



EVREST Project Report: Dissemination and Outreach Report

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1. INTRODUCTION

This report covers the activities performed in the framework of 'Task 6: Dissemination of results and findings'. The objectives of this task were to increase awareness and provide wide dissemination of the results obtained within the project, from international scientific research to the public.

This task was programmed for a duration of 24 months, and was coordinated by the director of Centro de Ciência Viva (CCV) de Tavira, Rita Borges. Because the director was substituted during the course of the project, current director is Ana Ramos, she became the coordinator of Task 6, included as EVREST team member in 21/03/2017.

All members of the scientific team are authors or co-authors of publications/communications that disseminated project results and findings within the scientific community (described in detail in section 2).

A team member was hired by Centro Ciência Viva de Tavira to pursuit the task of dissemination to non-specialists, Verónica Belchior, from 12/12/2017 until 11/06/2018, who worked with João Afonso and Ana Ramos at CCV Tavira. Members of the scientific team were also involved in science communication activities to the public. These activities are described in detail in section 3, whereas section 4 provides information about a project deliverable (Milestone 5 of the proposal), which is an exhibition module for the general public that integrates CCV Tavira permanent exhibition.

2. SCIENTIFIC DISSEMINATION

Scientific dissemination covered results and findings from several project tasks. Table 1 includes a list of publications and communications foreseen on the proposal and actually delivered by the project.

In the submitted proposal, the team was compromised to deliver six papers in peer-reviewed international journals, six communications in international conferences and three in national conferences, and public dissemination actions.

Table 1: Account of output indicators, according to FCT application layout, foreseen on the project proposal, delivered during the course of the project, and the balance between delivered and foreseen output indicators.

Type	Foreseen	Delivered	Difference
A - Publications			
Books (chapter)	0	1	+1
Papers in international journals	6	9	+3
Papers in national journals	0	0	
B - Communications			
Communications in international meetings	6	9	+3
Communications in national meetings	3	6	+3
C - Reports	3	17	+14
D – Organization of seminars and conferences	1	2	+1
E – Advanced training	0	0	
PhD Theses	0	0	
Master theses	1	2	+1
Others	0	2*	+2

*Internships reports from foreign Master students.

In the following subsections a full description of the scientific production mentioned in table 1 is given.

2.1 PUBLICATIONS

This section lists the full reference and URL of book chapters, papers published, in press or accepted for publication in international journals describing the project results and findings, organized in chronological order.

2.1.1 BOOK CHAPTERS

1. Carrasco, A.R. & Matias, A. (2019). "Backbarrier shores along the Ria Formosa lagoon". In: Aníbal, J., Gomes, A., Mendes, I., Moura, D. (eds.), *Ria Formosa: challenges of a coastal lagoon in a changing environment*. 1st edition. University of Algarve, Faro, ISBN 978-989-8859-72-3, pp. 17-28. <https://sapientia.ualg.pt/handle/10400.1/12475>

2.1.2 PAPERS IN INTERNATIONAL JOURNALS

1. Carrasco, A.R., Plomaritis, T., Reyns, J., Ferreira, Ó., Roelvink, D. (2018). "Tide circulation patterns in a coastal lagoon under sea-level rise". *Ocean Dynamics*: 68(9), 1121-1139. <https://doi.org/10.1007/s10236-018-1178-0>
2. Kombiadou, K., Matias, A., Carrasco, R., Ferreira, Ó., Costas, S., Vieira, G. (2018). "Towards Assessing the Resilience of Complex Coastal Systems: Examples from Ria Formosa (South Portugal)". *Journal of Coastal Research*: SI 85, 646–650. <https://doi.org/10.2112/SI85-130.1>
3. Ferreira, Ó., Plomaritis, T.A., Costas, S. (2019). "Effectiveness assessment of risk reduction measures at coastal areas using a decision support system: Findings from Emma storm". *Science of the Total Environment*: 657, 124-135. <https://doi.org/10.1016/j.scitotenv.2018.11.478>
4. Kombiadou, K., Matias, A., Ferreira, Ó., Carrasco, A.R., Costas, S., Plomaritis, T. (2019). Impact of human interventions on the evolution of the Ria Formosa barrier island system (S. Portugal). *Geomorphology*: 343, 129-144. <https://doi.org/10.1016/j.geomorph.2019.07.006>
5. Matias, A., Carrasco, A.R., Loureiro, C., Masselink, G., Andriolo, U., McCall, R., Ferreira, Ó., Plomaritis, T.A., Pacheco, A., Guerreiro, M. (2019). Field measurements and hydrodynamic modelling to evaluate the importance of factors controlling overwash. *Coastal Engineering*: 152, 103523. <https://doi.org/10.1016/j.coastaleng.2019.103523>
6. Carrasco, A.R. (2019). Simple assessment of spatio-temporal of salt marshes ecological services. *Frontiers in Ecology and Evolution*: 7, 77. <https://doi.org/10.3389/fevo.2019.00077>
7. Kombiadou, K., Costas, S., Carrasco, A.R., Plomaritis, T.A., Ferreira, Ó., Matias, A. (2019). Bridging the gap between resilience and geomorphology of complex coastal systems. *Earth-Science Reviews*: 198, 102934. <https://doi.org/10.1016/j.earscirev.2019.102934>
8. Lazarus, E.D., Davenport, K.L., Matias, A. (2019, in review). Dynamic allometry in coastal overwash morphology. *Earth Surface Dynamics*. <https://doi.org/10.5194/esurf-2019-39>
9. Herrero, X., Costas, S., Kombiadou, K. (2019, in press). Coastal ridge constructive processes at a multi-decadal scale in Barreta Island (Southern Portugal). *Earth Surface Processes and Landforms*.
10. Matias, A., Carrasco, A.R., Ramos, A., Borges, R. (submitted). Engaging children in geosciences through storytelling and creative dance. *Geosciences Communication*.

2.2 COMMUNICATIONS

This section lists the full reference of communications in international and national scientific meetings undertaken by EVREST project team members, contributing to the communication and discussion of project results between peers.

2.2.1 COMMUNICATIONS IN INTERNATIONAL MEETINGS

1. Matias, A., Carrasco, A.R., Loureiro, C., Andriolo, U., Masselink, G., Guerreiro, M., Pacheco, A., McCall, R., Ferreira, Ó., Plomaritis, T., (2017). "Measuring and modelling overwash hydrodynamics on a barrier Island", *Coastal Dynamics 2017 Conference*, 12-16 June 2017, Helsingør, Denmark. Format: Oral communication.
URL: http://coastaldynamics2017.dk/onewebmedia/105_ana_matias.pdf
2. Matias, A., Carrasco, A.R., Ramos, A., Borges, R. (2018). "Coastal geology to children through performative arts". *EGU General Assembly 2018*, 8–13 April 2018, Vienna, Austria, *Geophysical Research Abstracts*, Vol. 20, EGU2018-2729. Format: Interactive Content presentation.
URL: <https://meetingorganizer.copernicus.org/EGU2018/EGU2018-2729.pdf>
3. Kombiadou, K., Matias, A., Carrasco, R., Ferreira, Ó., Costas, S., Plomaritis, T., (2018). "Towards Assessing the Resilience of Complex Coastal Systems: Examples from Ria Formosa (South

Portugal)”. Proceedings from the International Coastal Symposium (ICS) 2018, 13-18 May 2018, Busan, Republic of Korea. Format: Oral presentation.

URL: <http://ics2018.org/html/?pmode=notice&smode=view&seq=372>

4. Kombiadou, K., Matias, A., Carrasco, R., Ferreira, Ó., Costas, S., Plomaritis, T., (2018) ‘Assessing the Resilience of the Ria Formosa Barrier Island System: Preliminary Findings’, Protection and Restoration of the Environment, 3-6 July 2018, Thessaloniki, Greece. Format: Oral presentation.
URL: <http://pre14.civil.auth.gr/>
5. Carrasco, A.R., Kombiadou, K., Matias, A. (2018). The influence of sediment availability to coastal ecosystem services provision. ESP2018, 15-19 October 2018, S. Sebastian, Spain. Format: Poster presentation.
URL: <https://www.esconference.org/eu2018/wiki/384868/book-of-abstracts#T.%20Thematic%20Sessions>
6. Carrasco, A.R., Kombiadou, K., Matias, A., Costas, S., Ferreira, Ó. (2018). Ecosystem processes and services provision in salt marshes facing varying sediment availability. IX Symposium on the Iberian Atlantic Margin, 4-7 September 2018, Coimbra, Portugal. Format: Poster presentation.
URL : http://evrest.cvtavira.pt/wp-content/uploads/2018/09/051_CarrascoEtAl-MIA2018.pdf
7. Kombiadou, K., Matias, A., Costas, S., Carrasco, A.R., Ferreira, Ó., Plomaritis, T. (2019). Assessment of Natural and Anthropogenic Drivers to the Evolution of Ria Formosa Barrier Island System. 9th International Conference on Coastal Sediments 2019, 27 – 31 May 2019, Tampa/St. Petersburg, Florida, USA, pp. 57-70. Format: Oral presentation.
URL: https://www.worldscientific.com/doi/abs/10.1142/9789811204487_0006
8. Taborda, R., Ribeiro, M. (2019). Modeling shoreline evolution and headland sediment bypassing at platform beaches. 9th International Conference on Coastal Sediments 2019, 27 – 31 May 2019, Tampa/St. Petersburg, Florida, USA, pp. 2746-2760. Format: Oral presentation.
URL: https://www.worldscientific.com/doi/10.1142/9789811204487_0235
9. Kombiadou, K., Costas, S., Carrasco, A.R., Plomaritis, T., Ferreira, Ó., Matias, A., (2019). From geomorphology to resilience of barrier islands: transferring concepts from theory to application. X Jornadas de Geomorfología Litoral, 4-6 September 2019, Castelldefels, Spain. Format: Oral presentation.
URL: <https://xjornadasgeomorfologialitoral.icm.csic.es/>.



Figure 1: EVREST team members participation in the international conference “X Jornadas de Geomorfología Litoral”, Castelldefels, Spain, September 2019.

2.2.2 COMMUNICATIONS IN NATIONAL MEETINGS

1. Matias, A., Kombiadou, K., Carrasco, A.R., Ferreira, Ó., Costas, S., Plomaritis, T. (2017). The EVREST project: evolution and resilience of barrier Island systems. 4ª Conferência sobre Morfodinâmica Estuarina e Costeira, 18-19 May 2017, Oporto, Portugal. Format: Oral presentation.
URL: http://mec2017.lnec.pt/pdf/resumos_final_v2.pdf
2. Matias, A., Carrasco, A.R., Loureiro, C., Andriolo, U., Masselink, G., Guerreiro, M., Pacheco, A., McCall, R., Ferreira, Ó., Plomaritis, T. (2017). Parameters influencing overwash hydrodynamics. 4ª Conferência sobre Morfodinâmica Estuarina e Costeira, 18-19 May 2017, Oporto, Portugal. Format: Oral presentation.
URL: http://mec2017.lnec.pt/pdf/resumos_final_v2.pdf
3. Madeira, F., Antunes C. (2018). Análise da variabilidade relativa do Nível do Mar para a região do Algarve. 5ª Jornadas de Engenharia Hidrográfica, June 19, 2018, Lisbon, Portugal. Format: Oral presentation.
URL: <http://www.hidrografico.pt/jornadas2018.php>
4. Matias, A., Carrasco, A.R., Borges, R. (2018). Recurso à dança criativa e “storytelling” para a comunicação de ciência. 6ª SciComPT 2018, 10-12 October 2018, Figueira de Castelo Rodrigo, Portugal. Format: Poster presentation. Format: Oral presentation.
URL: http://scicom.pt/wp-content/uploads/2018/10/SciComPT-2018_Programa-Detalhado.pdf
5. Matias, A., Vicente, P.N., Mena, A. (2019). Projeto 'Dar corpo às memórias': Uma experiência de Ciência & Arte para a inclusão social. 7º Congresso da Rede de Comunicação de Ciência e Tecnologia de Portugal – SciComPT 2019, 29-31 May 2019, Aveiro, Portugal. Format: Oral presentation.
URL: <http://www.scicom2019.pt/wp-content/uploads/2019/02/livro-resumos.pdf>
6. Matias, A., Carrasco, A.R. (2019). Assets of coastal geoscience communication. 5ª Conferência sobre Morfodinâmica Estuarina e Costeira, 24-26 June 2019, Lisbon, Portugal. Format: Oral presentation.



Figure 2: Oral communications by EVREST team members at the national conference MEC2019, Lisbon, June 2019.

2.3 REPORTS

This section lists the reports produced under the several EVREST tasks, covering also administrative and fieldwork reports.

Table 2: Account of reports produced by the project, discriminated by administrative reports, fieldwork reports and task reports, foreseen on the project proposal, delivered during the course of the project, and the balance between delivered and foreseen projects.

Type	Foreseen	Delivered	Difference
Reports	3	17	+14
Administrative reports	3	5	+2
Task reports	0	8	+8
Fieldwork reports	0	4	+4

- Three progress reports were produced, after 12, 24 and 36 months of project execution, mandatory by FCT rules. The 1st and 2nd annual reports, dated 08/06/2016 and 01/06/2017, respectively, provided short descriptions of completed work; justifications of deviations from the approved proposal, both on the scientific and budget perspectives; and a list of publications and output indicators. The 3rd and final report provides a more comprehensive description of project results and comprises all tasks. Besides these progress reports, two more administrative reports were produced describing the 1st and 3rd annual project meetings and workshops.
- Eight reports were produced describing methods used and results from the several tasks of the project, as follows.

Task 1: Data collection and GIS integration:

1. Kombiadou, K., Matias, A. (2017). *EVREST GIS Platform Report*. CIMA – Universidade do Algarve. 13pp.

Task 2: Quantification of hydrodynamic and morphologic variables:

2. Madeira, F. (2017). *Análise da variabilidade relativa do nível do mar para a região do Algarve*. Instituto Dom Luiz, Faculdade de Ciências da Universidade de Lisboa. 16 pp.

3. *Plomaritis, T., Kombiadou, K., Matias, A. (2019). Analysis of wave climate. CIMA – Universidade do Algarve. 10 pp.*
4. *Antunes, C., Madeira, F. (2019). Analysis of Sea Level Rise. CIMA – Universidade do Algarve. 12 pp.*

Task 3: Analysis of geomorphological evolution:

5. *Kombiadou, K., Matias, A. (2018). Synthetic report on geomorphological evolution of the study sites. CIMA – Universidade do Algarve. 38 pp.*

Task 4: Modelling barrier island and lagoon system:

6. *Carrasco, R., van den Hoven, K., Ferreira, Ó. (2019). Modelling morphological impact of sea-level rise in the Ria Formosa lagoon. CIMA – Universidade do Algarve. 8 pp.*

Task 5: Integration of results and quantification of resilience:

7. *Kombiadou, K., Matias, A. (2019). Report on the resilience of barrier systems. CIMA – Universidade do Algarve. 42 pp.*

Task 6: Dissemination of results and findings:

8. *Matias, A., Ramos, A. (2019). Dissemination and Outreach Report. Centro de Ciência Viva de Tavira. 21 pp.*
- Four reports were produced describing fieldwork undertaken within EVREST project, mostly related to Tasks 1 and 2:
 9. *Matias, A., Carrasco, A.R. (2016). Preparatory fieldwork in Ria Formosa. CIMA – Universidade do Algarve. 6 pp.*
 10. *Antunes, C., Madeira, F. (2017). Tide observation campaign along the Algarve coast. Instituto Dom Luiz, Faculdade de Ciências da Universidade de Lisboa. 4 pp.*
 11. *Antunes, C., Madeira, F. (2017). Tide observation campaign along the Algarve coast: Lagos and Barreta Island. Instituto Dom Luiz, Faculdade de Ciências da Universidade de Lisboa. 3 pp.*
 12. *Matias, A., Kombiadou, K., Carrasco, A.R., Costas, S., Ramires, M., Robbins, E., Sousa, L. B. (2017). Fieldwork in Culatra Island. CIMA – Universidade do Algarve. 30 pp.*

2.4 ORGANIZATION OF SEMINARS AND CONFERENCES

2.4.1. ORGANIZATION OF CONFERENCES

Three members of the EVREST project team participated on the organizing committee of two national conferences, promoting opportunities to disseminate project results:

4ª Conferência sobre Morfodinâmica Estuarina e Costeira, 18-19 May 2017, Oporto, Portugal.

5ª Conferência sobre Morfodinâmica Estuarina e Costeira, 24-26 June 2019, Lisbon, Portugal

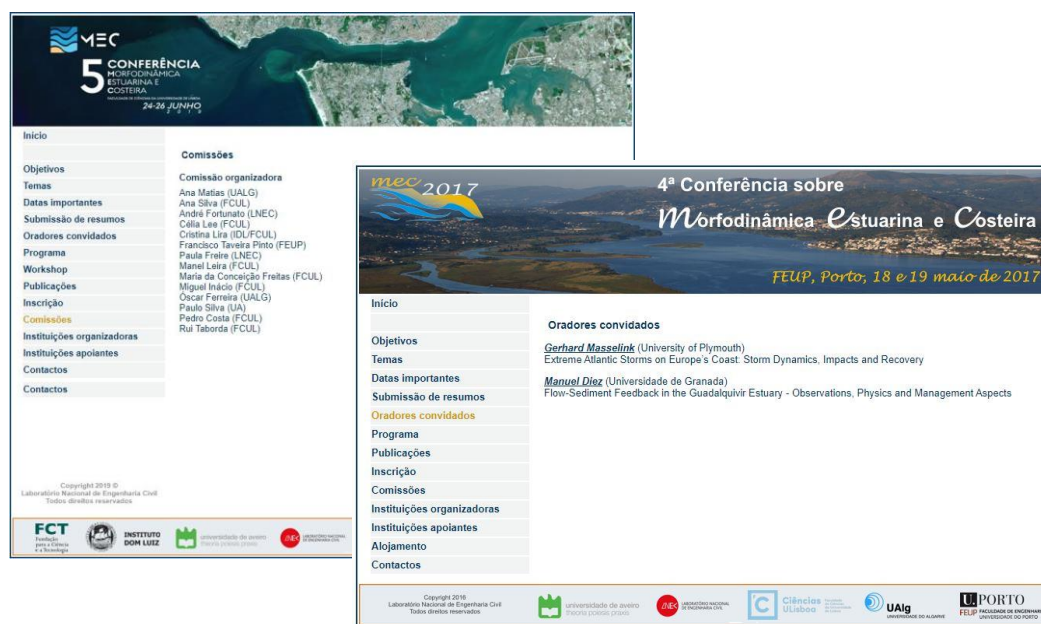


Figure 3: Webpages of national conferences MEC2017 and MEC2019, co-organized by EVREST project team members A. Matias, Ó. Ferreira, and R. Taborda. MEC2017 conference invited speaker was EVREST consultant Prof. Gerhard Masselink, that contributed within the tasks of results discussion of EVREST project.

2.4.2. ORGANIZATION OF SEMINARS

Within the EVREST project, three open seminars to the academic audiences were organized. The lectures given by L. Moore and G. Masselink were also organized in the framework of the MSc programme ‘Marine and Coastal Systems’ of the University of Algarve. Seminar details:

22nd September 2016: CIMA Advanced Open Seminar and MSc. Opening Lecture by Laura J. Moore, from the University of North Carolina – Chapel Hill, USA, entitled “Barrier island ecomorphodynamics and response to changing climate”, at Pedagogical Complex, Amphitheater A.

17th February 2017: CIMA Advanced Open Seminar by Mónica Martins, from Instituto de Geografia e Ordenamento do Território da Universidade de Lisboa, entitled “How dune plants translate sea erosion: A case study along the Portuguese coast”, at Building 8, Room 3.24.

27th September 2018: CIMA Advanced Open Seminar and MSc. Opening Lecture by Gerd Masselink, from the University of Plymouth, entitled “Variability in the north-east Atlantic wave climate and its influence on annual-to-decadal beach dynamics”, at Pedagogical Complex, Amphitheatre A.



Figure 4: L. Moore and G. Masselink seminars advertisement.

2.4.3. ORGANIZATION OF WORKSHOPS

Within the EVREST project, two workshops were organized for the project researchers, students involved in the project, and science communication staff. Workshop details:

1st EVREST workshop took in 21-12 September 2016, at Building 7, room 2.57. The workshop included a geomorphological field trip to Culatra Island and Barreta Island, an ecological field trip to Tavira Island, a visit to Centro Ciência Viva de Tavira exhibitions, and the following presentations:

- Matias, A.: “EVREST project in brief”
- Ferreira, Ó.: “The Ria Formosa barrier islands”
- Costas, S.: “Dunes and barrier of the past”
- Roelvink, D.: “Modelling on the West Frisian barrier islands”
- Antunes, C. & Taborda, R.: “The sea-level records of Portugal”
- Plomaritis, T. & Carrasco, A.R.: “Modelling storm and sea-level rise impacts on barriers”
- L. Moore: “Barrier island ecomorphodynamics and response to changing climate”

2nd EVREST workshop took place in 27-28 September 2018, at Building 2, room 2.11. The workshop included presentations of scientific results and of the dissemination activities. The second part was composed of a brain-storm open discussion the project results. Presentations were the following:

- Matias, A.: “Introduction/Welcome”
- Kombiadou, K.: “Recent barrier evolution in Ria Formosa”
- Carrasco, A.R.: “Marsh evolution in the Ria Formosa lagoon”
- Otero, X.: “Evaluation of coastal barrier constructive processes on Barreta Island”
- Roelvink, D.: “Modelling on the West Frisian barrier islands”
- Madeira, F.: “Assessment of relative sea level rise for Algarve region”
- Ramos, A. & Afonso, J.: “CCVT dissemination activities – EVREST Science Club”
- Kombiadou, K.: “Passing from evolution to resilience”
- Masselink, G.: “Variability in the north-east Atlantic wave climate and its influence on annual-to-decadal beach dynamics”.



Figure 5: Sample images from the 1st workshop, September 2016.

2.5 ADVANCED TRAINING

2.5.1 MASTER THESES

Xabier Herrero Otero (2018). *Evaluation of coastal barrier constructive processes on Barreta Island, Southern Portugal*. MSc, University of Algarve & Vrije Universiteit Amsterdam.

Dimitra Alkisti Pliatsika (2018). *Exploring aeolian sediment transport potentials and aeolian activity at Ria Formosa*. MSc Marine and Coastal Systems, University of Algarve.

Pedro Miguel de Sousa Vinagre Amado (ongoing). *Salt marsh response to changing hydrodynamics: the case of Ancão Inlet migration (Ria Formosa coastal lagoon)*. MSc Marine and Coastal Systems, University of Algarve.

Gustavo Carvalho Braga Vieira (ongoing). *Storm impact and recovery of sand barriers after extreme events*. MSc Marine and Coastal Systems, University of Algarve.

2.5.2 INTERNSHIP REPORTS

Emily Robbins (2017). *Evolution and resilience of barrier islands systems*. Internship for the MSc in Expertise and management of the coastal environment. University of Algarve & European Institute for Marine Studies (IUEM) in Brest, France. http://evrest.cvtavira.pt/wp-content/uploads/2017/09/Report_Emily_Robbins_MasterStudentInternship.pdf

Marine Fouin (2018). *Long term evolution of the salt marsh area within the Ria Formosa lagoon*. Internship for the MSc in Environmental management and rural development. University of Algarve & Université de Lorraine Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires in Nancy, France.

3. DISSEMINATION TO NON-SPECIALISTS

3.1 WEBSITE

The EVREST project website was created following a structure defined by A. Matias and K. Kombiadou with contributes from the rest of EVREST team, design by K. Kombiadou, and hosted by Centro Ciência Viva, which is responsible for its maintenance. The site is created using the WordPress platform and is regularly updated by K. Kombiadou by uploading project deliverables (papers, reports, datasets – on section About EVREST), adding media materials as they are produced (leaflet, posters, radio broadcasts, etc. – on section Media Center), and news about the project progress, participation in conferences, students that are involved, etc – on section News & Events.

The website was a project milestone (M1), foreseen to be delivered during the first year of project execution. It is online since 09/11/2016.

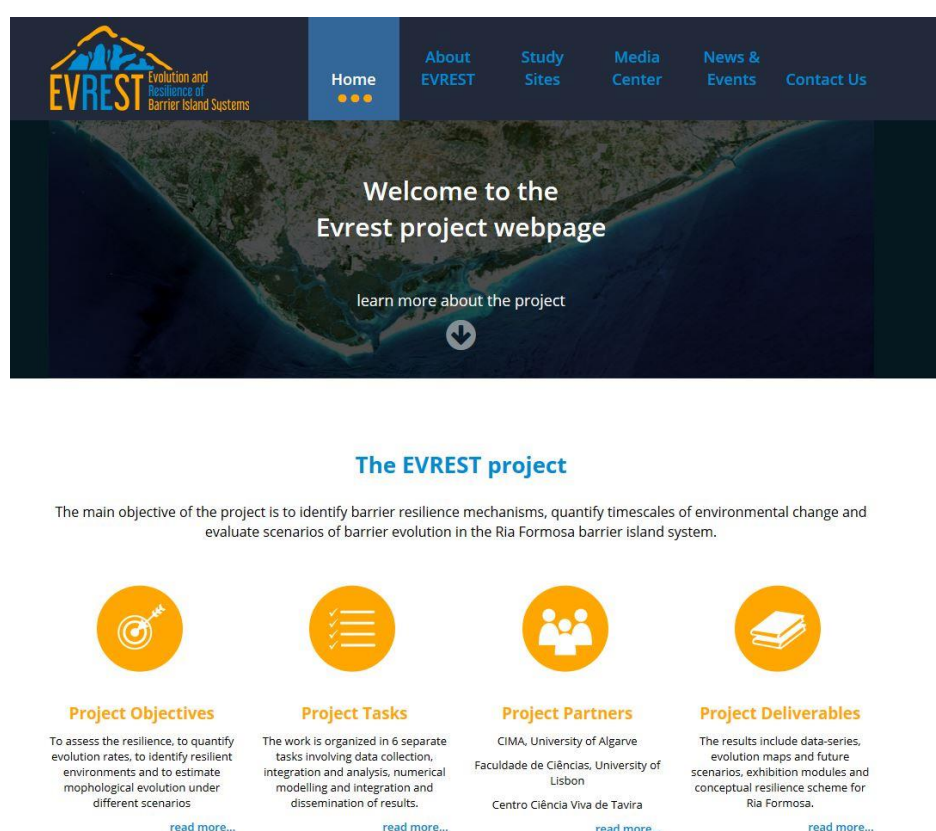


Figure 12: EVREST project webpage home.

3.2 PARTICIPATION IN MEDIA

National radio (Antena 1) interview to A. Matias for the series '90 segundos de ciência', where EVREST project was approached. The interview was broadcast on 30/03/2017 and 31/03/2017. It can be found in <https://www.90segundosdeciencia.pt/episodes/ep-94-ana-matias/>.

Regional radio (RUA FM) interview to A. Matias for the series 'Projetoscópio', where EVREST project was briefly described. The interview was broadcast on in 28/03/2018. It can be found in <https://www.mixcloud.com/RUAFM/projetosc%C3%B3pio-28mar-evrest-cima-ana-matias-000406/>.



Figure 6: Participation in radio programmes.

3.3 PARTICIPATION IN EVENTS

3.3.1 SESSIONS IN SCHOOLS

The EVREST team participated in Science and Technology Week 2016, with the lecture by A. Matias & A.R. Carrasco “Construction and destruction of the islands in Ria Formosa”, to high-school students, at Escola Secundária de Tavira, on 24 November 2016. The presentation is available at http://evrest.cvtavira.pt/wp-content/uploads/2017/03/SemanaCT_2016_MATIASCARRASCO.pdf



Figure 7: “Science and Technology Week 2017” presentation in Escola Secundária de Tavira, November 2016.

Team member Óscar Ferreira presented an invited talk at the high-school of Vila Real de Santo Antonio (VRSA), entitled “A Geologia Ambiental das praias de VRSA”, given to 150 students within the scope of the ECOESCOLAS Day. 8 March 2019

Team member Óscar Ferreira presented invited talk at Escola de Hotelaria e Turismo (Faro), under the scope of the event Faro e a Ria Formosa, organised by the União das Freguesias de Faro, entitled “O Sistema de Ilhas Barreira da Ria Formosa: Caracterização e Evolução”, given to a broad audience of about 80 persons. 29 March 2019.

3.3.2 FIELD TRIPS

The EVREST team participated in the “Ria Formosa Week 2018”, by invitation of Centro Ciência Viva do Algarve and Câmara Municipal de Faro, by means of a field trip to Culatra Island with three classes of 4th grade students from Faro. The students visited the several barrier environments (marsh, dune and beach) and participated in hands-on activities.



Figure 10: Field trip to Culatra Island in the framework of “Semana da Ria Formosa”, April 2018.

Team member Óscar Ferreira guided a field trip to the Ria Formosa (Culatra Island) covering an overall explanation of the Ria Formosa evolution and environments within the event “Saberes da Ria II” organised by Faro municipality, attended by 40 persons, 8 May 2019.

Filed trip with students (40) from IHE UNESCO (Delft, Netherlands) to Ria Formosa (Culatra Island) to show the environments and evolution of the barrier island, 20 May 2019.

3.3.3 FAIRS, EXHIBITIONS, DEBATES

The EVREST project participated in the annual meeting of the Portuguese science and technology community “Encontro Ciência 2017”, held at the Centro de Congressos de Lisboa. On 3 July 2017, an EVREST stand was set at the exhibition hall, including the EVREST roll-ups, posters, flyers, and a permanent presentation on display. Three EVREST team members were present to provide additional information.



Figure 8: Stand of EVREST project in “Ciência 2017”.

The EVREST team participated in European Researchers Night 2017, at the Centro Ciência Viva de Tavira on Friday, September 29th, with the following activities:

10:00 - 13:00: Presentation of the EVREST project (posters, presentation, discussions).

10:00 - 12:00: Activities with primary school students “O mar enrola na areia”: The activities are designed to familiarise students with the sediment transport processes in beaches. The activity was conceived and interpreted by EVREST team members A. Matias and A.R. Carrasco from CIMA - University of Algarve.

21:00 - 22:00: Science café event about “Climate Changes: Impact in Marine Life and Coastal Zones”. Participating researchers from EVREST: Ferreira, Ó., Costas, S. and Borges, R.



Figure 9: Science Café event in Centro Ciência Viva de Tavira, in the framework of European Researchers Night 2017.

EVREST project tasks and results were presented during the Science and Technology Week 2017 – Science Fair organized at CCV Tavira, on 24 November 2017. 148 students mainly from high schools participated in the different activities.



Figure 10: Science and Technology Week 2017 – Science Fair organized at CCV Tavira.

CCV Tavira team developed activities related to dune formation and shoreline protection (dunes and saltmarsh) for more than 200 children (kindergarten and primary school) during the Children and Environment Week of Tavira (4-8 June 2018).



Figure 11: Activities developed during the Children and Environment Week of Tavira.

A field trip to the Barril beach (Tavira island) was conducted for the general public during the Ciência Viva Summer program 2019 (21 August, 10 participants).

<https://www.cienciaviva.pt/veraocv/comum/2019/> | ID7363

3.4 EVREST SCIENCE CLUB

3.4.1 SESSIONS IN SCHOOLS

A three session-based Science Club (2 sessions at the class-room and 1 field-trip, section 3.4.2) was developed for the 4th grade students of Tavira Municipality during 2018 (215 students, 11 classes). The class-room activities consisted of hands-on activities focusing on sediment composition of the saltmarsh (1st session, March to April) and dunes formation and their role on shoreline protection (2nd session, April to May).

3.4.2 FIELD TRIPS

In addition to the classroom sessions, 10 classes participated in a field trip to the Barril beach (Tavira island) to observe and identify the different habitats (salt marsh and dune system, forest), sediment (mud and sand) and fauna and flora.

Table 3: Dates of science club sessions.

Class	School	Sessions and field trip dates	Number of students
3º/4ºC	EB1 Conceição	13.03, 03.05, 19.06	17/17/17
4º	Jardim Escola João Deus	16.03, 27.04, 21.05	16/16/16
4ºA	EB Horta do Carmo	20.03, 23.05, 28.05	18/19/18
4ºB	EB Horta do Carmo	20.03, 23.05, 19.06	20/24/20
4ºD	EB Horta do Carmo	20.03, 23.05, 28.05	21/19/19
2º/4ºD	EB Horta do Carmo	20.03, 23.05, NA	21/19/0
4º	EB Santa Luzia	22.03, 24.04, 08.06	20/20/20
4ºC	EB Nº1	11.04, 09.05, 21.06	20/19/19
4ºB	EB Nº1	22.04, 08.05, 19.06	22/22/21
4ºD	EB Nº1	26.04, 08.05, 21.06	18/17/18
4ºA	EB Nº1	27.04, 17.05	22/23/22



Figure 12: Science Club activities.

3.4.3 OTHER ACTIVITIES

The Science Club visited the UALG 2018 Easter Camp and a total of 24 students (1st to the 6th grades) participated in the dune formation and shoreline protection (dunes and saltmarsh) hands-on activities.

3.5. SCIENCE & ART ACTIVITIES

An informal education activity called “The Sea Rolls the Sand” focusing on ocean dynamics was designed for 10-year-old students (sample video here: <http://evrest.cvtavira.pt/wp-content/uploads/2017/12/MOV01638.mp4>). The activity was developed by merging techniques and tools from arts, science, science communication and storytelling. It combines coastal science concepts (wind, waves, currents, and sand), storytelling techniques (narrative arc), and creative dance techniques (movement, imaginative play, and sensory engagement). A sequence of six exercises was proposed starting in the generation of offshore ocean waves and ending with sediment transport on the beach, during storm/fair-weather conditions. Scientific concepts were then translated into structured creative movements, within imaginary scenarios, and accompanied by sounds or music.

The programme was performed six times, within national and international initiatives. During the first two times, the sessions were included in the programme of the “European Researcher Night”, in September, 29th, 2017. These sessions took place in the educational laboratory of the science centre, which was emptied as much as possible to create space for physical activities. The other four times, the sessions were included in a national initiative “Science and Technology Week”, in November 23th and 24th, 2017. These sessions took place in three schools, including private and public schools, on classrooms and in the gym.

Overall 112 students participated in the programme, divided in school classes, varying between 15 and 22 students per session. summing 112 students. It was an inclusive programme since all students

in the class participated, including children with several mild types of cognitive and neurological impairment.



Figure 11: Sample pictures of the activity “The Sea Rolls the Sand” covering different sessions.

3.6. EDUCATIONAL OFFER

The sessions developed at the EVREST Science Club (section 3.4) were adapted to the different educational years and were included in the 2018/2019 & 2019/2020 Educational offer of CCV Tavira. Until now 284 students were involved in these activities (1st and 2nd stage of basic education).



Figure 14: CCV Távira Educational Offer for 2018/2019.

3.7 OUTREACH MATERIALS

An informative leaflet on the project, directed to the public, has been designed and distributed in related events since June 2017. The leaflet is available at http://evrest.cvtavira.pt/wp-content/uploads/2017/06/EVREST_flyer.pdf

A rollup for the project was designed and printed in June 2017 and has been, since, used in related activities. The rollup is shown in Figure 8.

Two posters, one with information on the barrier islands of Ria Formosa (http://evrest.cvtavira.pt/wp-content/uploads/2017/03/poster_RiaFormosa.pdf) and another on the evolution of Culatra Island (http://evrest.cvtavira.pt/wp-content/uploads/2017/03/poster_CulatraEvolution.pdf), were prepared and printed on September 2016. These posters have been used in field visits and other dissemination activities (e.g. Ciência 2017), as visual aids on the evolution of the system and the supported habitats.

4. EXHIBITION MODULE IN CENTRO CIÊNCIA VIVA DE TAVIRA

CCV Tavira team developed a hands-on augmented reality sandbox based on the open source project at UC Davis (<https://arsandbox.ucdavis.edu>). The module is part of the Center permanent exhibition since December 2018 and has been use for the educational activities with schools and visitors. This module is a very interactive visualization tool to explain processes related with topography, geography, geomorphology, geology and land and water management.



Figure 15: Exhibition module - augmented reality sandbox.