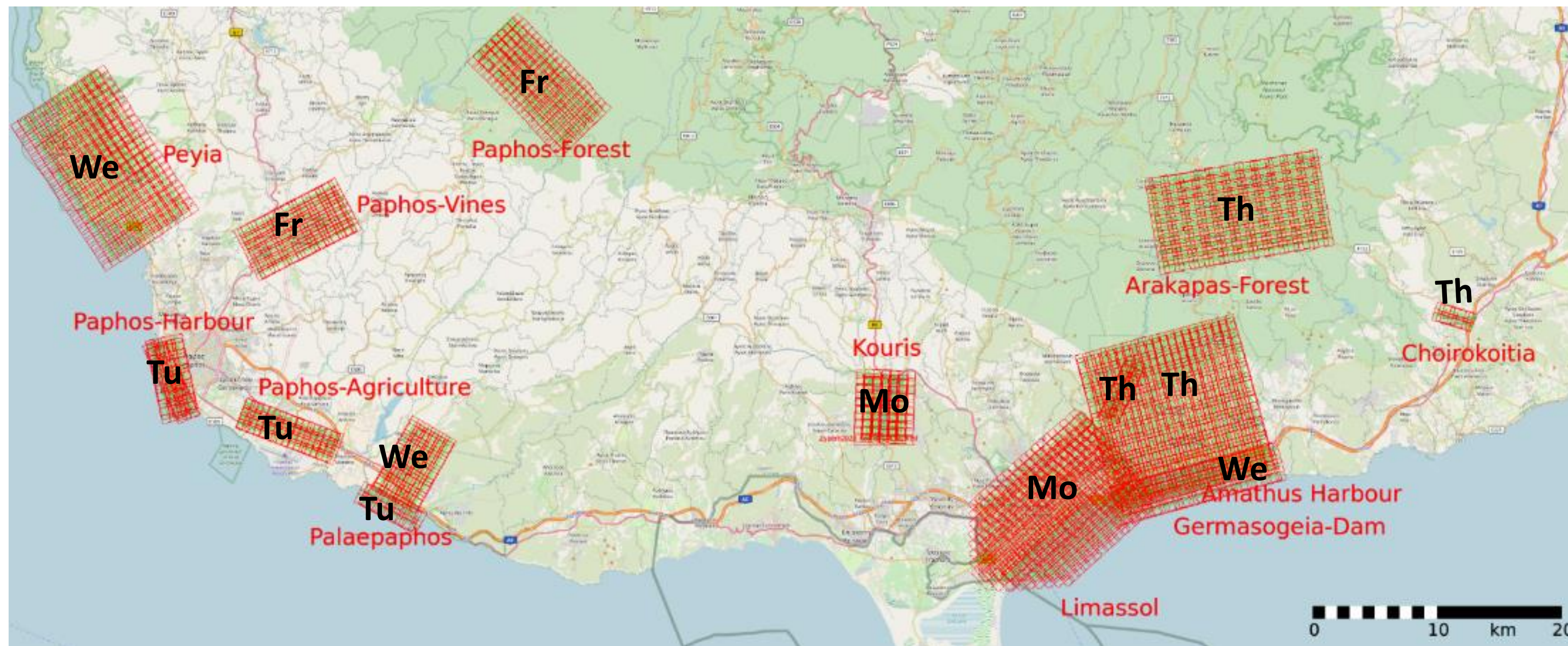


The joint Cyprus Flight Campaign of Eratosthenes CoE and DLR (CERAD) of 2023

Thomas Krauß, Veronika Gstaiger, Claas Köhler (DLR-MF, Oberpfaffenhofen, DE)

Kyriacos Themistocleous, Silas Michaelides, Christodoulos Mettas (ECoE, Limassol, CY)

24.04.2024, GeoDPA2024 Oldenburg



Test areas and day of measurement-flight
Mo. 13.- Fr. 17.10.2023

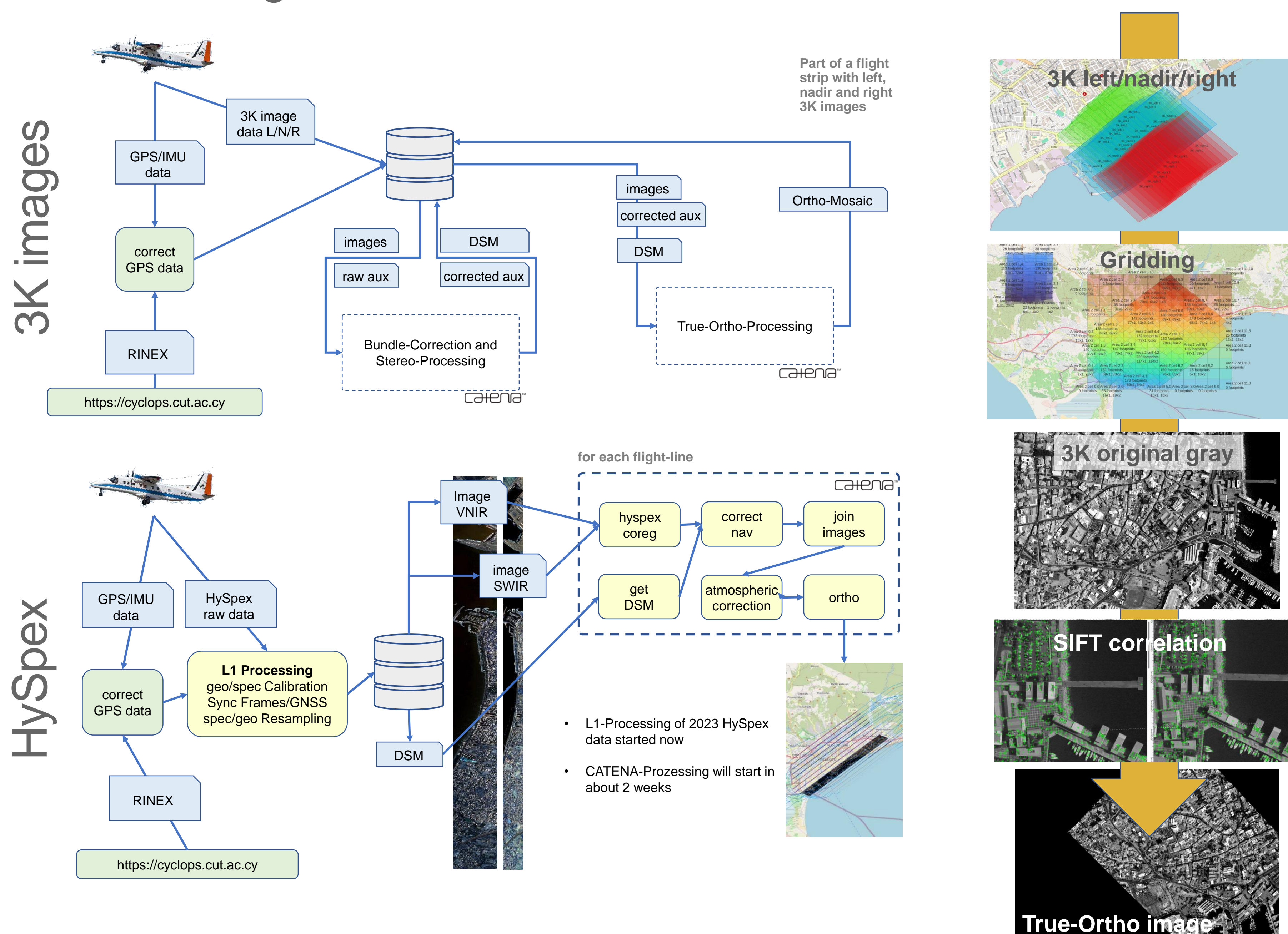


Goals of the Campaign

Agricultural Sites	Urban areas	Archaeological sites	Burned Areas	Dams	Sea sites	Forest
Kallepeia (10/10/2023) Acheleia (10/10/2023)	Limassol centre (9/10/2023) Paphos (10/10/2023)	Choirokitia (11/10/2023) Palepafos (10/10/2023) Amathounta - Gerasoigeia (12/10/2023)	Arakapas (12/10/2023)	Kouris (9/10/2023) Gerasoigeia (12/10/2023)	Pegeia (10/10/2023)	Paphos Pegeia (13/10/2023)
Soil/moisture Crop health Weed species Yield prediction Pest mgmt. Optimizing water use	Create urban digital twin Analyze pollutants Heat islands Vegetation Urban planning	CH monitoring for looting Detect presence of buried structures Find undiscovered archaeological sites e.g. in shallow water	Impact of wildfires Guiding recovery Soil changes Post-fire vegetation regrowth Invasive Species Detection	Water quality and temperature Fish populations and other wildlife 3D model for disaster preparedness	Water color, organic matter, chlorophyll Phytoplankton, sediments Water quality Coastal Erosion	Forest biomass Canopy structure and density Monitor changes in forest cover and structure over time

- Cross Calibration and validation of airborne hyperspectral sensors (HySpex) with ground measurements and hyperspectral satellites (EnMap) and space-borne sensors (DESI)
- Develop capacities of ECoE staff on processing of these imagery
- Deploy the processed data through the ECoE data cube and make it available to earth observation starts-ups in Cyprus

Processing of the data



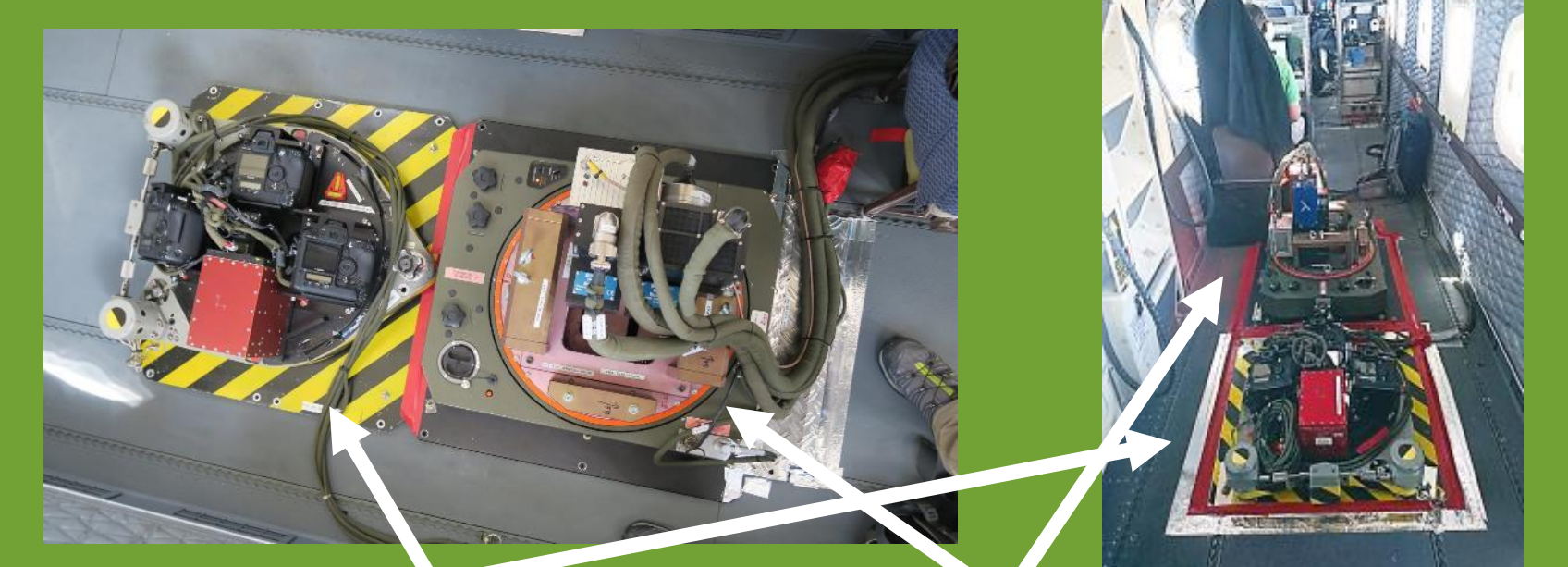
#	Test site	Lines	Altitude	Duration
1	Amathus-Harbour	1	9000 ft	00:10 hrs
2	Arakapas-Forest	12	10000 ft	02:40 hrs
3	Choirokitia	2	8000 ft	00:15 hrs
4	Gerasoigeia-Dam	21	8000 ft	05:30 hrs
5	Limassol	12	8000 ft	03:10 hrs
6	Palaeopaphos/Kouklia	6	8000 ft	01:20 hrs
7	Paphos-Agriculture/Acheleia	4	7000 ft	00:45 hrs
8	Paphos-Harbour	2	9000 ft	01:00 hrs
9	Paphos-Vines/Tsada	7	9000 ft	01:00 hrs
10	Paphos-Forest	7	10000 ft	01:10 hrs
11	Peyia	11	9000 ft	01:50 hrs
12	Kouris Dam	4	9000 ft	00:40 hrs

Research plane and Team



Home base was at Paphos airport PFO

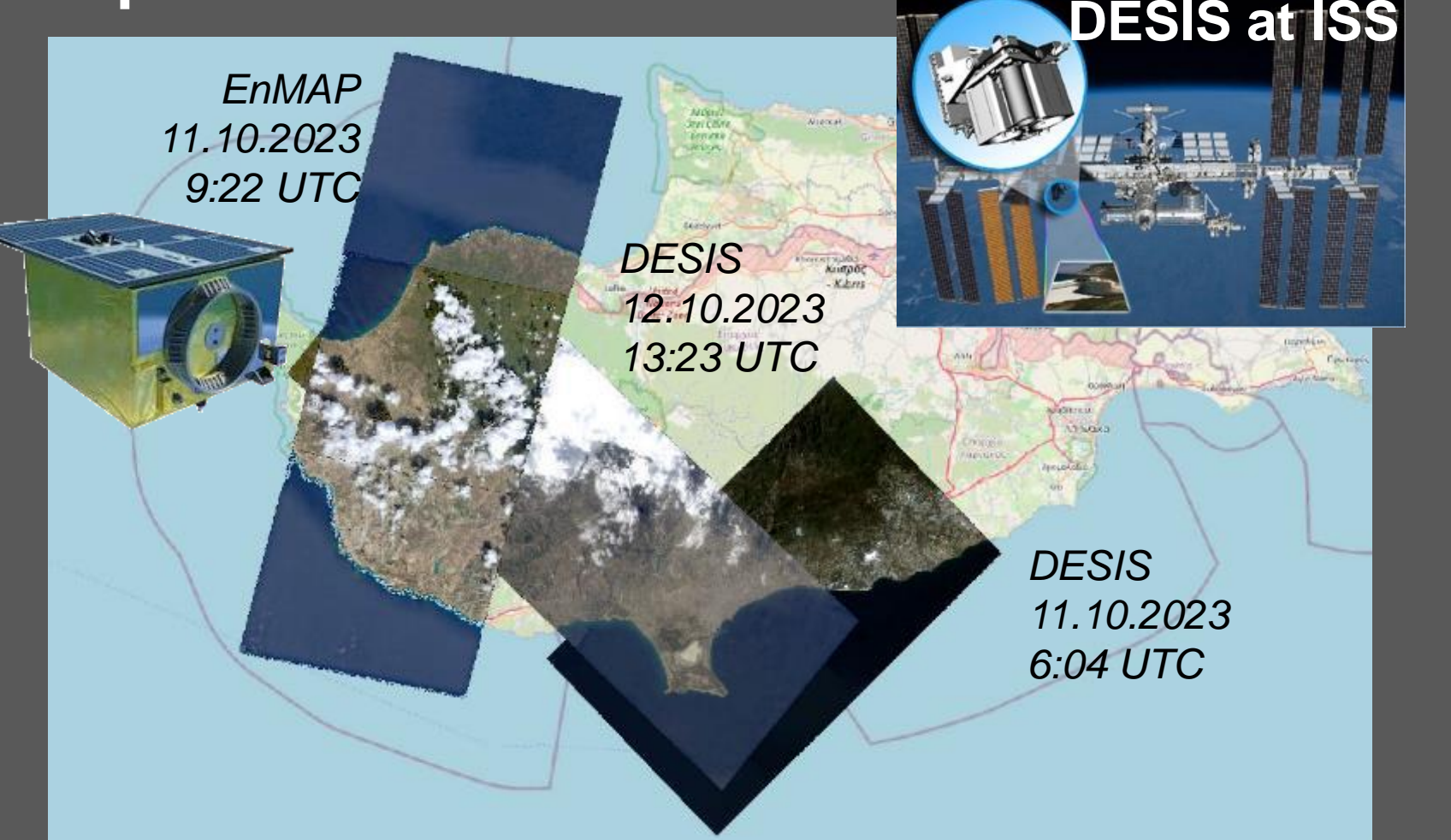
Instruments



3K camera system
In-house development of DLR's Remote Sensing Institute - 3 Canon frame cameras - high resolution 3D mapping and 3D analysis - Ground resolution ~17 cm

HySpex sensor
Hyperspectral push-broom scanner - over 900 narrow spectral bands in VNIR and SWIR - Ground resolution ~1 m VNIR ~2 m SWIR

Space data



Ground data

- Water/soil samples
- Spectroscopic measurements
- Drone-data
- Temperature/PM/gas-sensors
- Ground Control Points

