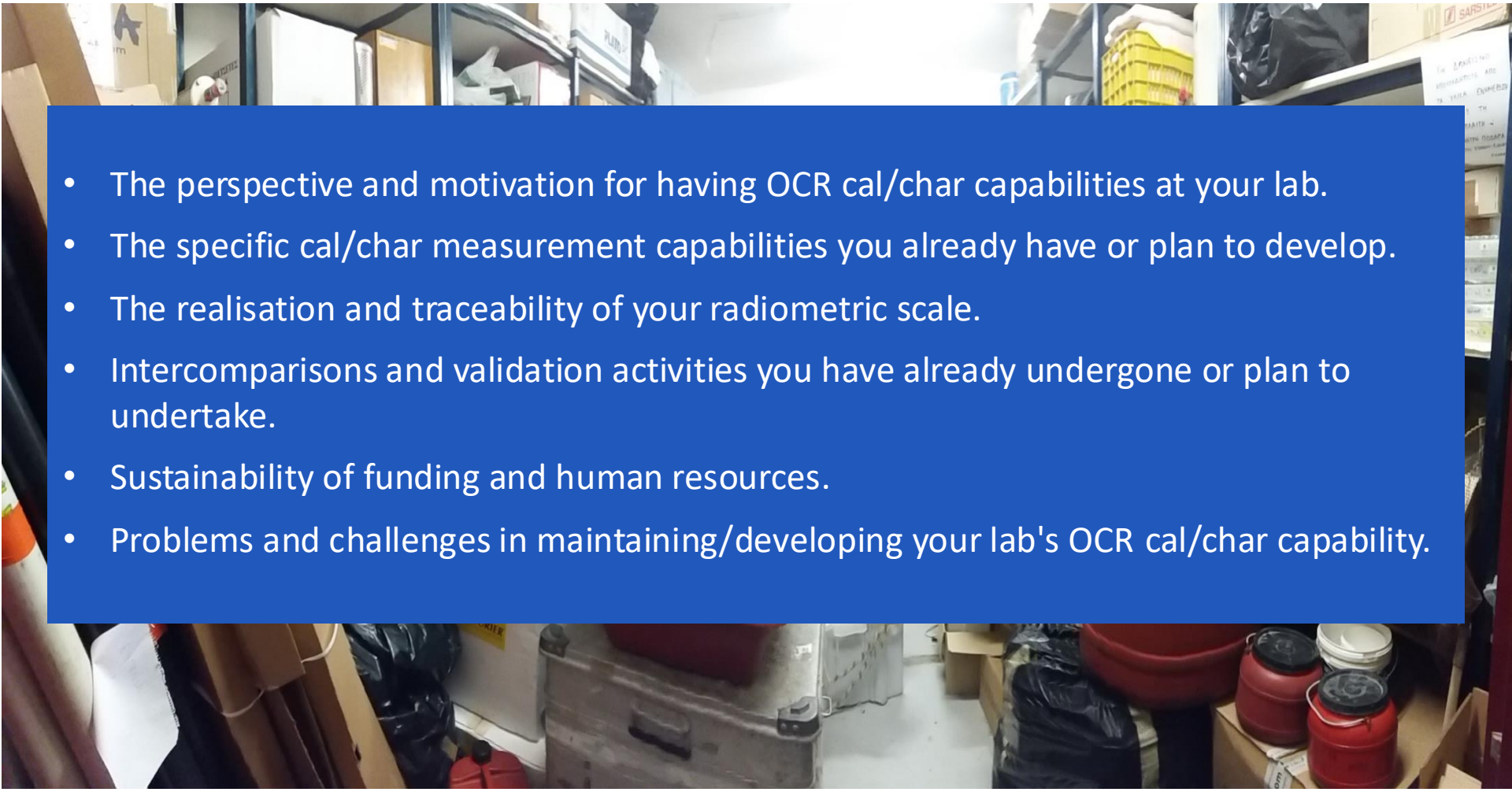
HCMR-Crete Current and Planned OCR Calibration and Characterisation Facilities

(Invited Presentation)

FRM4SOC PHASE 2 WORKSHOP
TARTU OBSERVATORY, TARTU, ESTONIA, MAY 20-22, 2025

Andrew C. Banks (Hellenic Centre for Marine Research - HCMR),
N. Spyridakis, A. Karageorgis, S. Psarra, M. Leontidi (HCMR)
P. Drakopoulos (UNIWA), Y. Pissas (HCMR Contracted Civil Engineer),
I. Nikoloudis (Civil Engineer for the Region of Crete)

HCMR-Crete OCR Calibration Facilities
Status Update



- The perspective and motivation for having OCR cal/char capabilities at your lab.
- The specific cal/char measurement capabilities you already have or plan to develop.
- The realisation and traceability of your radiometric scale.
- Intercomparisons and validation activities you have already undergone or plan to undertake.
- Sustainability of funding and human resources.
- Problems and challenges in maintaining/developing your lab's OCR cal/char capability.

HCMR-Crete OCR Calibration Facilities
Motivation

- HCMR perspective and motivation for having OCR calibration / characterisation capabilities:
    - Want to make the best possible satellite validation measurements in the Eastern Mediterranean and help improve ocean colour satellite data.
    - Recognise the value of FRM.
    - Would like to continue to contribute to the promotion and uptake of FRM and the European/International effort to improve ocean colour satellite data.
    - Would like the advantages and flexibility of being able to calibrate and characterise our own radiometry.
    - Also motivated by Copernicus OC-SVC to have and expand these capabilities and make Crete a centre of excellence for Europe in this field.

HCMR-Crete OCR Calibration Facilities
Previous Activities - History of OCR at HCMR

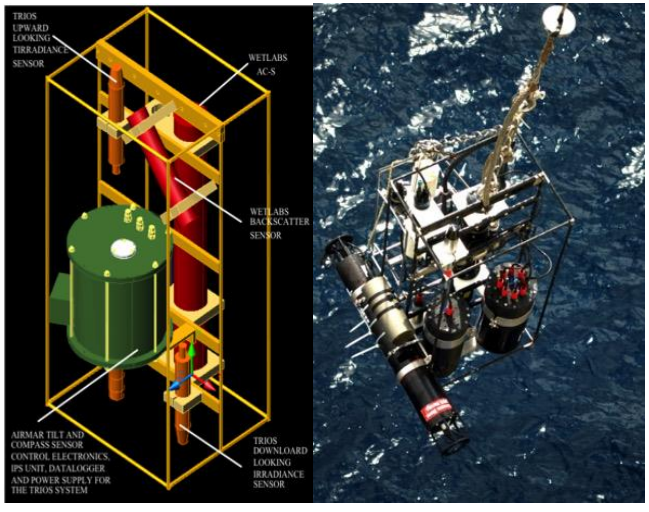
2005

2007-2009:
- Dr. Banks purchases HCMR's first radiometers (TriOS RAMSES), first deployments above water.

2010

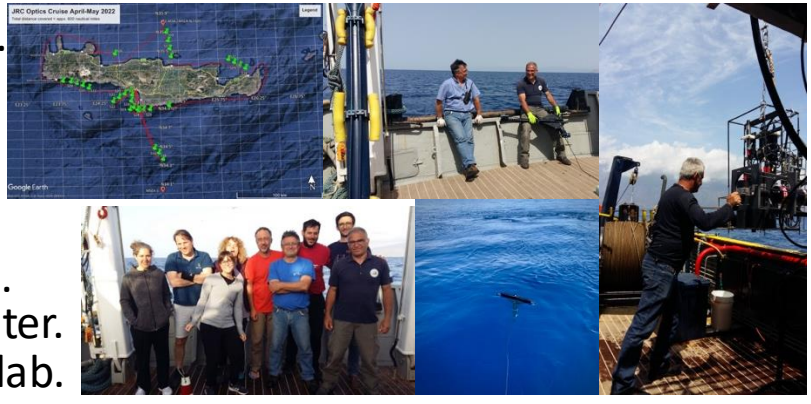
2011-12:
- Design and construction of HCMR profiling optics suite – in water radiometry.
- Dr. Banks moves to JRC & NPL.

2013-2018:
- HCMR optics suite deployments in E.Med & Black Sea.



2015

2018-2022:
- Dr. Banks moves back to HCMR.
- Start to follow FRM principles at HCMR.
- Proposed Crete Copernicus OC-SVC site.
- ProVal in Crete.
- Continued deployments of HCMR optics suite.

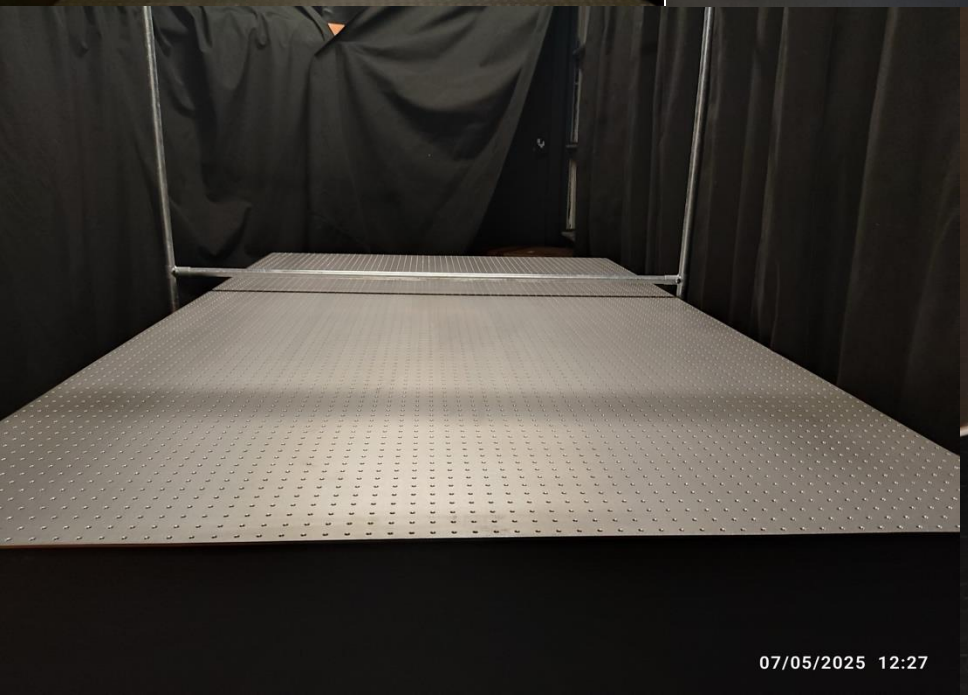


2020

2022-present:
- 2 JRC-HCMR OC validation cruises in Crete.
- EUMETSAT IOP products validation project.
- HyperNAV OC-SVC of PACE in Crete.
- Crete Copernicus OC-SVC site -> Design phase.
- Separation of OCR from IOPs – back above water.
- NABUCCO & development of OCR calibration lab.

TODAY

HCMR-Crete OCR Calibration Facilities
Present Status



HCMR-Crete OCR Calibration Facilities
Present Status

Alignment, distance measurement and ancillary equipment

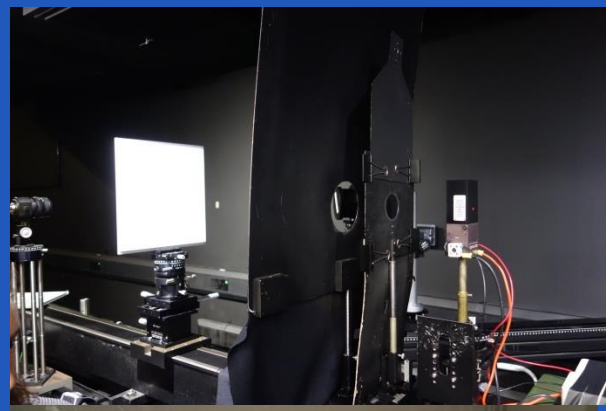
Alignment target – custom made
Calibrated measurement standard length gauge – from Mittutoyo – calibrated at NMI.
1 x micro-adjustment head for distance measurement – custom made
1 x bidirectional alignment laser – ex surveying
Alignment fitting (with mirror & stop) for 0-45 degree panel alignment – custom made.

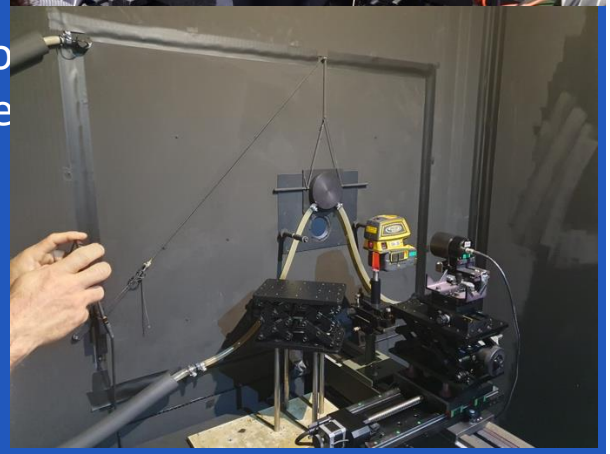
Room outfitting

Temperature, pressure, humidity & CO_2 sensors – near radiometers and for room
Matt black paint
Anodised black aluminium foil from Thor labs – to cover anything / everything
Clean room entrance matting
2 thin baffles with apertures (60 mm) from metal or Thor labs sheet
Matt black shutter – possibly also made from tile.
Black desk / table coverings
2 computers for control / monitoring of lamp and sensors.
Climate control system with positive pressure and good 2 stage filtering.
UPS (at least 2KW).
N.B. need to have lamp and panel well away from walls and need space around lamp for air circulation.
Don't use fans directly above lamp. Don't use fabric from baffling /blacking out because attracts dust.

HCMR-Crete OCR Calibration Facilities
Problems and Challenges

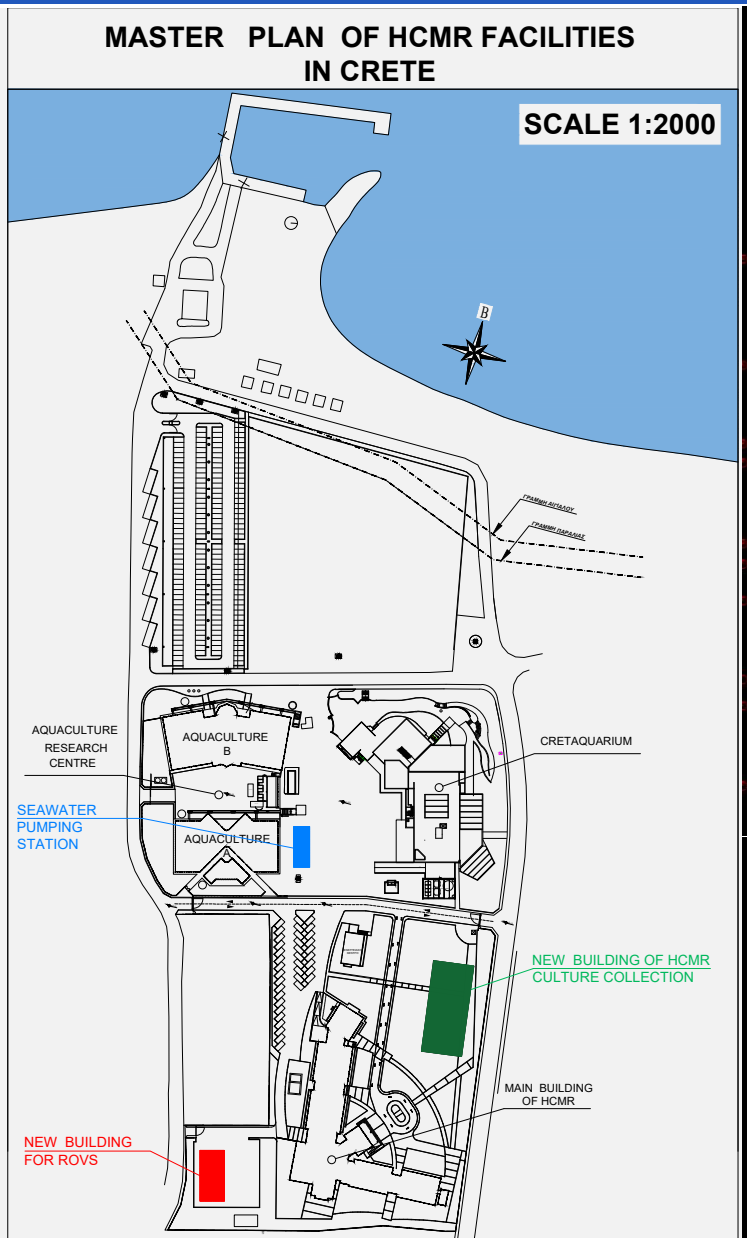
- Financial and Personnel Challenges
  - Funding – Calibration is an expensive business!
  - Space.
  - Lack of qualified and interested people in Greece.
- Information and procurement challenges, for example:
  - Information on (affordable) pricing and availability o
    equipment, e.g. metal ruler, contactless distance me
    reflectance panel?
  - Baffling baffling – material, thickness, number?
  - Aperture sizes, and distance from lamp?
  - ISO certification.

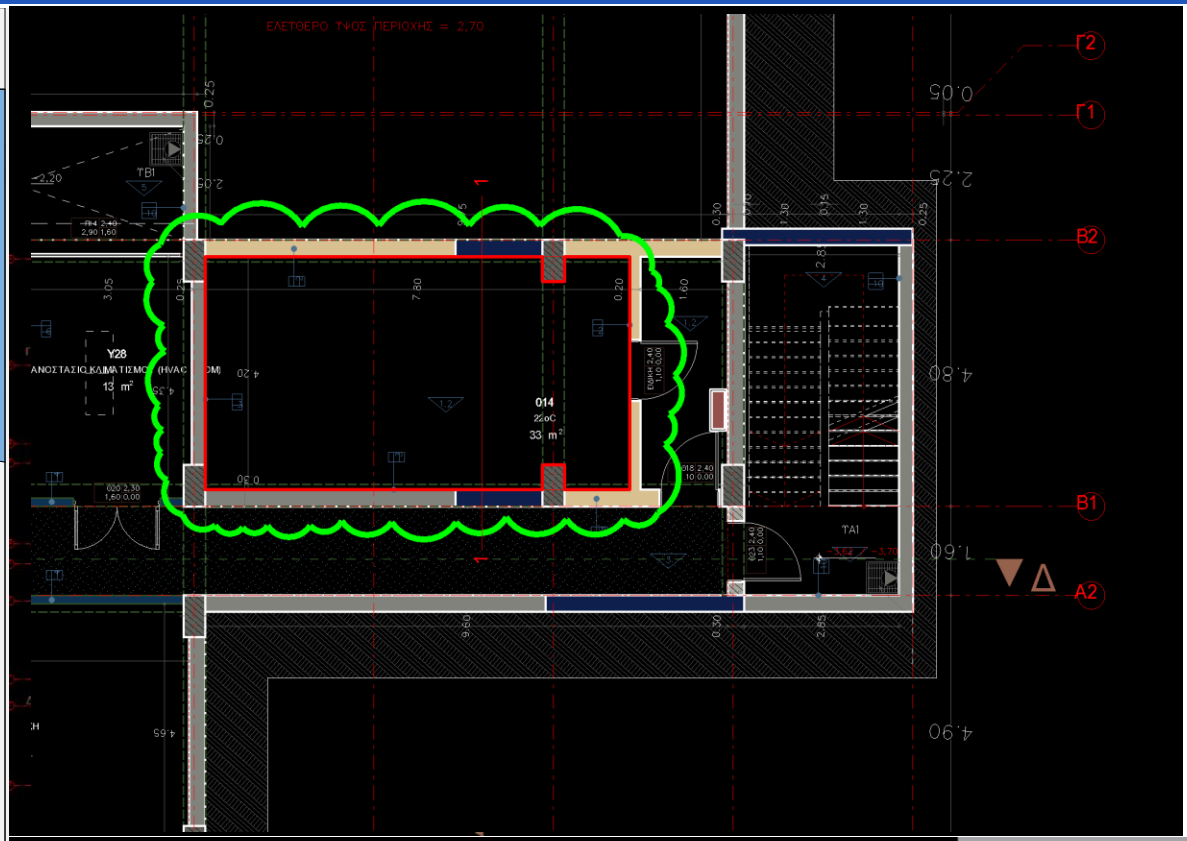


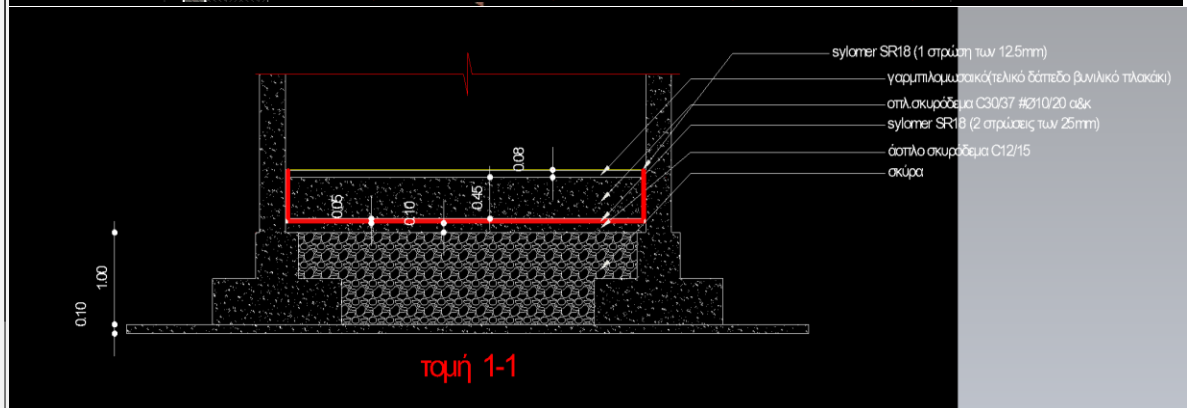


- Receiving assistance and inspiration from FRM4SOC experts on solving some of the above issues and making the HCMR lab an operational FRM facility is one of the main motivations for our attendance at this workshop.

HCMR-Crete OCR Calibration Facilities
Future Plans: New OCR Calibration Laboratory

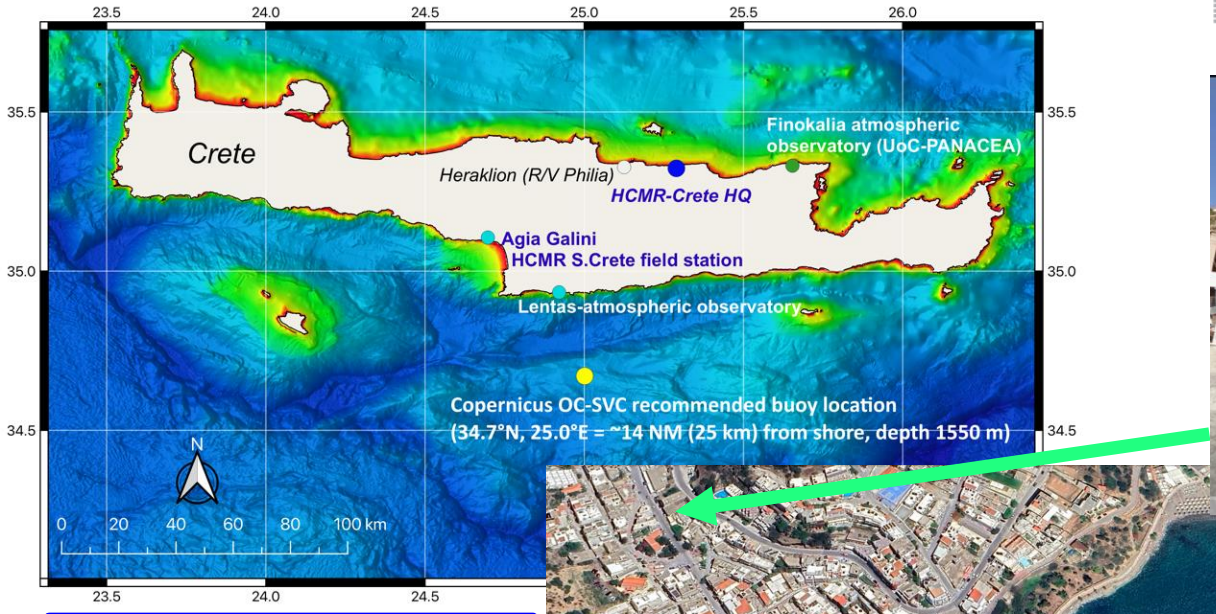


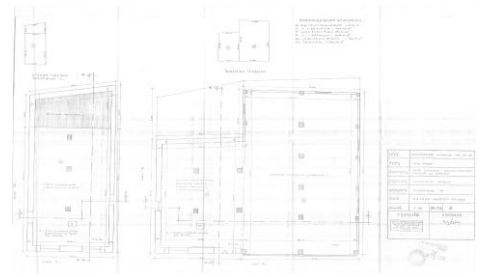




HCMR-Crete OCR Calibration Facilities
Future Plans: Copernicus OC-SVC Crete Site

Field Calibration Lab in Agia Galini, South Crete





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Contact: andyb@hcmr.gr