



EUROPEAN ASSOCIATION
OF REMOTE SENSING LABORATORIES



EO for Cultural and Natural Heritage Workshop 2024

15-16 October 2024 | ESA/ESRIN



Workshop closure

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→ THE EUROPEAN SPACE AGENCY

Sessions

1. Monitoring

2. Climate and Awareness

3. Preserving and Preventing

4. New techniques



[BBC.CO.UK/news/world-middle-east-47628369](https://www.bbc.com/news/world-middle-east-47628369)

The Workshop in a nutshell



EUROPEAN ASSOCIATION
OF REMOTE SENSING LABORATORIES



Audience

Remote Sensing Experts

Archaeologists

Cultural Heritage professionals

Education professionals

Private sector (Industry)

Academic sector (University)

National and European Entities and organizations...



RS Data and techniques

- LIDAR data
- Cartography
- UAVs
- Historical acquisitions (aerial/satellite)
- Ground sensors
- Earth Observation dataset



Harbor of Trajan in the first Sentinel-1 acquisition over Rome. @Copernicus Sentinel-1 data (2014) processed by Dr. J. Patruno

RS Data and techniques

- Sentinels (1,2)
- COSMO SkyMed
- RADARSAT-2
- TerraSAR-X
- DEIMOS
- Pleiades 1
- Worldview 3...



Harbor of Trajan in the first Sentinel-1 acquisition over Rome. @Copernicus Sentinel-1 data (2014) processed by Dr. J. Patruno

- ✓ SAR co-pol/ cross-pol data
- ✓ Backscattering analysis/Coherence
- ✓ InSAR / microdoppler
- ✓ Hyperspectral / Change Detection
- ✓ ML and AI

RS Data and techniques

Current and upcoming missions will cover a large range of SAR frequency, X, C, L, S, P band
(ALOS-4, NISAR, BIOMASS, Rose-L...)

Sentinel-1 FG/NG - Rose-L SoS (same orbit, same geometry)



operational C and L-band images acquired routinely - wide-swath (hundreds of km) + relatively high-resolution (5m on the ground) **!!**



<https://www.acceleratingasia.com/latest-news/investing-emerging-markets-bangladesh>

Applications

- Air and water quality
- Sea level rise
- Cruise ships traffic
- Dust aerosol
- Looting/land grabbing
- Pollutants
- Tourism management
- Ground motion
- Security
- Muon Tomography
- 3D Reconstructions
- Situational awareness maps
- Preventive Archaeology



Community needs

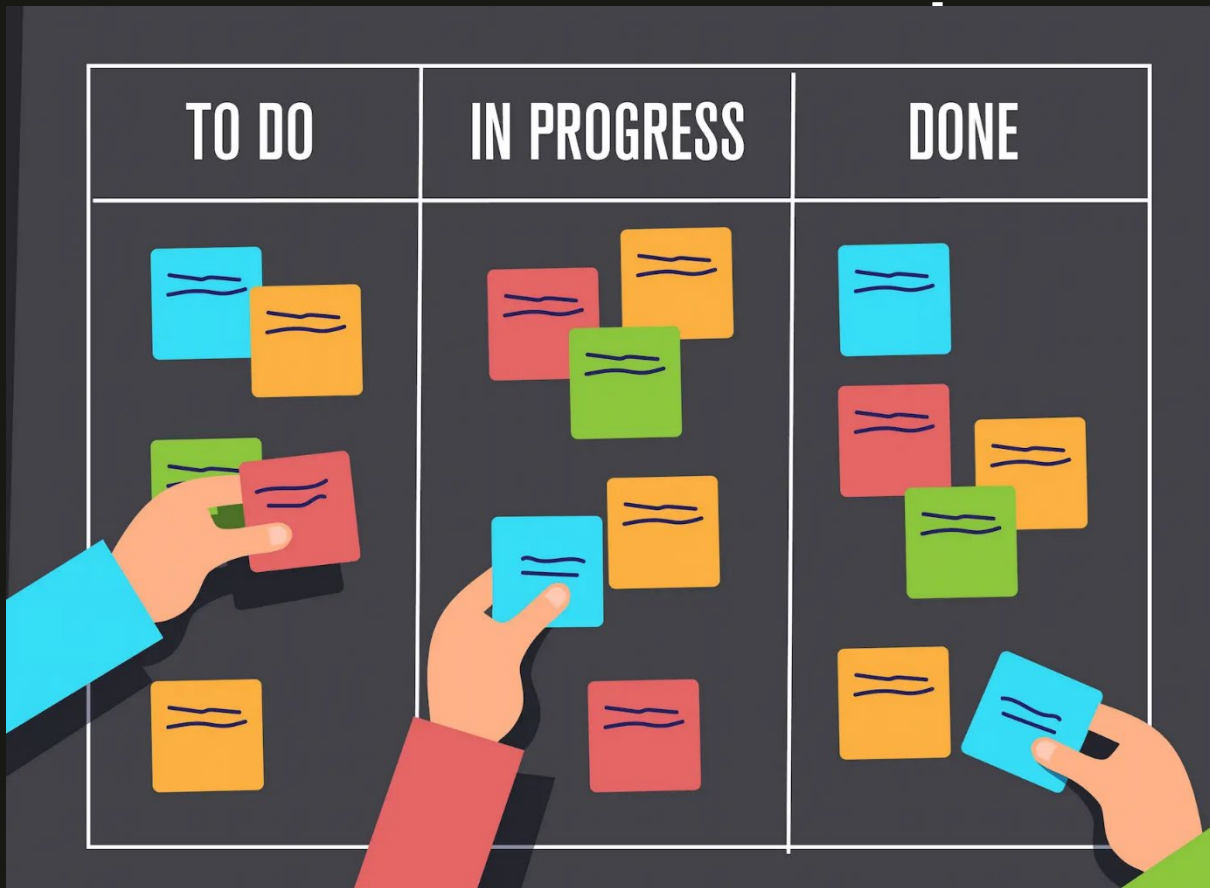


<https://artmuseumteaching.com/2015/04/13/mind-the-gap-art-museum-education-academia-the-future-of-our-field/>

- Remote Sensing expertise
- Cultural Heritage expertise
- Developing a common language
- Share a “Space4Culture” concept (all expertise involved understand the importance of interdisciplinarity)

What the Workshop indicates

Progress done



- EO being accepted among some archaeologists
- EO services available: land cover change, Heritage risk monitoring, etc.
- The Private Sector is getting involved

Progress to be done



**AREAS OF
IMPROVEMENT**

- Still we are mainly among the EO community
- Need to attract the HERITAGE community
- To consider attracting the TOURIST authorities

Opportunities



- **ESA proposing to have this Workshop bi-annually**
- **ESA indicated small funding opportunities**
- **Some participants developing educational material EO 4 Heritage**

For consideration



- All possible resolutions (legacy and new)
- EO SAR ascending / descending
- EO SAR 3D model
- SDGs
- BIG Data management (AI processing capabilities)
- Interdisciplinarity (integration of different data sources – AI processing capability)
- VISUALISATION!
- Digital Immersion etc.



EARSeL Symposium

- Prague, 26-29 May 2025
- Special session on EO for Heritage

ESA Living Planet Symposium

- Vienna, 23-27 June 2025
- Agora (TBC) on EO for Heritage
- GRSG Annual Conference
- 9-12 December 2025, ESRIN



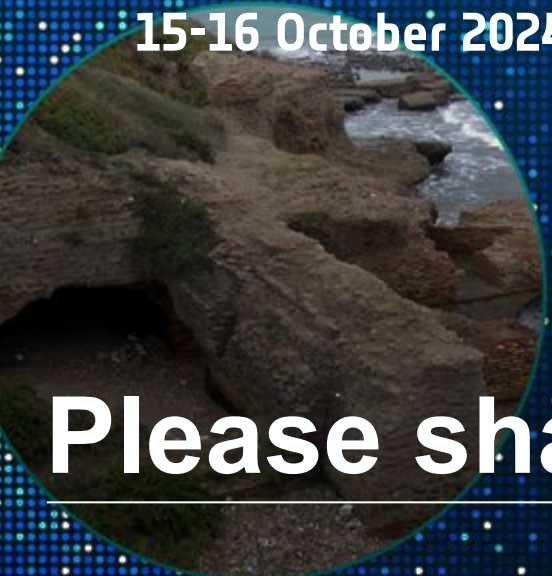


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Please share your feedback!

THANK YOU

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