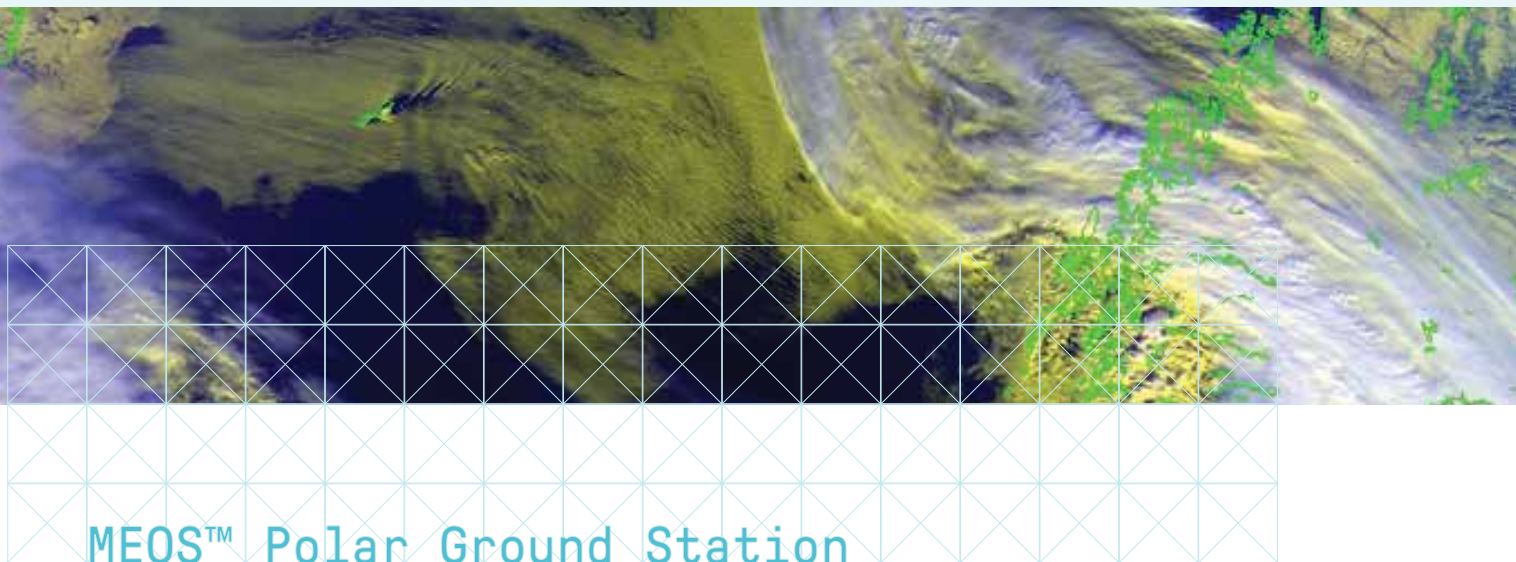# MEOS™ POLAR

MEOS™ Polar Ground Station

A multi-mission, flexible and modular turnkey system for acquisition, archiving, processing, analysis and distribution of meteorological data.

The MEOS™ Polar Ground Station supports the following satellites, sensors and transmission formats:

Satellites	Sensors	Transmissions
NOAA	AVHRR, TOVS, ATOVS	HRPT
TERRA and AQUA	MODIS, AIRS AMSU-A, HSB	Direct Broadcast
METOP	AVHRR, ATOVS	AHRPT
FY-3	VIRR, MERSI	CHRPT, MPT
S-NPP	ViiRS	HRD
NOAA20	ViiRS	HRD
METOP-SG	MekImage	DDB
SARAL	A-DCS	-
OCEANSAT-3	A-DCS	-

Supports other missions upon request

The MEOS™ Polar Ground Station can be delivered with support for any combination of these missions depending on the customer's requirements.

The MEOS™ Polar support direct broadcast reception in L- and X-band.

The Basic Package ingests data from the Front End System and provides all the necessary tools for basic processing and operation of the ground station. Data are pre-processed and stored into a mission specific formats or as Level 0, Level 1 and map-projected areas in HDF 5 format. All data is archived in a local archive.

Raw data files and higher level products may be distributed over LAN / WAN to other users. All operations are automatic and easily configurable, including management of disk space and retrieval of processing parameter files.

The system has advanced capabilities for monitoring of the system. All status information is stored in local DB. This gives a unique capability to do diagnostics locally as well as remotely, and to generate reception quality reports. The Basic Package contains a Quick Look Viewer showing incoming data in real time, with possibility to show selected channels, perform image enhancement, view a previous dissemination and to display multiple missions.

MEOS™ POLAR GROUND STATION

Front End System

The system provides the functionality to track the satellite, receive the radio frequency and deliver data to the ingest system.

The Front End System includes:

- Antenna
- Feed/downconverter
- X-band RHCP / LHCP switchable polarity
- L-band RHCP / LHCP switchable polarity
- Demodulator limited to 100 Mb/s by SW license

Different antenna sizes is provided depending on the customer's requirements:

Frequencies	Dual L,X			
Antenna sizes (m)	2.4	3.0	3.7	5.0
Satellites				
NOAA	+	+	+	+
METOP	+	+	+	+
TERRA	+	+	+	+
AQUA	+	+	+	+
FY-3	+	+	+	+
S-NPP	+	+	+	+
NOAA20	+	+	+	+
METOP SG	+	+	+	+

Basic Package

- Ingest of raw data to disk and pre-processing
- Production oriented
- Local and remote operation control
- Graphical User Interface for monitoring and control of the ground station
- Advanced logging and display of status telemetry and status in real time:
    - Schedule display
    - Activity display
    - Event log display
    - Station overview display
- Quick Look Viewer
- Generating of browse image files
- Archiving of raw data and higher order products

MEOS™ Antenna avaliable from 2.4 m to 5.0 m L/S/X-Band

Processing of the following products:

NOAA and METOP AVHRR:

- Level 1b and calibrated map-projected products integrates the ATOVS and AVHRR Pre-processing Package - AAPP.

S-NPP/NOAA20 ViiRS:

- Level 0 (RDR)
- Level 1 calibrated (SDR) and geocoded

FY-3 MERSI and VIRR:

- Level 1b and calibrated map-projected images.
- The CMA FY-3 software pacakge is integrated in MEOS™ and used for Level 1b processing.

TERRA and AQUA MODIS:

- Level 0, Level 1a and Level 1b, and bowtie corrected calibrated map-projected products The SeaDAS package is integrated in MEOS™ and used for Level 1a and Level 1b MODIS processing
- All map-projected products have defined projection parameters, and are stored as HDF 5 files
- Open data access at all processing levels
- Export of HDF 5 products to JPEG, PPM and PNG, GeoTiff
- Distribution of raw data and products (FTP, SFTP, NFS, SLE, TCP, UDT)
- Post pass reports

Host Computer and Receiver

The host computer is a HPE DL380 2U server with SuSE Linux Enterprice operating system. It is equipped with state-of-the-art hardware, dual 8 core CPUs, 64GB RAM for fast processing, and 4TB Disk space dimensioned for the customer's data storage demands.

Additional computers can be connected in LAN/WAN if a distributed system with multiple workstations is desired.

Processing Speed

- For TERRA and AQUA Direct Broadcast - from the end of reception (loss of signal) to finished Level 1 is typically 5 minutes.
- S-NPP/NOAA20 VIIRS the processing time ut to SDR is typically 5-6 minutes.

Options

As an option the MEOS™ Polar system can be delivered as a dual channel system with two demodulators.

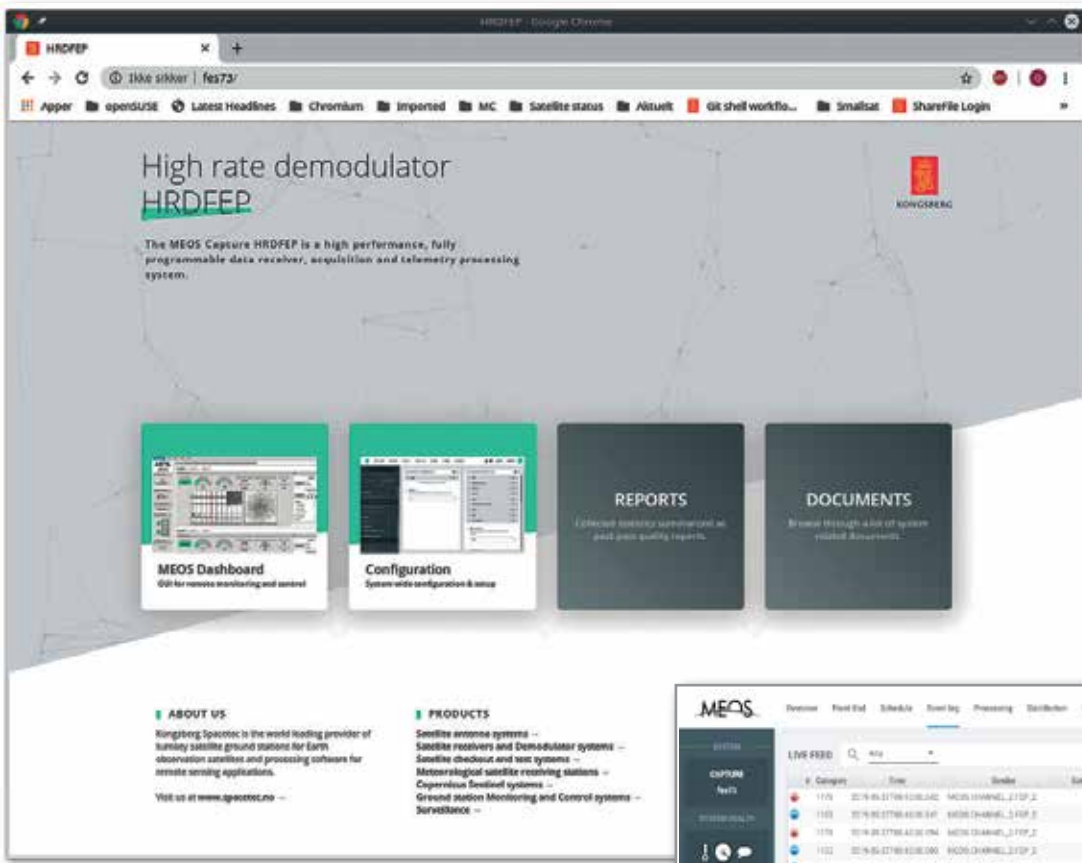## MEOS™ POLAR GROUND STATION

Options

The following packages are fully integrated in the MEOS™ for operational production:

EARS Package

- EARS segmentation (S-NPP, NOAA-20, METOP, NOAA, METOP SG, and FY-3)
- XML scheduling
  - EUMETSAT XML scehdule format
  - CCSDS Simple Schedule Format

DCS ARGOS Package

The package demultiplexes NOAA and METOP HRPT raw data files and extracts DCS (Data Collection System) data. DCS data is stored as a separate data type in an archive of the MEOS™ system.


MEOS™ Polar Landing page view
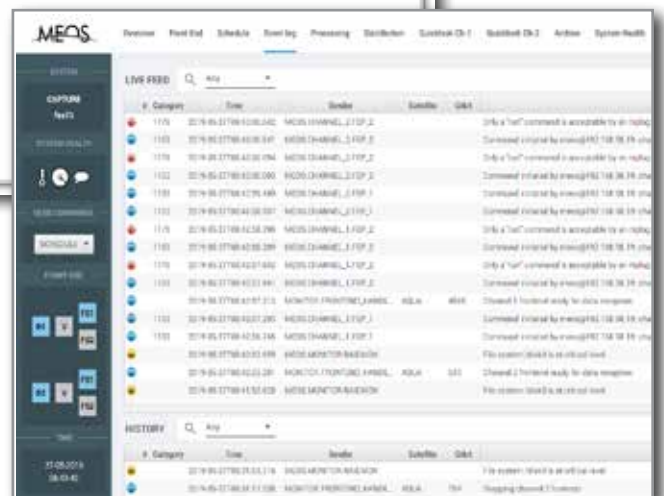

MEOS™ Polar Event log view

FEATURES

- Complete ground station
- Open architecture allows easy upgrading
- Linux based environment (SLES)
- Flexible, modular and scalable design
- Multi-mission support
- Ingest of raw data to disk and pre-processing
- Local and remote operation control
- Graphical User Interface for monitoring and control of the ground station
- Advanced logging and display of status parameters in real time

- Quick Look Viewer
- Processing of basic products depending on mission
- Open data access at all processing levels
- Generating of browse images
- Archiving of raw data and higher order products
- Export file formats: JPEG, PPM, PNG and Geotiff
- Distribution of raw data and products (FTP, SFTP, NFS, SLE, TCP, UDT)
- Postpass reports
- Extensive training, maintenance and support program
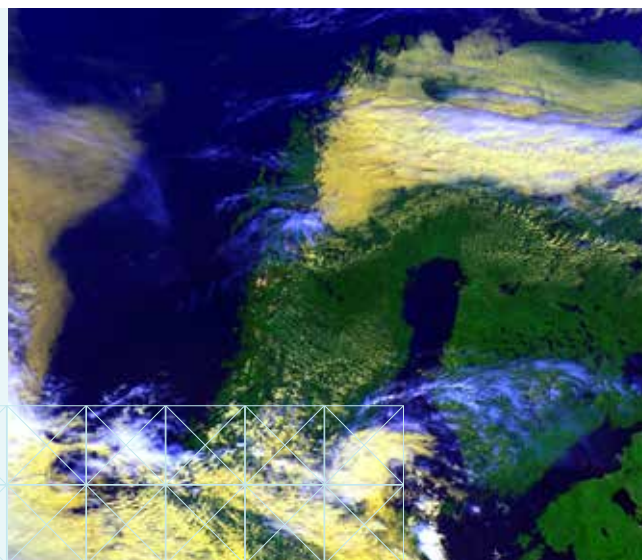
TECHNICAL SPECIFICATIONS

MEOS™ POLAR GROUND STATION
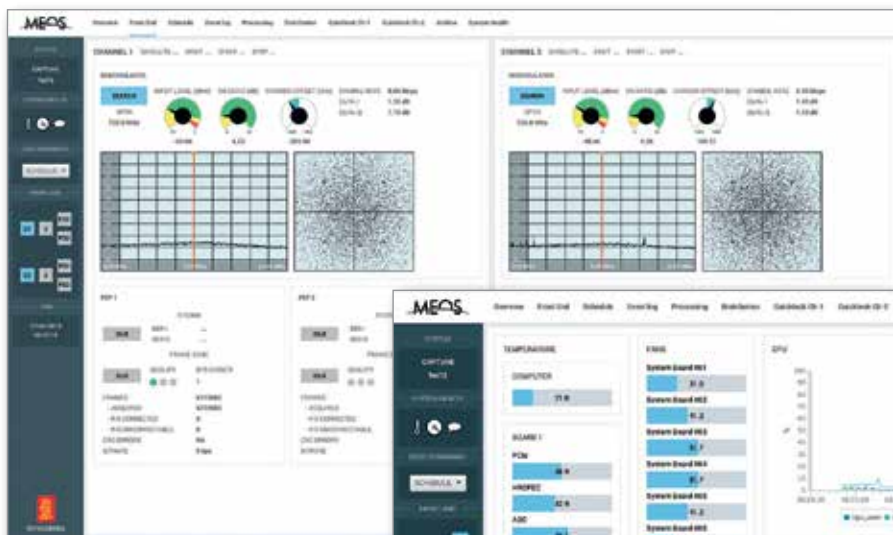
MEOS™ Polar Front-End view

MEOS™ Polar System Health view

KONGSBERG