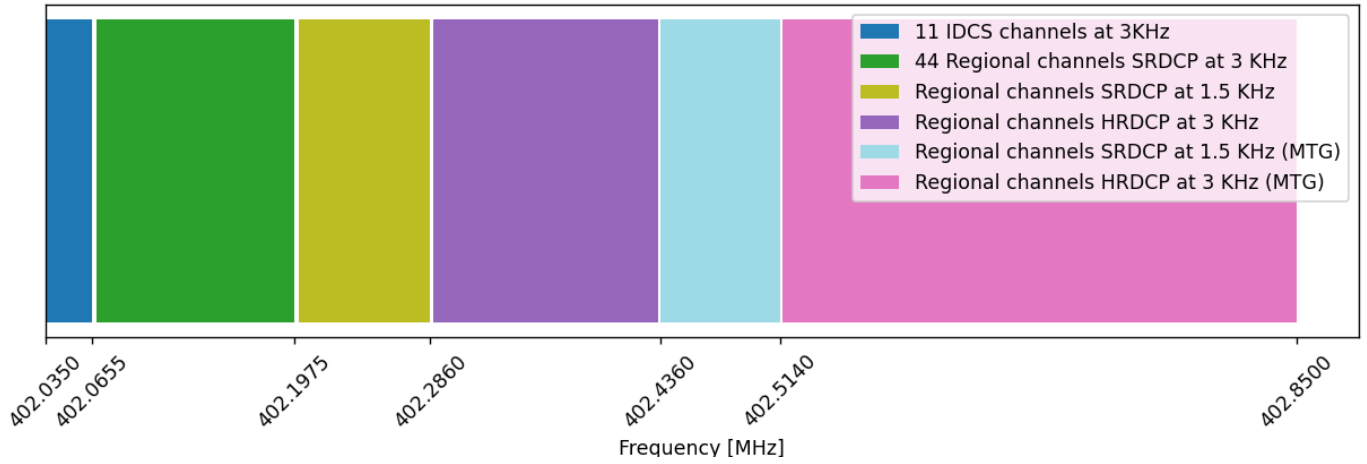
There has not been any testing of the EDCP with EUMETSAT DCS. It is hoped to modify the receivers and take part in some testing during 2025.

Channel Utilisation Status

The 245 regional channels slots (at 1.5 Khz spacing) available before the entry into operations of MTG have been increased up to 524 with MTG.

From these regional channels, the first 44 channels use a spacing of 3KHz and support the older 100 bps SRDCPs. The remaining 157 MSG channels can support the 1.5 kHz regional SRDCPs and the 3 kHz regional HRDCPs. The last part of the spectrum from 402.436 MHz to 402.85 MHz is reserved for MTG and the current assignation is SRDCP with 1.5 KHz spacing and HRDCP at 3KHz.

The allocation of regional DCP channels is shown in Figure 2. This figure also shows the 11 international (IDCS) channels (with centre frequencies spaced 3 kHz apart), from 402.0355 - 402.0655 MHz.



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DCP Types

The EUMETSAT DCS currently supports both standard and high-rate DCPs.

- Standard rate DCP (SRDCP) - SRDCPs transmit at 100bps and can transmit 649 bytes of platform data in 60 seconds (including 5 seconds unmodulated carrier, preamble, sync code and address) with a timing accuracy better than +/- 15 seconds.

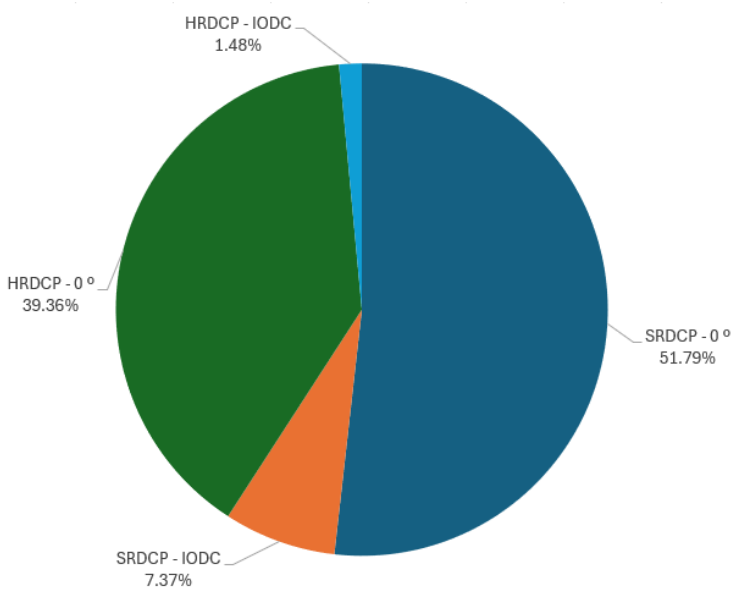
- High Rate DCP (HRDCP) – HRDCPs transmit at 1200bps and can transmit 653 bytes of data in 10 seconds. The timing accuracy is also improved to +/- 0.5 seconds. The modulation scheme used is also more robust against interference. More data can also be transmitted in a single message due to a more flexible allocation capability

The high rate DCPs (HRDCP) therefore allow for improved capabilities and warnings of potentially devastating natural phenomena such as tsunamis.

DCP Allocation

As of 10 February 2025, there are a total of 1819 DCPs allocated (1672 in the last report from March 2024), with 537 actively transmitting (498 in last report).

Out of those DCPs allocated, 743 are HRDCPs transmitting at 1200 bps (716 supported by Meteosat-10 at 0° and 27 by Meteosat-9 at 45.5°E). The remaining 1076 are Standard Rate DCPs (942 supported by Meteosat-12 (MTG) at 0°, 134 by Meteosat-9 (MSG) at 45.5°E).



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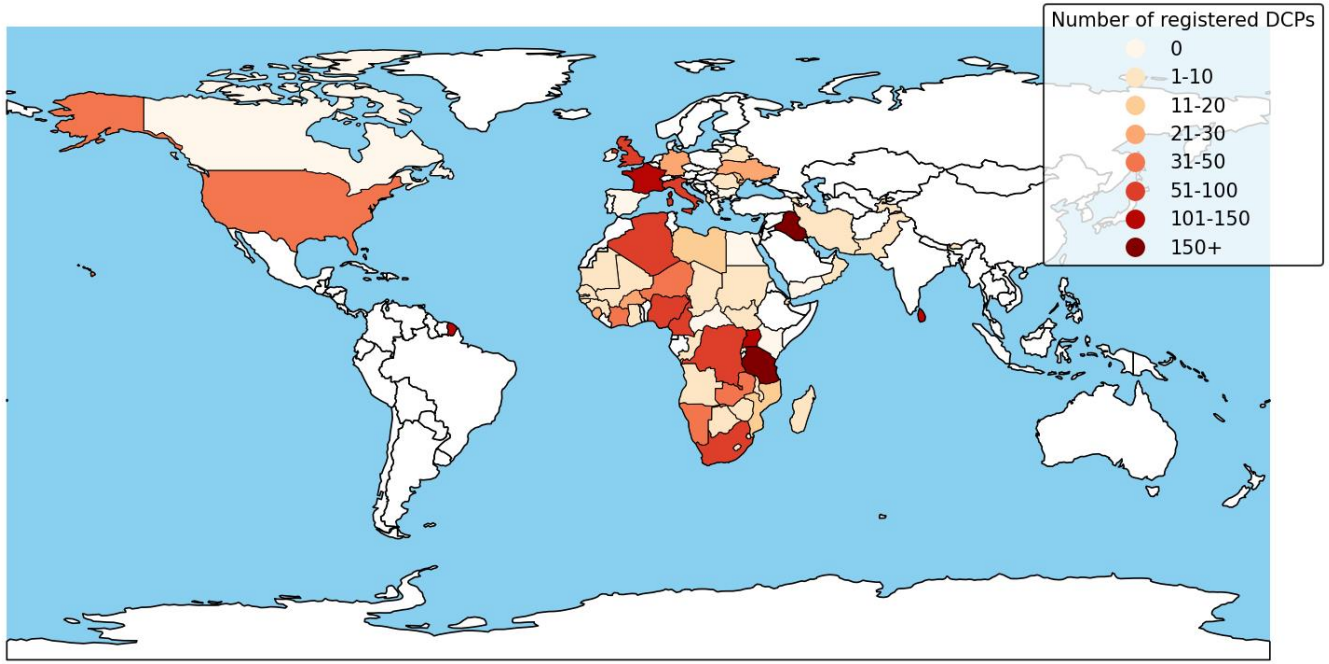
DCP Geographical Distribution

DCPs transmitting via the 0° and IODC satellite are located in Europe, Africa and Asia. The following figure visualises the geographical distribution of DCPs. On 31 December 2024, there were 1819 DCPs deployed in 66 countries (Europe, Africa, Asia).



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Geographical Distribution of DCPs by Country

The following table shows the breakdown of number of DCPs per country, as of 31 December 2024.
It also shows changes in geographical distribution for the period 1 from 31 December 2023 to 31 December 2024.

DCPs		Country	DCPs		Country	DCPs		Country	DCPs		Country
6		Albania	0	↓	Falkland Islands	45	↑	Niger	68	↑	United Kingdom
51		Algeria	104	↑	France	100	↓	Nigeria	36	↑	United States
5	↓	Angola	23	↑	Germany	10		Oman	1		Yemen
2		Armenia	2	↓	Ghana	3	↓	Pakistan	45	↓	Zambia
6		Belarus	0	↓	Greece	0	↓	Philippines	5	↓	Zimbabwe
0	↓	Benin	8	↓	Guinea	7		Romania			
5		Bhutan	2		Guinea-Bissau	8	↓	Rwanda			
2	↓	Botswana	2		Iran	1		Saint Pierre and Miquelon			
1		Bulgaria	208	↑	Iraq	10	↓	Senegal			
21	↑	Burkina Faso	1	↑	Ireland	0	↓	Seychelles			
0	↓	Burundi	72	↓	Italy	30		Sierra Leone			
84	↓	Cameroon	1	↓	Kenya	1		Slovakia			
1		Canada	6		Lesotho	73	↑	South Africa			
3	↓	Cape Verde	11		Libya	5	↓	South Sudan			
1	↓	Central African Republic	5	↓	Madagascar	1		Spain			
6	↑	Chad	9		Malawi	148	↑	Sri Lanka			
1		Comoros	0	↓	Maldives	3	↓	Sudan			
66	↓	Congo, Democratic Republic	8	↓	Mali	10		Tajikistan			
3		Congo, Republic of the	6	↑	Mauritania	201		Tanzania			
35	↓	Côte d'Ivoire	2	↓	Mauritius	1		The Gambia			
1		Cyprus	11		Moldova	0	↓	Togo			
8		Djibouti	15		Mozambique	129	↑	Uganda			
1		Egypt	49	↑	Namibia	24		Ukraine			

Larger numbers of DCPs are highlighted with darker colours.

↑↓ = indicates an increase /decrease in DCPs registered, compared with previous report.

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STATUS OF THE BEST PRACTICES FOR CERTIFICATION

The following table provides a EUMETSAT status of implementation of the CGMS Agency Best Practices in support to DCP Transmitter (TX) Certification Process (EUM/CGMS/DOC/21/1252912).

Best Practice		Compliance	Comment
1	BP.01 MINIMISE THE COSTS FOR THE CERTIFICATION PROCESS	Yes	EUMETSAT has performed the certification process at one of their ground stations
2	BP.02 PROVIDE AN ONLINE REGISTRATION PROCESS FOR AN MANUFACTURER CERTIFICATION	No	EUMETSAT does not have an online registration process. The PDF form are available online but no interactive process exists.
3	BP.03 THE MANUFACTURER SHOULD PERFORM INITIAL TESTING AND SUPPLY RESULTS TO THE SATELLITE OPERATEOR	Yes	This has been applied during the previous certifications
4	BP.04 FAVOURABLE ASSESSMENT OF THE INITIAL REPORT SHOULD LEAD TO PRELIMINARY OVER THE AIR TESTING	Yes	We did find it difficult and it was done on a case by case basis
5	BP.05 PROVIDE TEST DCP ENCODING MESSAGE AND EXAMPLES OF THE CODING PROCESS AT THE DIFFERENT STEPS	Yes	EUMETSAT has supplied these
6	6 BP.06 CONTINGENCY TIME SHOULD BE BUILT INTO ANY CERTIFICATION PLAN	Yes	We considered this when planning certification

STATUS OF THE BEST PRACTICES FOR DATA ACCESS

The following table provides a EUMETSAT status of implementation of the CGMS Agency Best Practices in support to DCP Data Access (EUM/CGMS/DOC/21/1252911).

Best Practice		Compliance	Comment
1	BP.01 DCS DATA AVAILABILITY VIA THE INTERNET	Yes	
2	BP.02 DCS DATA AVAILABILITY ON THE WMO GTS	Yes	
3	BP.03 CONTIDIONS OF DCS DATA ACCESS VIA THE INTERNET	No	EUMETSAT's data access policy is deemed not to allow this.
4	BP.04 HIGH DCS DATA AVAILABILITY	Yes	
5	BP.05 DATA LATENCY	Yes	All DCP data is available to the end user within 3 minutes
6	BP.06 DCS DATA ARCHIVE	Yes	Currently a 30 day archive
7	BP.07 TAILORED DCS DATA ACCESS	Partial	EUMETSAT does not offer much tailoring. This will be addressed in the new version of the web service which is planned to be introduced in 2026.
8	BP.08 USER NOTIFICATIONS	Yes	The EUMETSAT User Notification System is used (https://uns.eumetsat.int/)
9	BP.09 UP-TO-DATE RECORD OF DCP OPERATOR CONTACT INFORMATION	No	This is a manual task performed by the engineers internally at EUMETSAT. It is a requirement on the planned web service replacement, planned for 2026, that will allow the update of this data directly by the users.
10	BP.10 DCS DATA ACCESS DOCUMENTATION	Partial	Documentation is available but not directly from the DCS web service. It will be included with the new web service planned for 2026.

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WIS 2.0

EUMETSAT has begun the preparations for the migration of the DCS data to WIS 2.0.
The migration is planned to take place in early Q3 2025.

ACTIONS AND/OR RECOMMENDATIONS FOR CONSIDERATION BY CGMS WORKING GROUP I

CGMS WG-I is invited to take note of the status of the EUMETSAT Data Collection Services.
No actions or recommendations are proposed; this paper is for information only.

CONCLUSION

EUMETSAT is committed to providing a high level of service to its DCS users.
CGMS WG-I is invited to take note of the status of the EUMETSAT Data Collection Services.