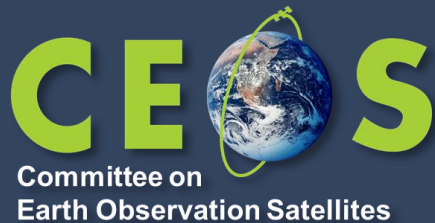


Towards an F(C)DR Inventory



J. Schulz & M. Grant, EUMETSAT
A. Nunes & G. Scardapane, Innoflair UG
Agenda Item 8.8.2
WGISS-61, 16-20 March, 2026
Dehradun, India

- ❖ **Why:** The WGClimate was mandated by CEOS and CGMS to create an inventory of satellite-derived FCDRs, to address a long unfulfilled need for a deeper analysis and **understanding of gaps in the observing system and in the CDR production chain.**
- ❖ **What:** The F(C)DR Inventory is a **database designed to host detailed information** (metadata) about *existing* (produced and released) and *planned* (production and/or release in the future) satellite-derived FCDRs and FDRs.
- ❖ (For) **Whom:** CEOS and CGMS agencies (**gaps, planning**); input data for global and regional **reanalyses** (existing lists are mostly outdated and/or not curated); one-stop shop for **(T)CDR producers** (making available better options than NRT data), and developers of observation driven ML weather forecast models.

❖ Core characteristics

- ❖ Physical quantity; Coverages in space and time; Resolutions in space and time;
- ❖ *Uncertainty and Stability (whenever available and defined, still TBD but will follow discussion/decision for ARD).*

❖ [Active] Link to space segment (WMO OSCAR and CEOS MIM?)

- ❖ Satellites and Instruments used; *Individual time ranges (if available);*
- ❖ *Instrument type / class / technology (classification system still TBD).*

❖ Stewardship and User support

- ❖ Funding and producing institutions; curation responsibilities;
- ❖ Access link, user support details, links to documentation and other resources.

❖ [Active] Link to related datasets

- ❖ Heritage and follow-on F(C)DRs (*internal links*);
- ❖ Derived TCDRs (*external link to CDR Inventory -- cdrinventory.climatemonitoring.info*).

❖ Technical details

- ❖ Same base technology as the WGClimat CDR Inventory;
- ❖ Independent database with mostly formatted (core) data;
- ❖ Friendly UI; search / filtering / selection / labelling / comment / ... tools.

❖ Timeline

- ❖ Proof-of-concept in mid-May (end of current WP) – *work in progress!*
- ❖ (Potential*) beta release in late 2026 – *basic UI functionalities and reduced set of F(C)DRs (e.g. EUMETSAT internal information + FCDRs linked from the CDR Inv)*
- ❖ Full release in 2027 (*effort needs to be balanced with CDR Inv & Gap Analysis*)
 - ❖ Information harvested mostly from **public sources** (eg DOI landing pages);
 - ❖ Agencies welcome to be proactive (especially regarding the **planned** F(C)DRs).

F(C)DR Inventory „alpha“



FDR
Inventory

Expand /
Collapse all

FDR
Inventory

Export

Comment

FDRs



Fundamental

Data

Records

Inventory

An open catalogue of
FDRs: the underlying
dataset from which
Climate Data Records
(CDR) are generated.

Explore all datasets



Keyword Search

☐	ID ↑↓	Name & Version ↑↓	Responsible Org.	Physical Quantity	Start date ↑↓	End date ↑↓	Status ↑↓	Updated on ↑↓	
☐	3	Microwave Radiance FCDR R5	EUMETSAT	Brightness Temperature	1979-01-01	2024-12-31		2026-03-18	▼
☐	2	Detailed view Fundamental Climate Data Recor...	EUMETSAT	Brightness Temperature	1978-10-25	2022-12-31		2026-03-18	▲

planned

existing

Fundamental Climate Data Record of Microwave Imager Radiances, Edition 4

Physical Quantity
Brightness Temperature

Temporal coverage
Start date 1978-10-25
End date 2022-12-31

Temporal resolution
N/A

Still TBD
(formatted info:
likely ranges)

Horizontal coverage
North 90
West -180 East 180
South -90

Horizontal resolution
N/A

Vertical resolution
N/A

Satellites/Instruments

DMSP-F08 | SSM/I | DMSP-F10 | SSM/I
DMSP-F11 | SSM/I | DMSP-F14 | SSM/I
DMSP-F15 | SSM/I | DMSP-F16 | SSM/I
DMSP-F17 | SSM/I | DMSP-F18 | SSM/I
DMSP-F19 | SSM/I | Nimbus-7 | SMMR

Active links to WMO-OSCAR
(or CEOS-MIM)

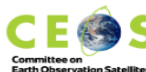
Expanded
view

Direct link to F(C)DR

Released on 2022 F(C)DR Access https://doi.org/10.5676/EUM_SAF_CM/FCDR_MWI/V004

Resp. organizations [EUMETSAT] European Organisation for the Exploitation of Meteorological Satellites

F(C)DR Resp. organizations [CM SAF] Climate Monitoring Satellite Application Facility



☐	1	Fundamental Climate Data Recor...	EUMETSAT	Brightness Temperature	1987-07-09	2013-12-31		2026-03-18	▼
--------------------------	---	-----------------------------------	----------	------------------------	------------	------------	--	------------	---

F(C)DR Inv: detailed view



FDR
Inventory

2 -

Fundamental Climate Data Record Edition 4

Record information

Status
existing

Data Record Identifier
10.5676/EUM_SAF_CM/FCDR_MWI/V004

Citation

Fennig, Karsten; Schröder, Marc; Konrad, Hannes; Hol
Microwave Imager Radiances, Edition 4, Satellite App
DOI:10.5676/EUM_SAF_CM/FCDR_MWI/V004, https://doi.org/10.5676/EUM_SAF_CM/FCDR_MWI/V004

Variables

Physical Quantity
Brightness Temperature

Other information

Release date
2015

Update frequency
N/A

Data lat
N/A

Access Point
contact.cmsaf@dwd.de

F(C)DR Access
https://doi.org/10.5676/EUM_SAF_CM/FCDR_MWI/V004

Access restrictions
N/A

Registration
N/A

Data format
NetCDF

Metadata standards
N/A

Other related FDRs

Grouped by
N/A

Superseded by
[FDR ID 2](#)

Heritage
N/A

Linked CDRs

- 10652 [existing] - HOAPS 4.0

Satellites/Instruments

[Nimbus-7](#) | [SMMR](#)
1978-10-25 - 1987-08-20

[DMSP-F08](#) | [SSM/I](#)
1987-07-09 - 1991-12-18

[DMSP-F10](#) | [SSM/I](#)
1992-01-01 - 1999-12-31

[DMSP-F11](#) | [SSM/I](#)
1999-12-31 - 2000-07-31

[DMSP-F14](#) | [SSM/I](#)
1997-07-05 - 2026-08-23

[DMSP-F15](#) | [SSM/I](#)
2000-02-28 - 2006-07-31

[DMSP-F16](#) | [SSMIS](#)
2005-11-01 - open-ended

[DMSP-F17](#) | [SSMIS](#)
2006-07-31 - 2017-07-31

[DMSP-F18](#) | [SSMIS](#)
2010-03-08 - open-ended

[DMSP-F19](#) | [SSMIS](#)
N/A - open-ended

Instrument type?

Documentation

Data Documentation

- https://doi.org/10.5676/EUM_SAF_CM/FCDR_MWI/V004

Organizations

Responsible Organizations

[EUMETSAT] European Organisation for the Exploitation of Meteorological Satellites

F(C)DR Responsible Organizations

[CM SAF] Climate Monitoring Satellite Application Facility

(Active) link to CDR Inv

Instruments: type / classification?

SSM/IS Instrument

Measurements and Applications

Measures thermal microwave radiation. Global measurements of air temp profile, humidity profile, ocean surface winds, rain overland/ocean, ice concentration/age, ice/snow edge, water vapour/clouds over ocean, snow water content, land surface temperature.

Instrument Summary

Full Name	Special Sensor Microwave Imager Sounder	Status	Operational
Instrument Agencies	NOAA ^U , DoD (USA) ^C	Maturity	High Heritage - Operational
Instrument Type	Atmospheric temperature and humidity sounders  and Imaging multi-spectral radiometers (passive microwave) 	Geometry	Conical scanning 
Instrument Technology	Multi-purpose imaging MW radiometer	Sampling	Sounding
Data Access	Open Access	Data Format	Binary, NetCDF



OSCAR

Observing Systems Capability Analysis and Review Tool

Home | Observation Requirements | Space-based Capabilities | Surface-based Capabilities | Analysis
Overview | Programmes | Satellites | Instruments | Frequencies | Agencies | Satellite Status | Gap Analyses

Instrument: SSMIS

Instrument details

Acronym	SSMIS				
Full name	Special Sensor Microwave - Imager/Sounder				
Purpose	Multi-purpose imagery with temperature/humidity sounding channels for improved precipitation				
Short description	21 frequencies, 24 channels MW radiometer covering the 54 and 183 GHz bands. See table below for channel details. Note that F16 has different polarisations from F17 onwards for channels 1-5				
Background	Replacing and merging SSM/I, SSM/T and SSM/T-2 flown on DMSP up to F15				
Scanning Technique	Conical: 53.1° zenith angle, swath 1700 km – Scan rate: 31.9 scan/min = 12.5 km/scan				
Resolution	Changing with frequency, consistent with an antenna diameter of 61 x 66 cm				
Coverage / Cycle	Global coverage once/day				
Mass	96 kg	Power	135 W	Data Rate	14.2 kbps

Providing Agency	DoD
Instrument Maturity	Flown on operational programme
Utilization Period:	2004 to 2026
Last update:	2024-10-16

Satellites this instrument is flying on

Note: a red tag indicates satellites no longer operational, a green tag indicates future satellites

- Defense Meteorological Satellite Program - Block 5D-3 (DoD)
 -  DMSP-F16 (see instrument status) Jan 2004 - 2023
 -  DMSP-F17 (see instrument status) 2007 - Sep 2026
 -  DMSP-F18 (see instrument status) Jan 2010 - Sep 2026
 -  DMSP-F19 (see instrument status) Aug 2014 - Feb 2016

Instrument classification

- Earth observation instrument
 - Passive microwave radiometer
 - Conical scanning microwave radiometer

WIGOS Subcomponents

- Subcomponent 1
 - MW sounders [in SSO]
 - MW sounder [in SSO]
 - MW imagery [in SSO]
 - MW imager [in SSO]
 - MW cross-track upper stratospheric and mesospheric sounders
 - MW cross-track upper stratospheric and mesospheric sounder

Mission objectives

- ❖ (2 way) Linkage with other DBs
 - CDR Inv (FCDR <> CDR) → “applications!”; WMO-OSCAR / CEOS-MIM (FCDR <> instruments)?
- ❖ Gap analysis, filtering,...
 - Different needs than CDR Inv? Type of instrument, spectral domain? (see point below!)
- ❖ AI usage: MCP server to enable readability for AI-Agents (to be first tested with the CDR Inv)
- ❖ Which naming resources / references to use for variables? (Not GCOS anymore... CF convention?) e.g. BTs in different spectral ranges in the same FCDR need to be distinguished for analysing gaps, or guiding users to specific application? Shall we simply rely on the spectral characteristics (type, class?) of the instruments used [as a searchable parameter]?
- ❖ Additional info relevant for CEOS-WGISS? What? How to source it?