EnMAP*

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*Environmental Mapping and Analysis Program

Wissen für Morgen
EnMAP Mission [DESIS]

Size of satellite
3.1 m × 2.0 m × 1.7 m
[109.0 m × 97.9 m × 27.3 m]

Launch mass of satellite/instrument
942 kg/357 kg [455 t/93 kg]

SWIR
900 nm < λ < 2450 nm
(134 [0] spectral bands)
SNR > 150 [] @ 2200 nm

VNIR
420 nm < λ < 1000 nm
(94 [235] spectral bands)
SNR > 500 [195] @ 495 [550] nm

Ground Track
30 m × 30 m [30 m × 30 m]

Satellite Pointing Range
± 30° [-40° to +50°]

Swath
30 km [30 km]

Covered Area/Day
150,000 km²
[70,800 km² for DLR]

Launch/Target lifetime
2022/5 years
[2018/5 years]

398 orbits in 27 days [no repeat orbit] at
11:00 [various] local time at equator with
98° [51° ] inclination at 653 km [400 km] altitude
Revisit frequency: ≤ 4 [average 3 to 5] days

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EnMAP Status

- 1st End-to-End Test
- CTS-1
- Calibration & Charac.
- Thermal & Acoustic Tests

- Final Technical Verification
- Operational Validation, ...
- 2nd End-to-End Test
- CTS-2 / CTS-3, Reviews, ...
- Electromagnetic Compatibility Tests
- Final Performance Tests, ...

- Launch on 28.02.2022 (to 01.07.2022) from Florida, USA with Falcon-9 by SpaceX
- Launch & Early Orbit Ph. (0.5 m), Commissioning Ph. (5.5 m), Routine Ph. (4.5 y), Disposal Ph. (3 m)
EnMAP Access, Products and Science

- **User Portal**: register
- **Proposal Portal**: proposal
- **acquisition**: free and open

- E.g. bare Earth mapping: geological & soil applications by EnGeoMAP & EnSoMAP processors for mineral & soil mapping (in EnMAP-Box)

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EnMAP Calibration, Quality Control and Validation

- **Pre-Flight Calibration & Characterization DB by Space/S**
- **In-Flight Calibration by Ground/S based on satellite equipment**

- in-situ and reference data
  - Demmin/Camarena (agriculture, soils; S. Chabrillat)
  - Lake Constance (water; A. Bracher)
  - Munich North Isar (agriculture; T. Hank)
  - Makhtesh Ramon (geology; E. Ben-Dor)
  - Mammoth Mountain (snow; T. Painter)
  - Ivanpah Playa (USA; R. O. Green)
  - Pinnacles (Australia; C. Ong)
  - Amiaz Playa (Israel; E. Ben-Dor)
  - RadCalNet, Hypernets, AERONET, PICS

- airborne
  - Demmin (HySpex on Cessna207)
  - Lake Constance/Munich North Isar (TBD)

- spaceborne
  - all (S2 (L1C REF), DESIS, PRISMA, …)

- Based on all mission data by Ground/S with online & offline quality control

- Based on Level 1B/1C/2A products & in-situ and reference, airborne & spaceborne data by Science/S

- Support from the science community

QUALITY_CLASSES (land=brown, water=blue, clouds=black)
QUALITY_CIRRUS (blue/white color) & QUALITY_CLOUD (pink)

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Thanks!

- Germany's high-resolution imaging spectroscopy Earth observing satellite mission
- enmap.org
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