ACTIVITY	Workshop and Training School
ORGANIZER	Italian National research council (CNR)
VENUE	Institute for Marine Biological Resources and Biotechnology of the National Research Council (IRBIM CNR); Institute of Anthropic Impacts and Sustainability in marine environment - Detached Unit of Capo Granitola.
DATE	08th to 22th May 2023
ATTENDEES	9 student and 12 staff; 8 teaching staff; 4 Italian researches tolks in cooperation day
ATTACHEMENTS	Collection of Presentation of TACTUAL students

Introduction

MARE, an Erasmus+ CBHE project spanning from 2020 to 2023, aims to cultivate adaptive and end-user-centric curricula with international relevance. The project's focal point is the sustainable management and governance of coastal and adjacent marine areas in partner countries, namely Malaysia and Vietnam. Aligned with the goals of enhancing the capacity of non-EU countries within the Erasmus+ Program, this three-year endeavour seeks to revolutionize the educational offerings of universities in the realms of sustainable and integrated coastal area management in Vietnam and Malaysia.
The initiative involves a series of brief instructor and student mobility exchanges between Asian nations, orchestrated as a collaborative effort among the project partners. Among these partners, staff and students from: Universiti Teknologi Malaysia; Universiti Malaysia Terengganu; Can Tho University (VN); University of Natural Resources and Environmen (VN); Vietnam Maritime University (VN)

University Kuala Lumpur will spend time at Dicar, engaging in research for them
theses that pertain to maritime hydraulics and the planning and administration of coastal
region they were hosted at the IRBIM-CNR Institute in Mazara del Vallo to conduct a workshop aimed at strengthening international cooperation and a training school to enhance skills and problem-solving methods related to the integrated sustainable and resilient management of coastal areas and deltas.

Diary Activities

Day 1 Monday 8 th May

The workshop was an integral part of the training school activities, allowing students to observe what is necessary to strengthen and enhance cooperation in the research sector. On the first day, Dr. Gian Marco Luna, the director of IRBIM-CNR, inaugurated the workshop & training school. Subsequently, the activities planned for the following days were introduced. By the end of the first part of the day, the foundation was laid for the publication of a volume on the sustainability of coastal areas and deltas. This volume, primarily targeted at students, aims to serve as a compendium of the skills and knowledge that the 'MARE' project has successfully gathered. Throughout the scheduled days, discussions revolved around the editorial project and the contents of the volume. Editors, authors, and the publisher (Springer) were identified. In the subsequent months, the publisher embraced the editorial project proposed for the publication of this volume."

Day 2 Tuesday 9 th May

The second day of the workshop focused on aspects of international cooperation. A series of presentations were scheduled by researchers from CNR, professors from Malaysian and Vietnamese universities participating in the TACTUAL event, aimed at strengthening cooperative efforts, including through the signing of memorandums of understanding and joint research programs. To this end, Dr. Francesca Tolve from the International Relations Office of CNR gave a presentation on 'CNR and the International Dimension: Vision and Instruments for Implementation.' This presentation explained how CNR fosters collaboration between its researchers and foreign researchers, including the internal financial tools used by CNR for its international cooperation policies.

Subsequently, Dr. Gemma Andreone, Director of the Institute for International Legal Studies (ISGI-CNR), introduced the institute, which focuses on international legal aspects and has long been involved in studies related to high seas environments and issues related to maritime law and marine resources. Dr. Adamo from the Institute of Anthropic Impact and Sustainability in Marine Environment (IAS-CNR) presented the headquarters in Capo Granitola, located a few kilometers from Mazara, which primarily focuses on oceanography and the study of anthropogenic impacts in the marine environment. Finally, Dr. Francesco Filiciotto from the Institute of Polar Science at CNR presented research and assessment methods related to stress on marine species and acoustic pollution in the marine environment

Following these presentations, there were discussions on the main research activities and potential collaboration interests of colleagues from Universiti Teknologi Malaysia, Universiti Malaysia Terengganu, Can Tho University (VN), University of Natural Resources and Environment (VN), and Vietnam Maritime University (VN). Subsequently, one-to-one meetings were held with the aim of establishing new collaborations. This activity led to the signing of a Memorandum of Understanding (MOU) between CNR and Vietnam Maritime University on the topics of Integrated Coastal Zone Management (ICZM) and Maritime Spatial Planning. Currently, a possible Memorandum of Understanding (MOU) between CNR and UMT is in the planning stage.

During the same day, a meeting was organized between the participants of TACTUAL and the productive district of fisheries and blue growth (COSVAP) based in Mazara del Vallo."

The COSVAP, which stands for 'Consortium for the Development of the Fishermen District and Blue Growth,' is an organization located in Mazara del Vallo, focused on the sustainable development of the fishing sector and economic growth related to the sea. The consortium's main objective is to promote innovation, research, and cooperation among businesses and local institutions in the fishing and maritime sectors. Its goals include implementing strategies for sustainable management of marine resources, promoting responsible fishing, developing advanced technologies for the fisheries sector, and encouraging ethical business practices. Additionally, COSVAP actively works to promote employment in the fishing industry, contribute to the well-being of local communities, and preserve the marine environment for future generations.

The meeting with COSVAP was of paramount importance for the participants of the TACTUAL workshop and training school for several reasons:

1. **Networking Opportunities:** Meetings with organizations like COSVAP provided participants with the opportunity to establish meaningful connections with key players in the

maritime and fishing sectors. These connections could lead to future partnerships, research collaborations, and job opportunities.

2. **Sharing of Experiences:** COSVAP, as an organization operating in the fishing and blue growth sector, could share its experiences and best practices with the participants. This knowledge exchange was valuable for those seeking to deepen their understanding of the industry and improve their practices.
3. **Practical Application of Knowledge:** The meeting provided participants with the chance to see how the theoretical knowledge gained during the workshop and training school could be applied in the real-world context. Observing how organizations like COSVAP managed challenges and seized opportunities in the sector offered a practical and concrete perspective.
4. **Inspiration for Innovation:** Interacting with an organization active in the blue growth sector could inspire innovation among the participants. Witnessing innovative projects and creative solutions adopted by COSVAP could stimulate new ideas and initiatives among workshop attendees.
5. **Opening to Possible Job Opportunities:** For those interested in working in the fishing and blue growth sector, the meeting with COSVAP could be an opportunity to explore potential job opportunities, internships, or collaborative projects.

In summary, the meeting with COSVAP provided participants with a window into the real-world applications of the knowledge acquired during the workshop and training school, bridging the gap between theory and practice and opening doors to new professional opportunities and collaborations.

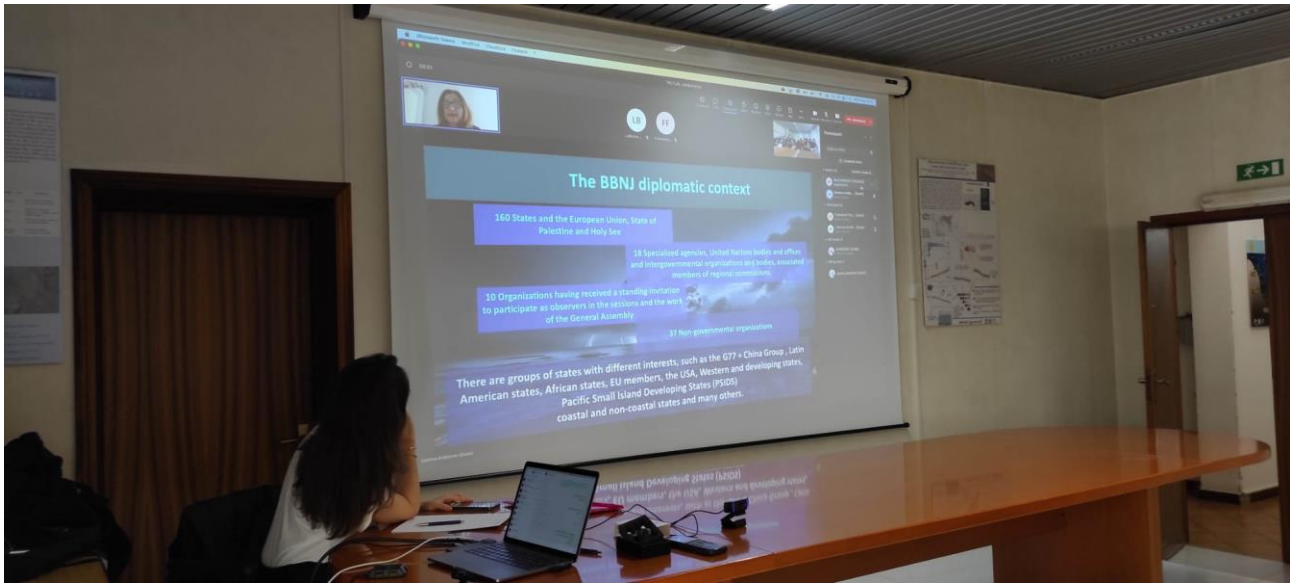


Figure 1 Dr Gemma Andreone Director of ISGI-CNR

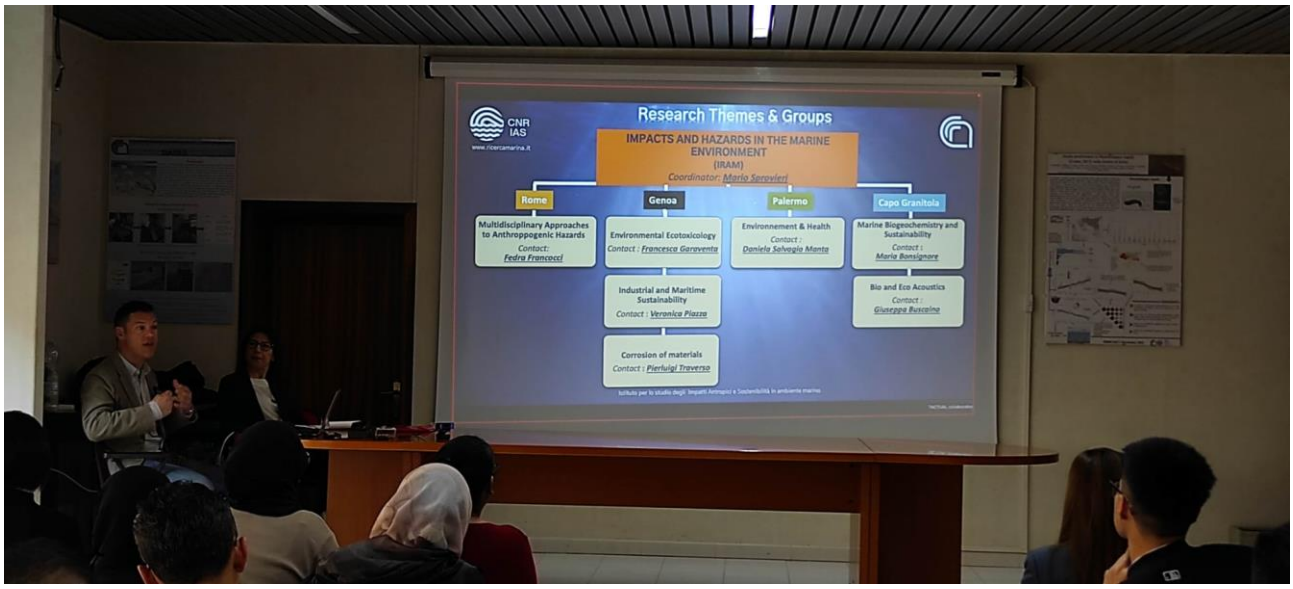


Figure 2 Dr Antonino Adamo IAS-CNR

Figure 3 Dr Francesco Filiciotto ISP-CNR

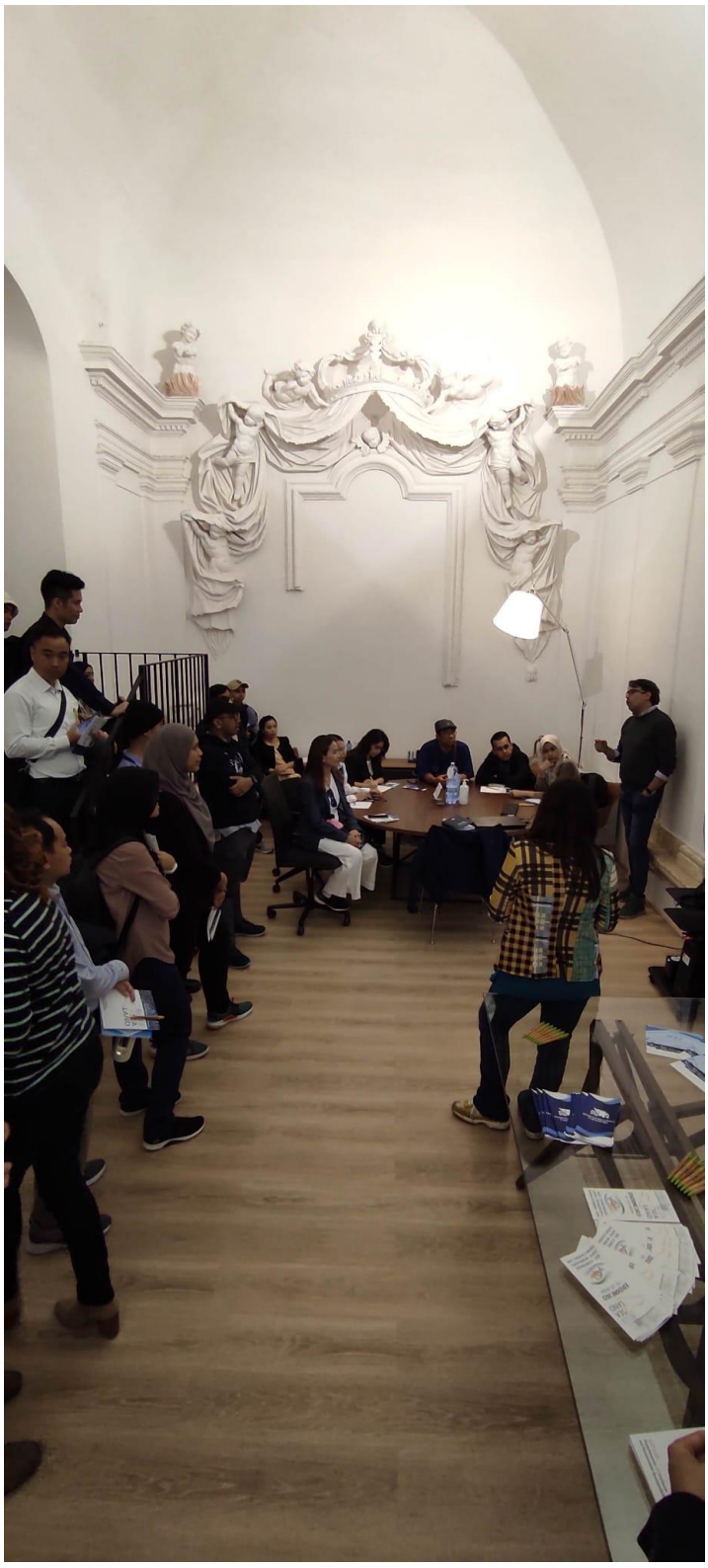


Figure 4 Vistit of staff and student of TACUAL workshop and training school at COSVAP in Mazara del Vallo

Day 3 Wednesday 10 th May

During the day, a workshop and training activity was organized to demonstrate the functionalities and usefulness of the 'MSP Challenge' simulator. The activity was conducted in collaboration with Breda University, particularly with Dr. Magali Goncalves from Breda University.

MSP Challenge is a marine spatial planning simulator designed to provide an interactive and educational experience on the integrated management of human activities in marine environments. This interactive tool is used to simulate realistic scenarios of marine spatial planning, allowing participants to explore the complex dynamics among various human activities such as fishing, tourism, renewable energy, marine conservation, and more.

Users of MSP Challenge can take on specific roles, such as government representatives, industry professionals, or environmental organizations, and must collaborate and make strategic decisions to sustainably manage marine resources. The simulator helps illustrate the challenges involved in marine spatial planning, encouraging collaboration, understanding, and dialogue among diverse stakeholders.

Figure 5 Class of MSP challange

In essence, MSP Challenge is an interactive educational tool that provides an engaging learning opportunity on issues related to marine resource management and marine spatial planning. It is often used in workshops, training courses, and educational activities to raise awareness and engage the public on the challenges and opportunities related to the sustainable management of our oceans and seas.

Organizing a session on MSP Challenge during TACTUAL was crucial for several reasons. Firstly, it provided participants with a hands-on experience, allowing them to engage directly with marine spatial planning concepts in a simulated environment. This interactive learning opportunity facilitated a deeper understanding of the complexities involved in managing human activities in marine spaces.

Secondly, MSP Challenge encouraged active collaboration and problem-solving among the participants. By assuming different roles and making decisions within the simulation, attendees gained insights into the perspectives of various stakeholders involved in marine spatial planning. This collaborative approach promoted dialogue and knowledge exchange among participants from diverse backgrounds, fostering a holistic understanding of the challenges and trade-offs in real-world marine planning scenarios.

Furthermore, the session served as a practical application of the theoretical knowledge acquired during the workshop and training school. Participants had the chance to apply the concepts, strategies, and decision-making skills learned in real-time, enhancing their ability to address similar challenges in their professional contexts.

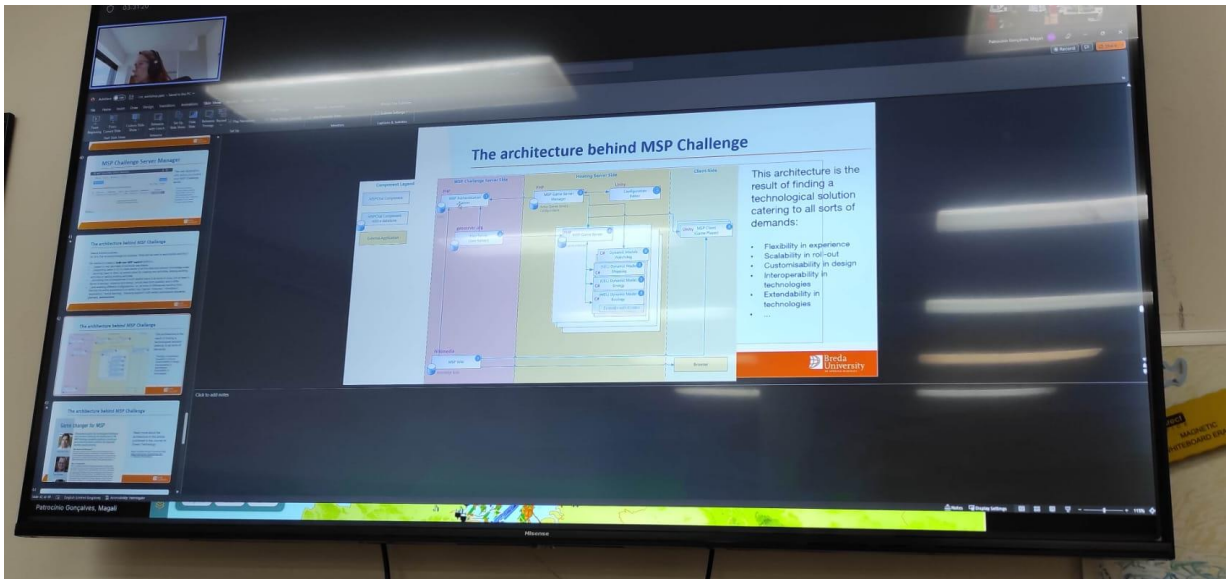


Figure 6 Dr Magali Goncalves

Lastly, MSP Challenge promoted a multidisciplinary approach to problem-solving. Participants from different disciplines and expertise areas collaborated, reflecting the interdisciplinary nature of marine spatial planning. This interdisciplinary engagement is essential in addressing the complex and interconnected issues related to marine resource management and sustainability.

In summary, the MSP Challenge session in TACTUAL was essential because it provided participants with an immersive, collaborative, and practical learning experience, fostering a deeper understanding of marine spatial planning and equipping them with valuable skills applicable to their respective fields.

Day 4 Thursday 11 th May

Capo Granitola Visit

During the day, a visit was organized to the Institute for Anthropogenic Impact and Sustainability in Marine Environment (IAS-CNR) in Capo Granitola."

The Institute for Anthropogenic Impact and Sustainability in Marine Environment (IAS-CNR) plays a vital role in the scientific community due to its significant objectives and research focus. The institute is dedicated to studying the impact of human activities on marine environments and promoting sustainable practices. Its core objectives include:

1. **Environmental Research:** IAS-CNR conducts in-depth research on the impact of various human activities on marine ecosystems. This research includes studying pollution, habitat destruction, climate change effects, and other anthropogenic factors that affect marine life.
2. **Biodiversity Conservation:** The institute works towards the conservation of marine biodiversity. Researchers at IAS-CNR study endangered species, habitat preservation, and restoration methods to protect the diverse marine life.
3. **Sustainable Development:** IAS-CNR focuses on sustainable development practices in marine environments. This includes researching sustainable fishing methods, aquaculture in coastal areas.
4. **Anthropogenic Impact Studies:** Researchers analyze the consequences of human-induced changes in marine ecosystems. This involves studying the impact of pollutants, overfishing, and climate change on marine organisms and habitats.
5. **Policy Recommendations:** IAS-CNR provides valuable data and research findings to policymakers and environmental organizations. By offering evidence-based recommendations, the institute contributes to the formulation of policies aimed at conserving marine ecosystems and promoting sustainable development.
6. **Educational Initiatives:** The institute is often involved in educational programs and initiatives, sharing its knowledge with students, researchers, and the public. This educational outreach enhances awareness about marine conservation and sustainable practices.

In summary, the Institute for Anthropogenic Impact and Sustainability in Marine Environment (IAS-CNR) is dedicated to researching and understanding the impact of human activities on marine ecosystems. Through their research, they contribute valuable insights to conservation efforts, policy-making, and sustainable development practices, playing a crucial role in preserving the marine environment for future generations.

The visit to the Institute for Anthropogenic Impact and Sustainability in Marine Environment (IAS-CNR) in Capo Granitola was crucial for the activities of TACTUAL for several reasons.

Firstly, it provided participants with a concrete opportunity to see the application of theories and methodologies discussed during the workshop and training in real-life situations. The visit allowed them to closely observe ongoing research activities, understand the technological tools used, and see how scientists tackle issues related to anthropogenic impacts in marine areas.

Secondly, the visit facilitated direct interaction with researchers and experts at the Institute. This firsthand knowledge exchange allowed participants to ask specific questions, engage in in-depth

discussions on topics of interest, and receive direct answers from those actively involved in field research.

Figure 7 visit of Capo Granitola IAS-CNR Institute

Additionally, the visit provided a practical and tangible perspective on the challenges and solutions in the field of sustainable management of marine resources. Seeing firsthand how the Institute addresses issues related to pollution, marine biodiversity conservation, and promoting sustainable development enriched participants' understanding of these topics.

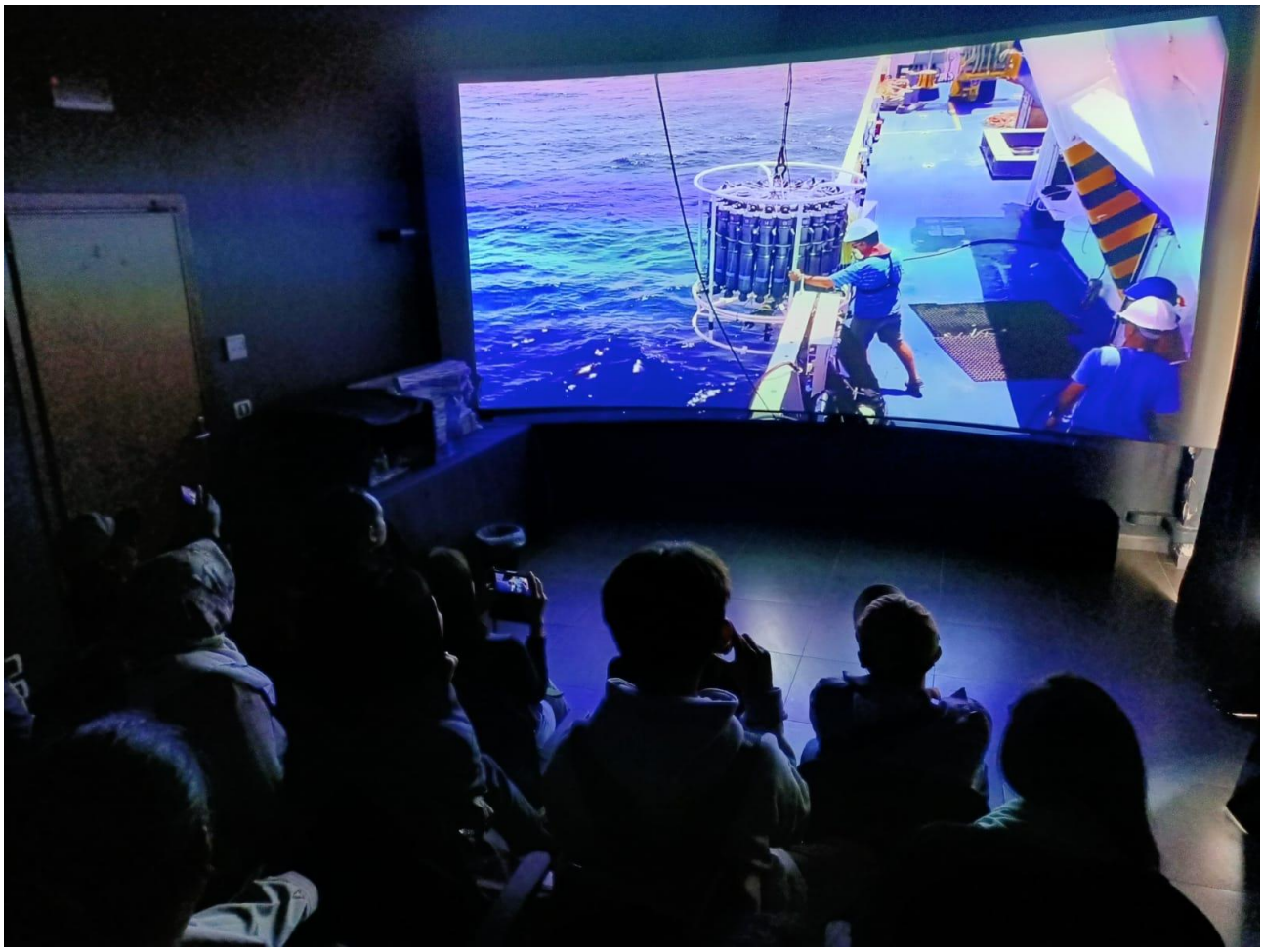


Figure 8 explanations of IAS-CNR research activities

Lastly, the visit inspired participants by providing concrete examples of how scientific research can have a positive impact on the marine environment. It demonstrated how research activities and conservation efforts can significantly contribute to the sustainable management of marine resources, motivating participants to consider innovative and practical solutions in their own work contexts.

In summary, the visit to IAS-CNR was instrumental for TACTUAL activities because it enhanced participants' experience, providing them with a practical and real-world perspective on the challenges and opportunities in managing marine resources. It facilitated direct interaction with industry experts, inspiring new ideas and approaches to sustainable marine environmental management.

Field trip

During the event, a field visit was organized to the archaeological park of Selinunte, an ancient Greek city located on the southwestern coast of Sicily. Selinunte is not only a testament to the rich historical and cultural heritage of the region but also serves as a model for interdisciplinary exploration. The park, with its well-preserved ruins, is expanding its activities beyond archaeology, embracing various disciplines. It has become an interdisciplinary hub, inviting researchers from diverse fields, not just archaeology, but also environmental conservation, landscape preservation, and marine resources management.

Figure 9 field trip at Selinunte Archeological Park

The main objective of this visit was to draw the participants' attention to themes related to coastal tourism and conservation, encompassing not only marine resources but also the preservation of landscapes. Selinunte, with its ancient port and traditions, has significantly influenced future generations. It stands as a representation of an ancient coastal city from the Greek period, and its historical significance makes it a focal point for cultural and scientific evolution in the Mediterranean world.

Furthermore, Selinunte showcases the intersection of cultural heritage and sustainable development. The region boasts excellent local agricultural, fishery, and gastronomic products. These local delicacies serve as a foundation for promoting sustainability and encouraging the consumption of locally sourced products (known as 'km 0' products). This model not only supports the local economy but also represents a sustainable approach to tourism. The success of Selinunte in integrating cultural preservation, interdisciplinary research, and sustainable tourism could potentially be replicated in other contexts, making it a valuable case study for sustainable development and heritage conservation.

Day 5 Friday 12 th May

During the final day of the workshop activities, several editorial tasks were finalized for the production of the volume that will be published by Springer. Meanwhile, students were engaged in preparing brief presentations about their CVs and skills, aimed at forming diverse working groups for the training school sessions (all the training activities and presentations by the students are attached).

Training School activities

The training activities were organized with the aim of stimulating students in problem-solving tasks. Specifically, during each day, an expert researcher in a specific field presented a topic in a brief frontal lecture, outlining the underlying scientific problems. Subsequently, students, divided into small working groups, collaborated to produce a presentation summarizing not only the topics

discussed but also methods and possible solutions. On some days, short field trips for further exploration were also organized. At the end of each day, students were required to present the results of their work to the researchers. This presentation took place in a small conference setting in front of other students who could participate in the debate through questions or suggestions.

Day 8 Monday 15th May

On this training day, Dr. Ludovica De Benedetti and Dr. Marianna Marzano assisted students in understanding the main legal issues related to 'The International Agreement on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction.' After explaining the theoretical aspects, the researchers helped students comprehend how to conduct international negotiations on environmental issues, emphasizing the priorities that should be considered in balancing the needs of the stakeholders. The ultimate goal was to conduct a simulation of an international agreement.

Day 9 Tuesday 16th May

During this co-held training activity, Dr. Vincenzo Maccarrone addressed the topic of 'Measuring ICZM Plan Performance,' discussing concepts related to sustainability, economic growth, endogenous development, and externalities. Dr. Bono delved into themes related to the shelf life of fishery products, with a particular focus on 'Combining Ozone and Modified Atmosphere Packaging (MAP) to Maximize Shelf-life and Quality of Striped Red Mullet (Mullus surmuletus).' On the same day, a field visit was conducted to 'Rosso di Mazara,' a globally leading company in the production of the local excellence 'Gambero Rosso di Mazara.' During the visit, the company owners explained how they added value to their product through specific packaging and marketing plans and how they certify their product.

Figure 10 Dr Gioacchino Bono

Figure 11 Visit of TACTUAL student at "Rosso di Mazara" company"

Day 10 Wednesday 17th May

Dr. Francesco Filiciotto's training activities focused on evaluating and discriminating signals emitted by marine organisms and assessing potential sources of underwater acoustic pollution. The training specifically concentrated on evaluating the underwater acoustic impact caused by pile driving activities near a marine protected area.

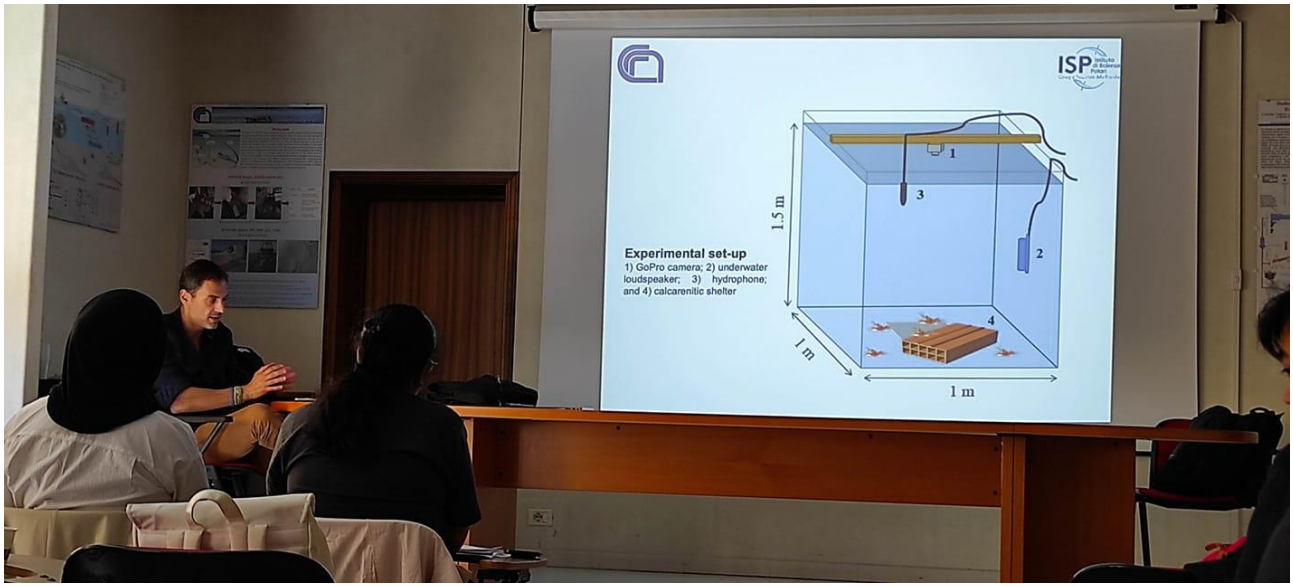


Figure 12 Dr Francesco Filiciotto

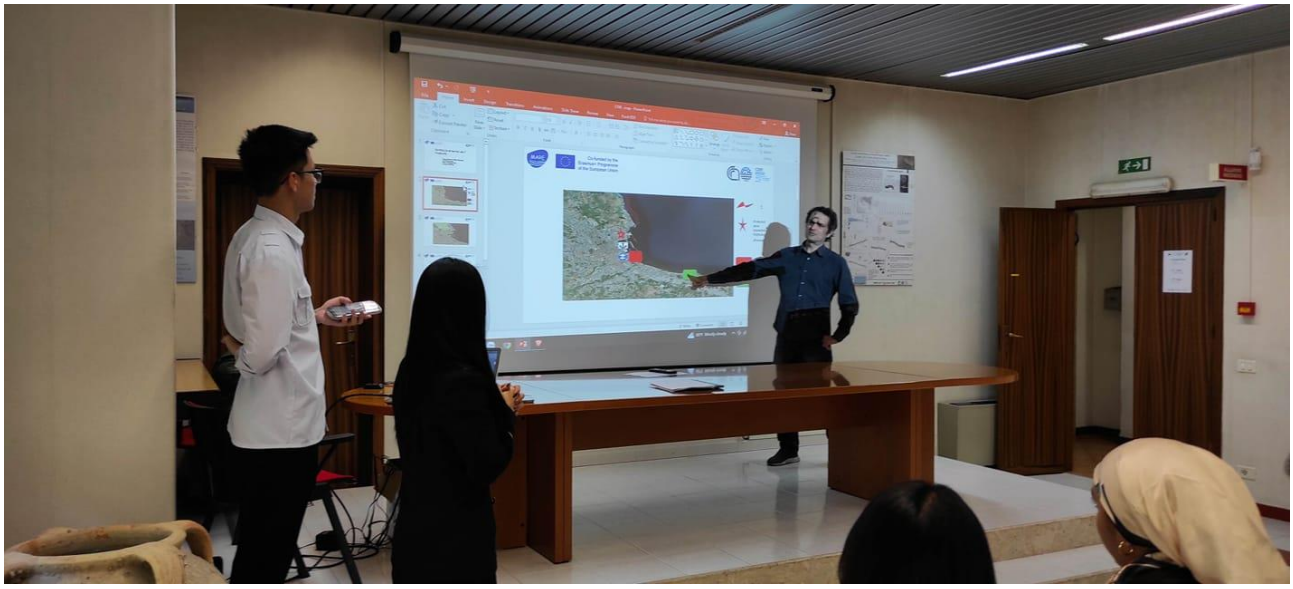
Day 11 Thursday 18th May

During this training activity, Professor Pietro Scandura had the opportunity to explain to the students the main issues related to coastal dynamics and the tools used for coastal defense. Through practical exercises and simulations, students were able to delve into the topics of 'Hydrodynamics and Coastal Sediment Transportation'.

Figure 13 Prof. Pietro Scandura

Day 12 Friday 19th May

Professor Daniele La Rosa's training activity focused on 'Coastal and Urban Planning in Coastal Zone Areas.' Students participated in a practical activity utilizing GIS-WebGIS technology to assess urban runoff levels."



After Professor La Rosa's lecture, students had the opportunity to meet the mayor of Mazara del Vallo, Dr. Salvatore Quinci. Mayor Quinci presented the activities undertaken by the municipality of Mazara del Vallo in the realm of sustainable management of coastal areas, local policies regarding sustainable fishing practices, and the offshore wind farms being implemented in the waters off Mazara del Vallo. At the end of the presentation, students had the chance to ask questions, demonstrating keen insight and effectiveness in their critical analysis of the topics discussed. The meeting allowed for an assessment of how TACTUAL training school activities have enhanced the students' understanding of coastal area issues from a multidisciplinary perspective.

Figure 14 Photo taken from the press release published by the Mayor of Mazara del Vallo's office.

Day 15 Monday 22th May

During the final day, it was verified whether the educational objectives had been achieved, and if the students had enhanced their ability to approach problems and develop a multidisciplinary perspective regarding integrated coastal and delta management.

Saturday 13th May; Sunday 14th May; Saturday 20th May; Sunday21th May Days 6-7 and 13-14

Throughout these days, students engaged in independent work activities. TACTUAL's organization encouraged students to use these days for networking, stimulating them to envision potential future research or collaborations.

Conclusion

The conclusions drawn from the activities conducted during the TACTUAL Workshop and Training School reflect significant success in promoting a multidisciplinary understanding and an integrated approach to coastal areas and delta management. Guided by experts in the field, students actively participated in lectures, practical exercises, and field visits, enhancing their knowledge and acquiring valuable practical skills.

The objective of improving the understanding of coastal area issues was achieved through detailed lectures, hands-on exercises, and interactive discussions. Topics ranged from coastal dynamics to underwater acoustic pollution, urban planning to sustainable fisheries management. Additionally, students were encouraged to collaborate, fostering the exchange of ideas and the formation of professional networks.

The visit to the Municipality of Mazara del Vallo, with the mayor's presentation on local initiatives for sustainable coastal area management, provided students with a unique opportunity to comprehend real challenges and practical solutions implemented at the local level.

In summary, the TACTUAL Workshop and Training School achieved its set goals, providing students with an in-depth, multidisciplinary perspective on integrated coastal area management. The activities undertaken broadened their horizons, promoting a more comprehensive understanding of the complex environmental and social issues related to coastal areas and deltas, excellently preparing them to tackle future challenges in the field of sustainable management of our marine environment.