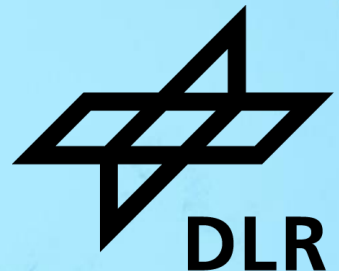


THE DATA ARCHIVE OF THE SPACEBORNE IMAGING SPECTROMETER MISSION DESIS

Infrared and Visible Optical Sensors (IVOS) 36
CEOS, Working Group on Calibration and Validation (WGCV)
Tokyo, 9. – 13.09.2024

M. Bachmann, U. Heiden, E. Carmona, D. Cerra, D. Dietrich, D. Marshall, R. Muller, M. Pato,
P. Reinartz, R. de los Reyes, M. Tegler, U. Knodt, D. Krutz, H. Lester



DEGIS specification

ISS (~ 400km), non-sun-synchronous orbit

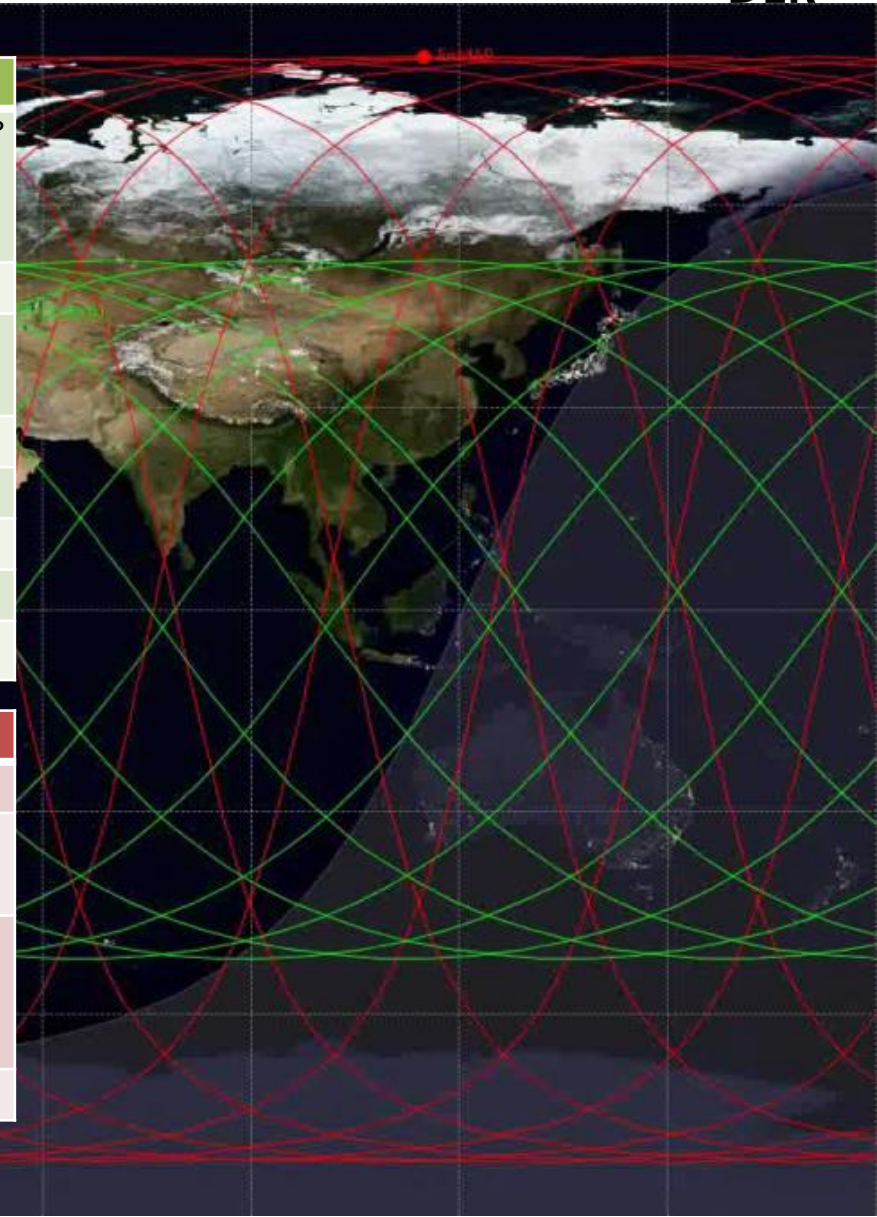
Covers 55° N to 52° S

Tilting options: -45° (backboard) to +5° (starboard),
-40° to +40° (along track)

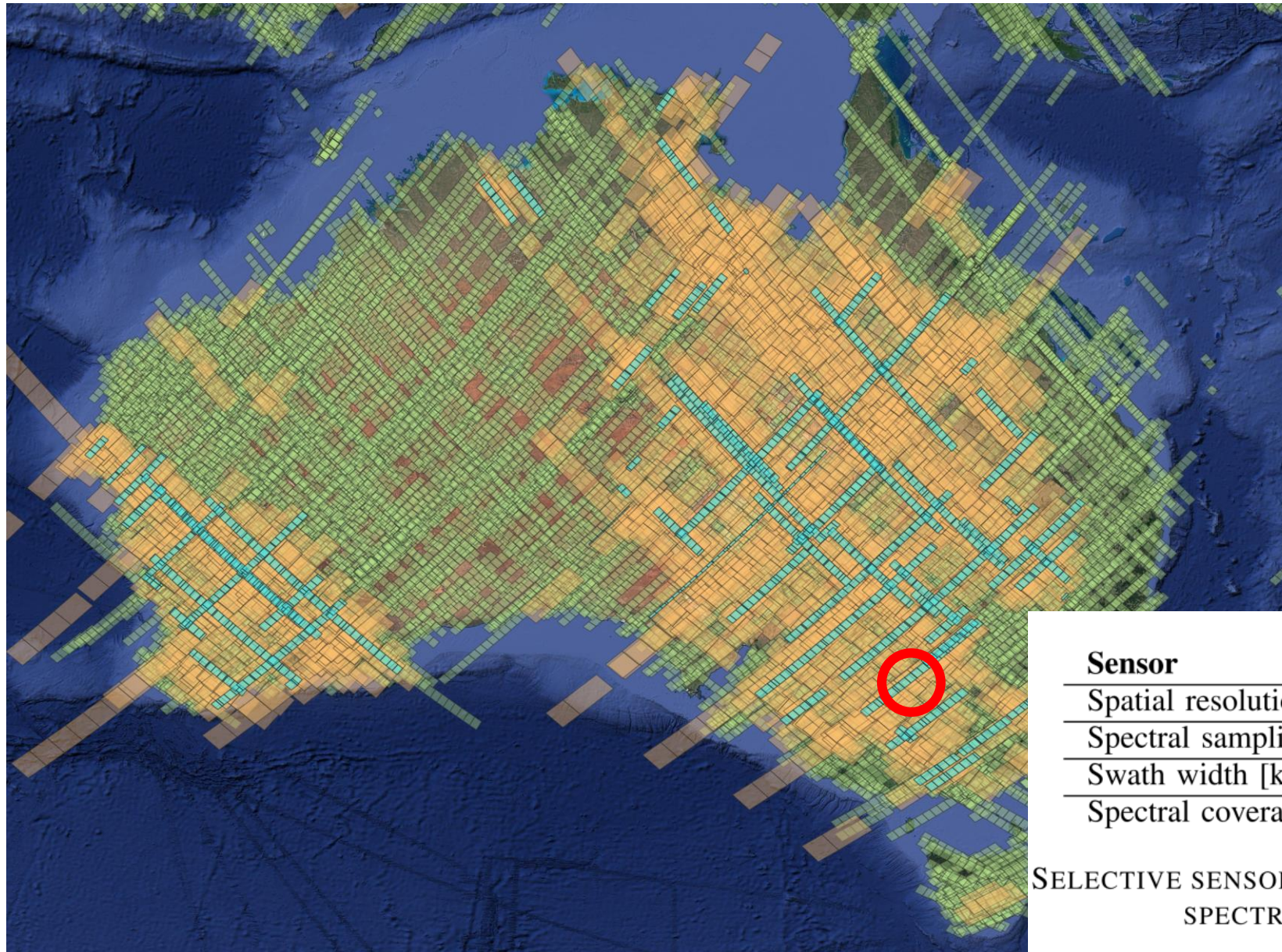
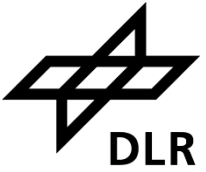


Mission Instrument	ISS/MUSES DESIS
Off-nadir tilting (across-track, along-track)	-45° (backboard) to +5° (starboard), -40° to +40° (by MUSES and DESIS)
Spectral range	400 nm to 1000 nm
Spectral sampling, FWHM	2.55 nm, 3.50 nm
Radiometry	13 bits
Spatial (res., swath)	30 m, 30 km (@ 400 km)
SNR (signal-to-noise)	205 (no bin.)/406 (4 bin.) @ 550 nm
Instrument (mass)	93 kg
Capacity (km, storage)	2360 km per day, 225 GBit

Mission Instrument	ISS/MUSES DESIS
Target lifetime	2018-2023 (nominal) ...
Satellite (mass, dimension, usage)	455 t, 109.0×97.9×27.5 m ³ (multi-purpose)
Orbit (type, local time at equator, inclination, height, repeat cycle)	not Sun-synchronous, various, 51.6°, 320 km to 430 km, no repeat cycle
Coverage	55° N to 52° S



Synergies – DESIS/EMIT Acquisition overlap (within 60 min)



- DESIS Footprints
- EMIT Footprints
- DESIS/EMIT Overlap

Status Oct 2023

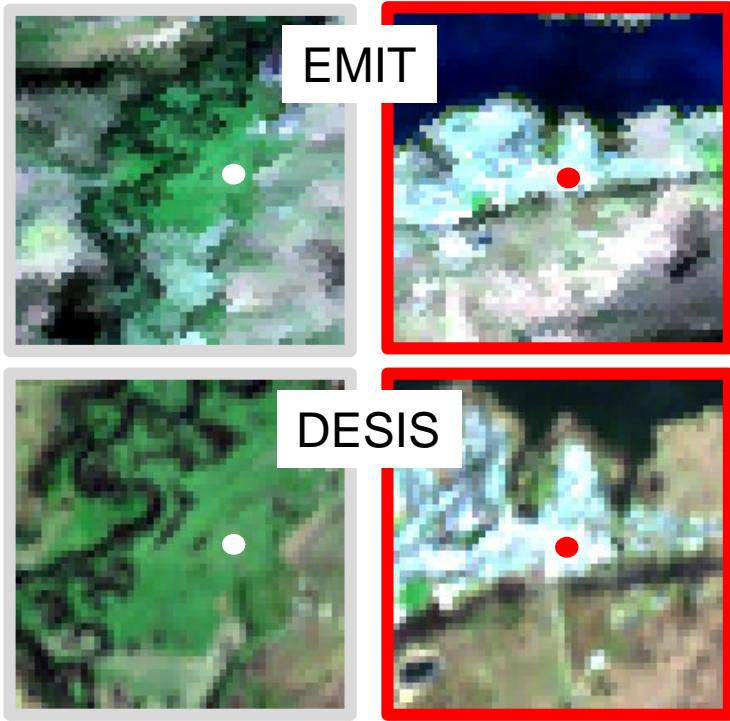
○ Albury Forest

Sensor	DESIS	EMIT
Spatial resolution [m]	30	60
Spectral sampling [nm]	2.55	7.40
Swath width [km]	30	75
Spectral coverage [nm]	400 - 1000	380 - 2500

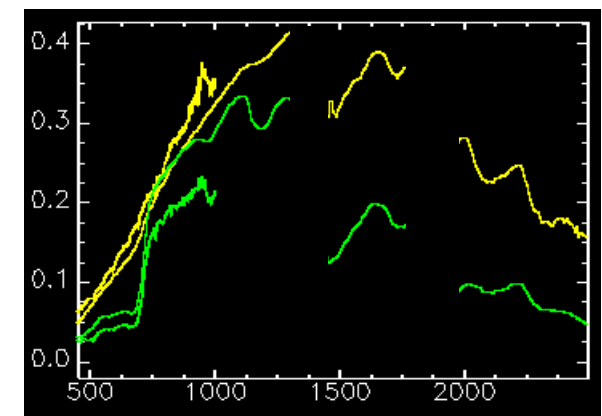
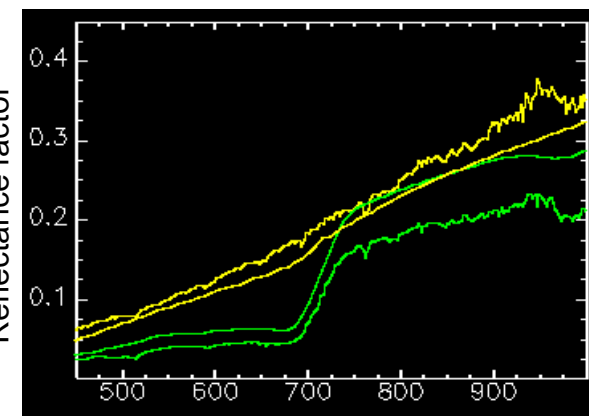
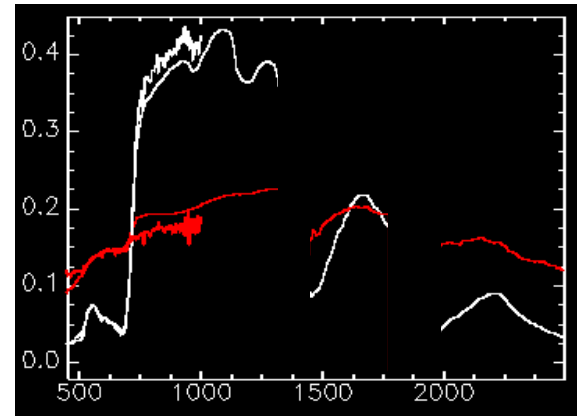
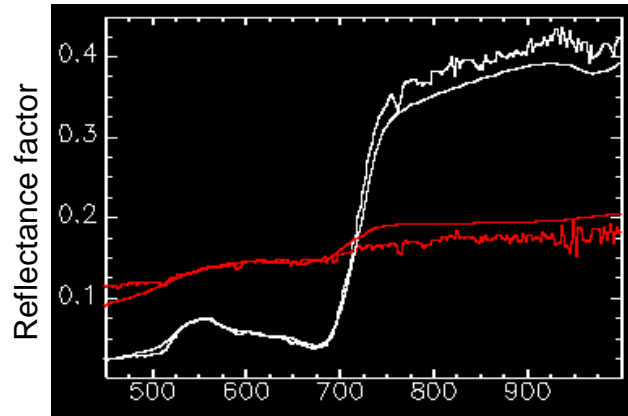
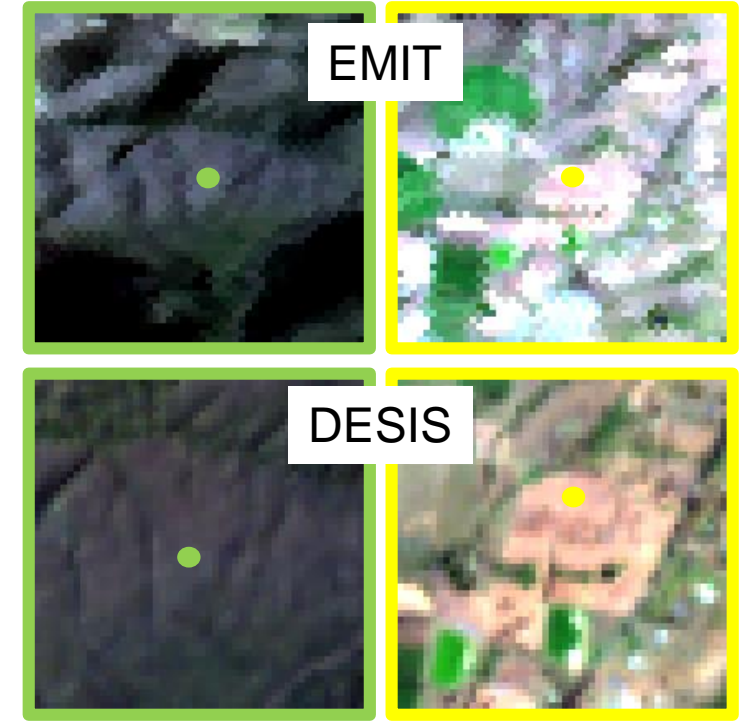
TABLE I

SELECTIVE SENSOR SPECIFICATIONS OF THE TWO IMAGING SPECTROMETERS EMIT AND DESIS

Synergies with EMIT – Albury Forest (16 / 03 / 2023, 04:50 GMT)



EMIT	Sensor	DESIS
60 m	Spatial resolution	30 m
7.40 nm	Spectral sampling	2.55 nm
75 km	Swath width	30 km
380 – 2500 nm	Spectral coverage	400 – 1000 nm



Wavelength [nm]

Wavelength [nm]

DEGIS News – Improved download opportunity

- DESIS via web services (WCS, WFS, WMS etc.)
- Data format: COG (Cloud-Optimized GeoTIFF)
- STAC Catalogue containing the metadata of the complete DESIS archive
- L2A processed DESIS data (standard processing) will be made available
- Bulk image download possible
- Data product in line with CEOS ARD „SR“, currently under CEOS review



DEGIS-HSI-L2A-DT0212241400_002-20240212T135928-V0220 [json](#)

Parent [html](#) [json](#) Collection [html](#) [json](#) Item [html](#) [json](#) OpenSearch [geojson](#) [atom/xml](#) [O&M](#)

Collection:
Platform: MUSES/ISS
Instrument: DESIS
Sensor Type: OPTICAL

Extents:
Spatial: 3.8089, 39.8228, 4.2979, 40.2393
Temporal: 2024-02-12T14:00:58.978Z / 2024-02-12T14:01:03.324Z

[Achtiges Ausschneiden](#)

Map: A map of the island of Tenerife, Spain, with a blue dashed rectangle indicating the footprint of the data collection. The map includes labels for 'Tenerife', 'Santa Cruz', 'Mazorra', and 'Mazorra'. The map is credited to '© OpenStreetMap contributors'.

Preview: A diamond-shaped thumbnail showing a satellite image of the island of Tenerife, rotated 45 degrees. The image shows the island's terrain and coastline against a dark background.

Footprint

Properties:
Parent Identifier: [DEGIS_HSI_L2A](#)
Created: Jun 4, 2024, 6:38:49 AM
Updated: Jun 4, 2024, 6:38:49 AM
Cloud Cover: 0
Processing Center: NZ
Processing Level: L2A
Resolution: 30.0
[CARD4L] Eastern Geometric Accuracy: 19.9578
[CARD4L] Northern Geometric Accuracy: 27.1926
[CARD4L] Specification: SR
[CARD4L] Specification Version: 5.0
[DEGIS] Cloud Shadow: 0.463207265186
[DEGIS] Datakeid: 0212241400
[DEGIS] Defective Pixels: 0
[DEGIS] Haze Cover: 28.1180002288
[DEGIS] Imageid: 0212241400002
[DEGIS] Mission Phase: routine
[DEGIS] Number Of Tiles: 5
[DEGIS] Ozone Value: 330

Assets:
Metadata [metadata](#)
Spectral Image [data](#)
Data Quality Test Flags [quality](#) [flags](#)
Data Quality Layers [quality](#) [masks](#)
Overview [overview](#)
Thumbnail [thumbnail](#)

DESIS News – Improved download opportunity

- DESIS via web services (WCS, WFS, WMS etc.)
- Data format: COG (Cloud-Optimized GeoTIFF)



Update:

- Since 31/05/2024, Teledyne has stopped the DESIS tasking and archive services due to negotiations with NASA
- Negotiation process still ongoing – decision expected until end of Sept.
- Services at DLR (archive + processing) are available – independent from the outcome of NASA negotiation