

THETIDA

PRESERVING UNDERWATER
AND COASTAL HERITAGE

THETIDA: Cultural Heritage as a Driver of Coastal Resilience

26/09/2025

32nd IAF-UNOOSA Workshop

*Panel Discussion 2: SIDS, Satellites, and Sovereignty:
Transforming Ocean Resource Stewardship from Space*

Sydney, Australia

Dominique Codran-Tilmans

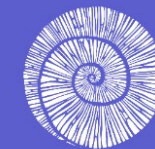
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**Funded by
the European Union**

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THETIDA Overview: Facts & Figures



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THETIDA's aim is to develop, test and validate an **integrated multiple underwater & coastal heritage risk assessment and protection system** with evidence-based monitoring frameworks, innovative tools and instruments, through participatory processes linking social innovations with cutting-edge technologies (ICT and IoT harmonised tools).

- **THETIDA Consortium:**

- Institute of Communication and Computer Systems (Project Coordinator)
- 5 SMEs (ELB, SG, IANTD, MDCA, RG)
- 8 Research institutes (ICCS, UNIPD, NTUA, TU/e, UAlg, CMMI, UCY, NIKU)
- 4 NGOs & Public org: (EFAKYK, MOOI, CCVAlg, EURISY)

- **Duration:** 42 months (05/2023 - 10/2026)

- **EU funding:** €3,999,287



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8 Participating countries



17 partners



7 pilot sites



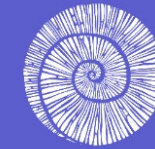
THETIDA Overview: Facts & Figures



THETIDA Objectives

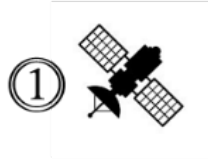
- Technical Objective: Contribute to safeguarding and protecting Europe's coastal and underwater cultural heritage from the effects of climate change and natural hazards by exploiting cutting-edge monitoring technologies for addressing multi-hazard risk understanding, better preparedness, faster, adapted and efficient response.
- Scientific and Innovation Objective: Promote, test and demonstrate innovative and sustainable modelling tools and a decision support system to protect cultural heritage and cultural landscapes from climate change, disaster risks and pollutants, as well as to respond efficiently to those risks in case of emergency.
- Impact Maximisation Objective: Actively engage diverse community groups, stakeholders and participants in participatory and inclusive data acquisition, co-creation and co-design processes through citizen science and participatory Living Lab methodologies to identify the values of maritime heritage and to collaboratively develop sustainable preservation and adaptation strategies

THETIDA Methodology



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- Remote Sensing
- Ocean forecasting system
- Climatological and Geo-Hazard Maps



- Surface Vessel Sensors

⑥



- Smart Buoys

②



- Wearable sensors

④

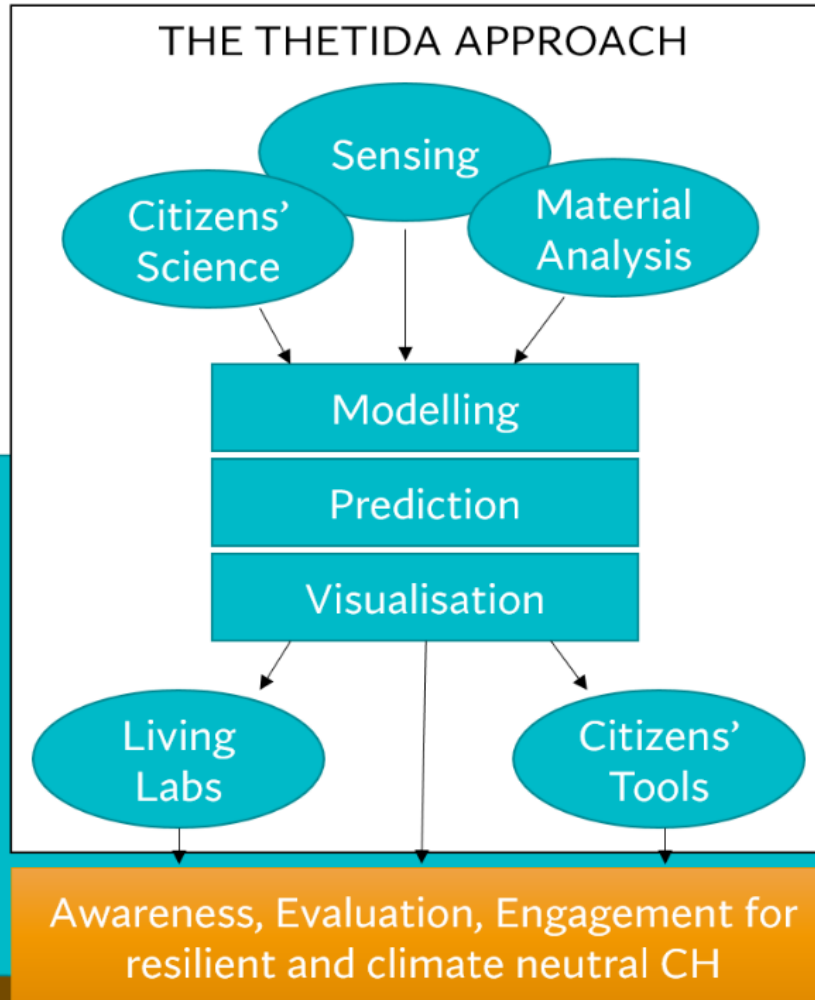


- Autonomous Underwater Vehicles (AUVs)

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THE THETIDA APPROACH

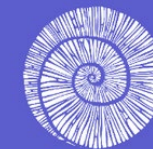


- Smart Tags
- Micro-weather Stations
- Crowdsourcing app



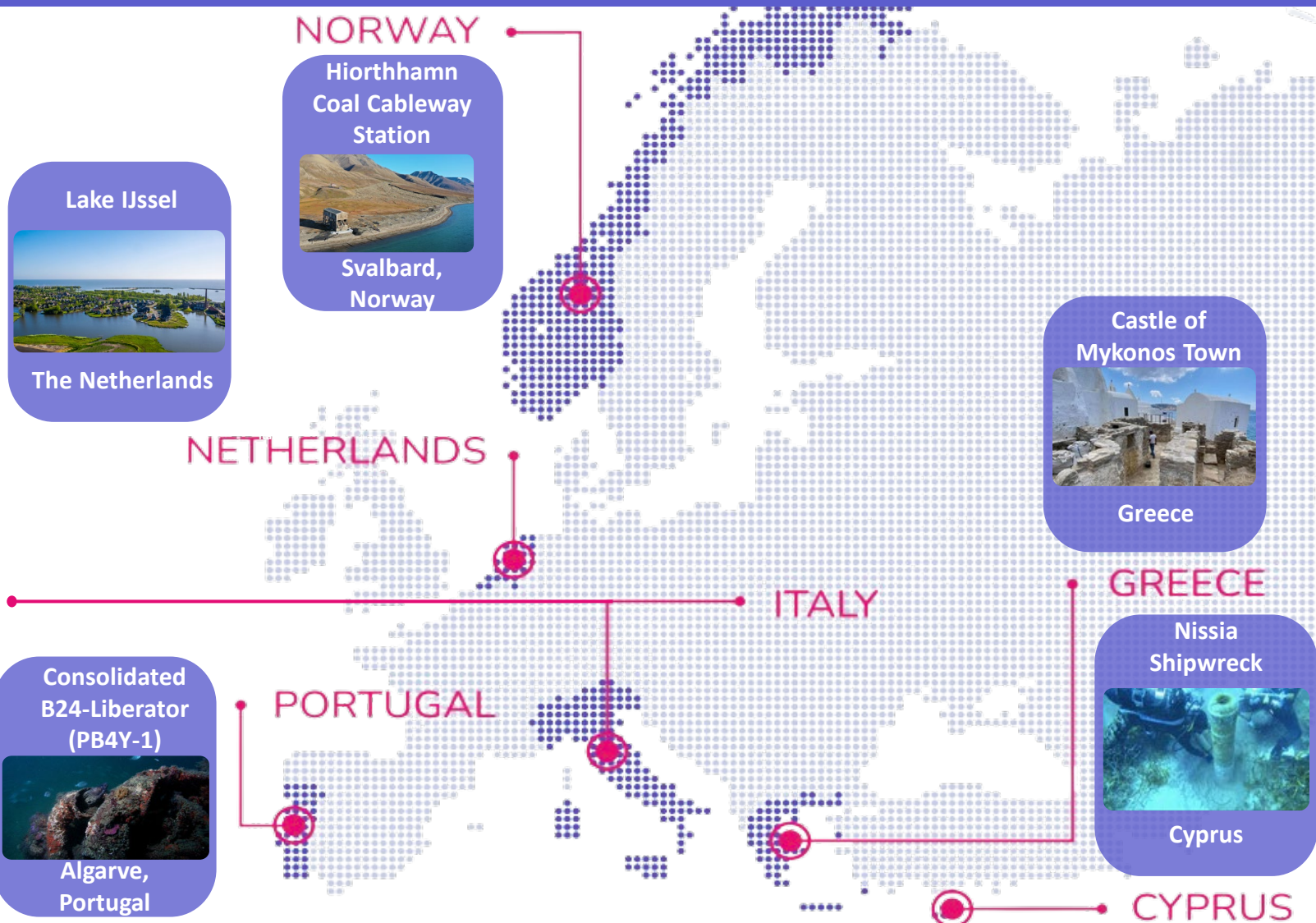
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THETIDA Pilot Sites

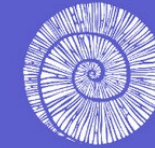


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- **Coastal threats:** Erosion, heat, drought, earthquake, anthropogenic influence, flooding, soil subsidence, seepage, salinization of soil
- **Underwater threats:** Temperature, water pollution and acidification, human-induced activities, fouling, over blooming, earthquake, currents



THETIDA Pilot Sites



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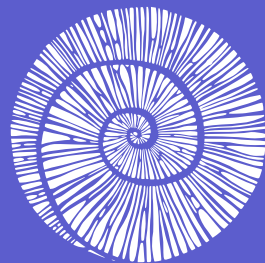
<i>City/Region</i>	<i>Climate</i>	<i>Heritage Type</i>	<i>Scale</i>	<i>Threat</i>	<i>Sensing Method</i>	<i>Structural Materials</i>
Netherlands, Lake IJssel	North Sea	Coastal/ Underwater	Landscape	Flooding, erosion, (wetting phenomena)	Remote Sensing (RS), CrowdSourcing (CS)	Masonry, Stone, Wood, Metal
Norway, Svalbard	Arctic Ocean	Coastal archaeological	Remote Landscape	Erosion, thermo-erosion gullyng, thaw slumping, anthropogenic influence	RS, CS	Wooden structures and iron elements
Portugal, Algarve	Atlantic	Underwater heritage	Town	Temperature, currents, pH, storm surge/waves, human-induced, earthquake	In-situ sensing	Aluminium, Steel
Italy, Gallinara, Spezia	Western Med	Underwater/ Coastal archaeological	Village	Temperature, water pollution and acidification, human-induced, fouling, overbloomng, earthquake	RS, In-situ sensing, CS	Stone, ceramics, iron
Cyprus, Paralimni	Eastern Med	Underwater/ Coastal archaeological	Remote site	Temperature, water pollution, human-induced, earthquake	RS, In-situ sensing, CS	Wood, metal, ceramics
Greece, Mykonos	Aegean Sea	Coastal	Village	Heat, drought, earthquake	RS	Masonry, Stone

Project Priorities – Policy Elements

- **Strengthening cultural heritage resilience for climate change**
 - THETIDA aims to support underwater cultural heritage from the effects of climate change and natural hazards in **a holistic manner that includes risk management, protection and preparedness, as complementary strategies to prevent damages to Cultural Heritage sites**, identify and ward off additional threats and promote policy tools for climate neutrality and economic resilience in coastal areas.
- **Achieving inclusive and sustainable development in coastal areas**
 - THETIDA will develop and select the appropriate business model(s) ensuring the sustainability of systems developed, including a lens on techno-economic, socio-economic and sustainability indicators derived from pilot areas.

Project Priorities – Solutions

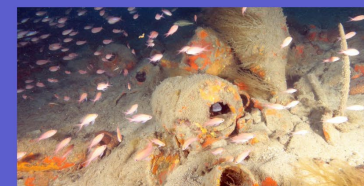
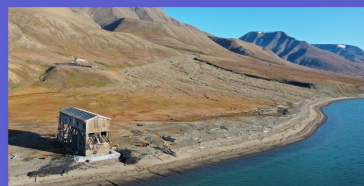
- **Remote sensing** of environmental and pollution stressors through satellite, aerial, and ground monitoring.
- **Deterioration models** for evaluating the effect of climate change, disaster risks, pollutants, and wetting phenomena on structural material of monuments, historical buildings, archaeological sites and cultural landscapes.
- **A prediction platform** for proactive management of underwater and coastal cultural heritage and cultural landscapes.
- **Ocean model data products** to support safeguarding, protection and response of submersed and coastal cultural heritage facing climate change and natural hazards.
- **Living labs (LL)** for participatory co-design and creation processes.



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Thank you!



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