

EUMETSAT DCS Status Report

This paper presents the status of the EUMETSAT Data Collection Services (DCS) currently supported by Meteosat-11 at 0° and Meteosat-8 at 41.5°E IODC (Indian Ocean Data Coverage). Included are 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. It serves an important role in enabling data collection platform (DCP) operators to use the Meteosat system to receive environmental data collected from DCP platforms.

EUMETSAT DCS, initially established with the first generation of Meteosat satellites (MFG) in 1977, has continued and expanded with Meteosat Second Generation (MSG), and will also be embarked on the future Meteosat Third Generation (MTG).

The EUMETSAT DCS currently supports both standard-rate (100bps) and high-rate (1200bps) DCPs. The high-rate (HRDCP) has improved capabilities and can be used for application such as warnings of potentially devastating natural phenomena such as tsunamis. The prime IODC application is for the Indian Ocean Tsunami Warning Network (IOTWS). As of 31 March 2020, there are 137 DCP operators located in 76 countries (Europe, Africa, Asia). There are a total of 1517 DCPs allocated, with 410 actively transmitting. Out of these 144 are HRDCPs (119 supported by Meteosat-11 at 0° and 25 by Meteosat-8 at 41.5°E). The remaining 1373 are standard rate DCPs (1225 supported by Meteosat-11 at 0° and 148 by Meteosat-8 at 41.5°E). Since March 2019, 27 new DCPs have been assigned (3 of them HRDCP). The EUMETSAT DCS has a typical reliability greater than 99%.

Action/Recommendation proposed:

CGMS WG-I is invited to take note of the status of the EUMETSAT Data Collection Services.

STATUS OF EUMETSAT DCS

1 INTRODUCTION

This paper presents the status of the EUMETSAT Data Collection Services (DCS) currently supported by Meteosat-11 at 0° for the prime and Meteosat-8 at 41.5°E for the IODC (Indian Ocean Data Coverage). Included are details of channel utilisation, DCP allocation, geographical distribution and DCP data dissemination mechanisms.

2 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 will also be embarked on the future Meteosat Third Generation (MTG). The Data Collection Service is currently supported by Meteosat-11 at 0° and Meteosat-8 at 41.5°E.

The MSG 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.

Figure 1 illustrates the MSG Data Collection System operated by EUMETSAT.

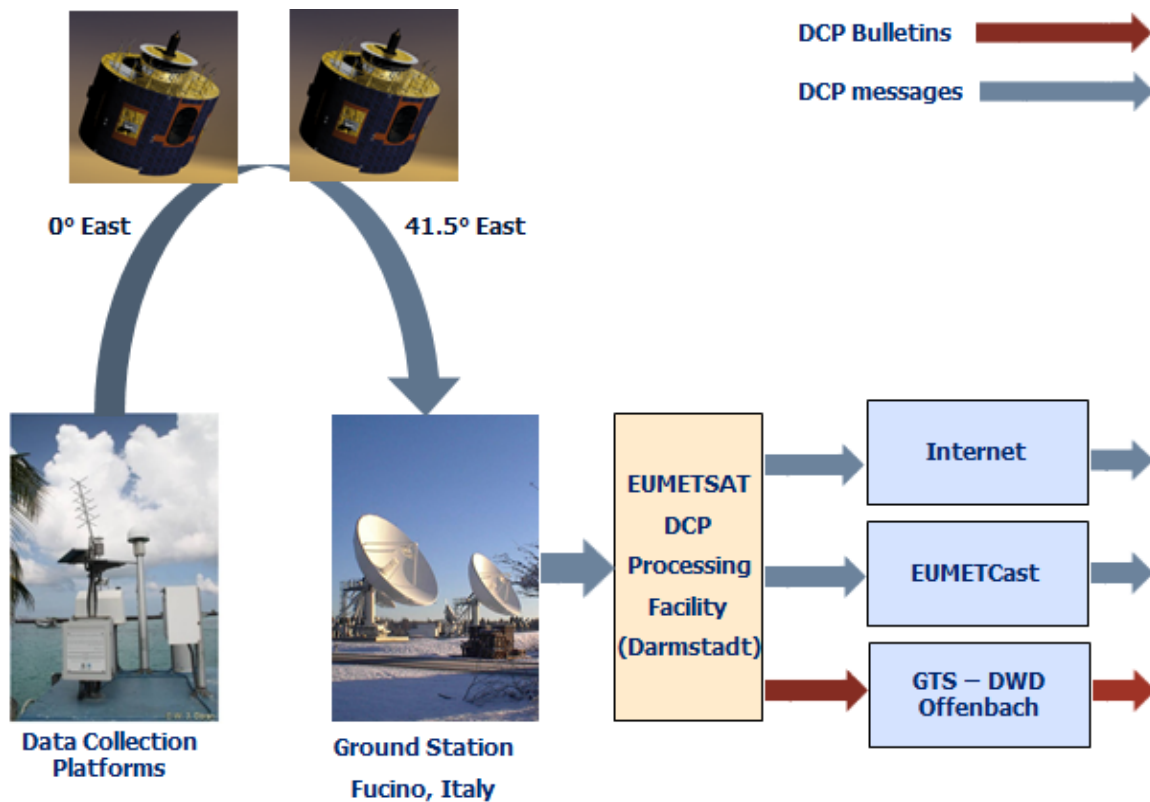


Figure 1 MSG Data Collection System (DCP message and Bulletins dissemination)

As illustrated above, the DCP first transmits its message to the satellite in the UHF radio frequency band. 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. 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 has a typical availability greater than 99%.

3 EUMETSAT DCS STATUS

3.1 Channel Utilisation

There are 245 regional channel slots (at 1.5 kHz spacing) available. Of these channel slots, 88 are allocated to 'older' DCPs, which are assigned 3 kHz spacing, therefore 157 channel slots are available for 1.5 kHz DCPs.

Currently there is a spare capacity of 94 unused 1.5kHz channels.

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. Originally there were 33 International Channels, but they were redistributed following the agreement at CGMS-36, i.e.:

- I01 – I11 (402.0025 – 402.0325 MHz) were allocated to NOAA for regional use;
- I12 – I22 (402.0355 – 402.0655 MHz) remain as International channels.
- I23 – I33 (402.0685 - 402.0985 MHz) allocated to EUMETSAT for regional use.

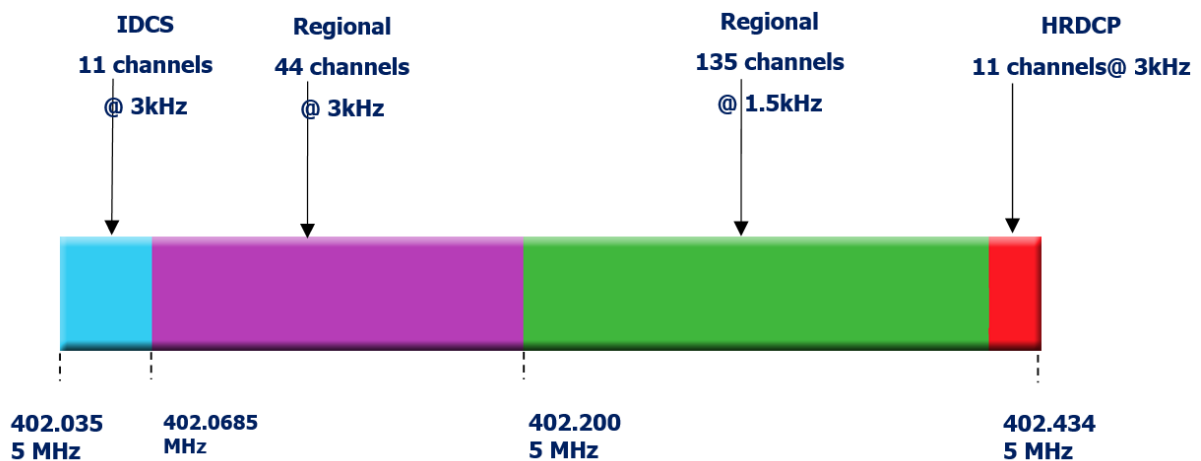


Figure 2 Allocation of International/Regional DCP Channels

Agreement has been made with NOAA, that the 11 former International channels, now allocated to NOAA, can be used for IODC regional DCS application on a non-interference basis.

Table 1 International Channel Utilisation

Ch No.	Frequency	Bandwidth	EUMETSAT Utilisation
1	402002500	1500	
2	402004000	1500	
3	402005500	1500	
4	402007000	1500	
5	402008500	1500	
6	402010000	1500	
7	402011500	1500	
8	402013000	1500	
9	402014500	1500	
10	402016000	1500	
11	402017500	1500	25 HRDCP
12	402019000	1500	
13	402020500	1500	
14	402022000	1500	
15	402023500	1500	
16	402025000	1500	
17	402026500	1500	1 (IOTWS)
18	402028000	1500	
19	402029500	1500	
20	402031000	1500	
21	402032500	1500	
22	402034000	1500	
23	402035500	1500	8 IOTWS
24	402037000	1500	
25	402038500	1500	
26	402040000	1500	
27	402041500	1500	40 (Sri Lanka)
28	402043000	1500	
29	402044500	1500	40 (Sri Lanka)
30	402046000	1500	
31	402047500	1500	40 (Sri Lanka)
32	402049000	1500	
33	402050500	1500	3 (IOTWS)
34	402052000	1500	
35	402053500	1500	2 (Sri Lanka)
36	402055000	1500	
37	402056500	1500	8 (IOTWS)
38	402058000	1500	

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Ch No.	Frequency	Bandwidth	EUMETSAT Utilisation
39	402059500	1500	IODC (Alert)
40	402061000	1500	
41	402062500	1500	7 (IOTWS)
42	402064000	1500	
43	402065500	1500	
44	402067000	1500	
45	402068500	1500	30 NASA/AERONET
46	402070000	1500	
47	402071500	1500	30 NASA/AERONET
48	402073000	1500	
49	402074500	1500	Reserved
50	402076000	1500	
51	402077500	1500	Reserved
52	402079000	1500	
53	402080500	1500	30 (WMO projects)
54	402082000	1500	
55	402083500	1500	30 (WMO projects)
56	402085000	1500	
57	402086500	1500	
58	402088000	1500	
59	402089500	1500	
60	402091000	1500	
61	402092500	1500	
62	402094000	1500	
63	402095500	1500	
64	402097000	1500	
65	402098500	1500	
66	402100000	1500	

Free	
Used	

3.2 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.

3.3 DCP Allocation

As of 31 March 2020, there are 137 DCP operators located in 76 countries (Europe, Africa, Asia).

There are a total of 1517 DCPs allocated, with 410 actively transmitting. Out of these 144 are HRDCPs (119 supported by Meteosat-11 at 0° and 25 by Meteosat-8 at 41.5°E). The remaining 1373 are standard rate DCPs (1225 supported by Meteosat-11 at 0° and 148 by Meteosat-8 at 41.5°E).

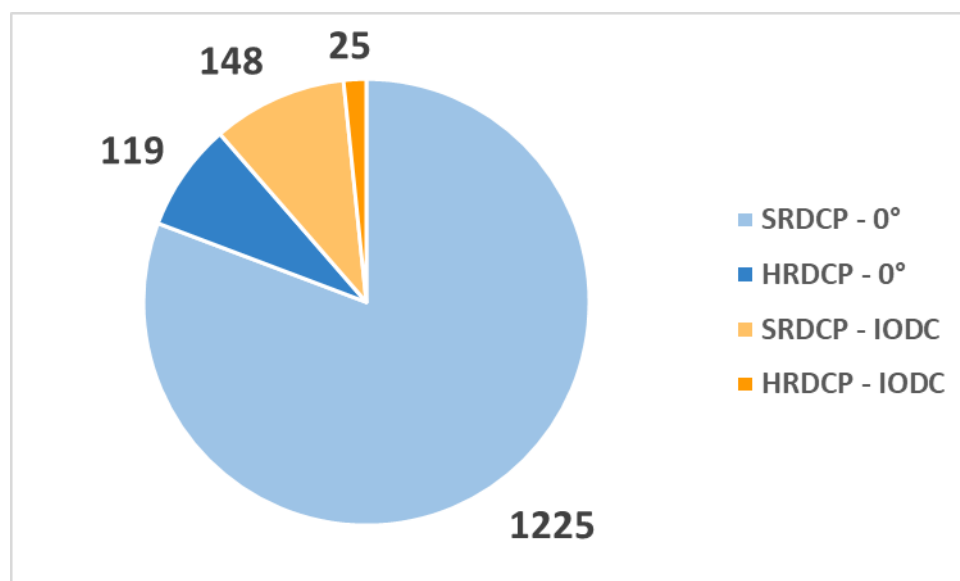


Figure 3 DCP Allocation

Since March 2019, 27 new DCPs have been assigned (3 of them HRDCP).

3.4 DCP Geographical Distribution

DCPs transmitting via the 0° and IODC satellite are located in Europe, Africa and Asia. The following table and chart show the geographical distribution, as of end of December 2019.

Table 2 Geographical Distribution of DCPs by Country

DCPs	Country	DCPs	Country	DCPs	Country	DCPs	Country
6	Albania	1	Falklands	1	Malta	10	Tanzania
51	Algeria	1	Finland	4	Mauritania	2	Togo
13	Angola	134	France	4	Mauritius	70	Uganda
2	Armenia	1	Gambia	23	Mozambique	52	UK
1	Austria	27	Germany	29	Namibia	24	Ukraine
6	Belarus	13	Ghana	17	Niger	1	Union des Comores
2	Benin	1	Gibraltar	108	Nigeria	67	USA ↑
5	Bhutan	1	Greece	10	Oman	1	Yemen
14	Botswana	11	Guinea	4	Pakistan	16	Zambia
1	Brazil	2	Guinea-Bissau	3	Philippines	13	Zimbabwe
1	Bulgaria	9	Indonesia	11	Republic of Moldova		
7	Burkina Faso	2	Iran	9	Republic of Seychelles		
60	Cameroon	200	Iraq	7	Romania		
2	Canada	8	Ireland	8	Rwanda		
4	Cap Verde	74	Italy	11	Senegal		
2	Central African Republic	3	Ivory Coast	13	Sierra Leone		
3	Chad	3	Kenya	1	Slovakia		
3	Congo	6	Lesotho	41	South Africa		
		11	Libya	8	Spain		
1	Cyprus	6	Madagascar	148	Sri Lanka		
51	Dem. Rep. of the Congo	9	Malawi	3	Sudan		
8	Djibouti	3	Maldives	5	Southern Sudan		
1	Egypt	19	Mali				

Larger numbers of DCPs are highlighted with darker colours.
Table entries in green = new; Country name in red = DCPs no longer registered.
↑↓ = indicates an increase /decrease in DCPs registered, compared with previous report.

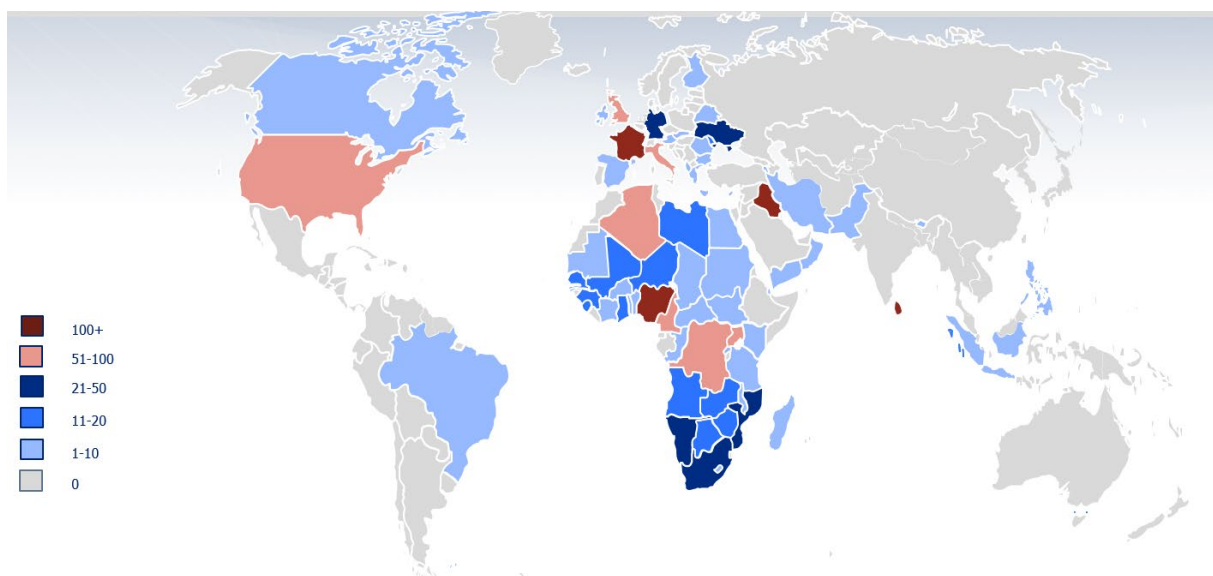


Figure 4 Map of Geographical Distribution of DCPs

4 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 and recommendations are proposed, this paper is for information only.

5 CONCLUSIONS

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.