



# MASTS-SFC Saltire Emerging Researcher Scheme (MASTS-SERS)

## Final Report

MASTS in association with the Scottish Funding Council supported the Saltire Emerging Researcher Scheme, which represented an important and exciting opportunity for Post Graduate Researchers (PGR) and Early Career Researchers (ECR) to engage in substantive collaboration with colleagues from Europe (EA, EEA and EFTA countries).

The scheme aimed to promote mobility between Scotland and European research partners with the aim of strengthening existing, and seeding future, research relationships. Participants are expected to demonstrate the impact of their exchange through the publication of novel research work, the formation of new collaborations and project/ funding submissions, and the dissemination of their results.

As your exchange has now come to a close, we ask that you reflect on the exchanges and provide a report by filling in the form below. The reports will need to demonstrate the potential benefits of the grant for both the recipient and their collaborators. Please return this within four weeks of completing your exchanges to [masts@st-andrews.ac.uk](mailto:masts@st-andrews.ac.uk). When you do so, you are agreeing that your answers may be used to promote the activities of MASTS, including being used on the website and social media channels.

Please note that MASTS may also contact you, the participants, and/or your supervisors to gather additional post-exchange impact information. This information must be provided on request.

## Contact information

|   |   |
|---|---|
| <b>Participant name</b>                           | Dr Encarni Medina-Lopez   |
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| <b>Email address</b>                              | <a href="mailto:emedina@ed.ac.uk">emedina@ed.ac.uk</a>  |
| <b>Host name</b>                                  | Dr Gabriel Navarro Almendros  |
| <b>University or Institution &amp; Department</b> | CMAN, CSIC ("Instituto de Ciencias Marinas de Andalucia" of the "Consejo Superior de Investigaciones Cientificas" of Spain) |
| <b>Email address</b>                              | <a href="mailto:Gabriel.navarro@icman.csic.es">Gabriel.navarro@icman.csic.es</a>  |

## Exchange overview

|                            |  |
|----------------------------|--|
| <b>Title</b>               | From the North Sea to the Strait of Gibraltar: remote sensing applications for high-resolution coastal science solutions |
| <b>Start date</b>          | 20/06/2022   |
| <b>End date</b>            | 15/07/2022   |
| <b>Project location(s)</b> | ICMAN, CSIC<br>Calle Republica Saharaui, 4, 11519<br>Puerto Real, Cadiz (Spain)  |

### Abstract (max 300 words)

Provide a brief summary of the exchange using language accessible to a non-specialist. Describe what the exchange objectives were, the activities that were carried out, and the subsequent outcomes. This may be published on the MASTS website.

This opportunity established a knowledge exchange programme between the Andalusian Institute for Marine Sciences (ICMAN) of the Spanish National Research Council (CSIC) and the School of Engineering of the University of Edinburgh. The focus of the exchange was on the use of remote sensing data to monitor coastal areas. In particular, the use of satellite and drone imagery to improve the resolution of solutions for ecosystems in the Mar Menor coastal lagoon. The exchange increased the exposure of the activities developed in Scotland in this area, helped gain knowledge on the techniques developed in Spain, grew the research network and strengthened collaborations in this particular area of research for future international research proposals. Activities carried out included two main streams. The first one comprised the discussion on the use of satellite data to assess water quality parameters with high-resolution satellites for advancement of coastal applications. One area of interest in this stream is machine learning applications to study chlorophyll and algal blooms near the coast. The second stream involved networking and community building, and a seminar was organised to present the activities developed during the exchange period.

### Impact (max 600 words)

Please demonstrate the impact of your exchange from your perspective, and that of your exchange partner. Describe what the wider benefits of the exchange were to you as participant, your own and host institutions, and the wider community.

Benefits of the exchange to me: this exchange has benefited my career exposing my research to a leading European institution. This opportunity has opened the door to a formal collaboration with future EU funding applications in mind. I plan to ensure a sustainable collaboration by exchanging students and planning regular virtual catch.

Benefits of the exchange to my institution: the School of Engineering did not have any established collaborations in the area of coastal science in the Mediterranean and eastern Atlantic area prior to this one. The School is planning to establish formal coastal science courses within one of its teaching disciplines. This nascent collaboration will be highly beneficial to establish links to a new area of expertise for the School in a critical geographical location.

Benefits of the exchange to the wider community: the host organisation is part of CEI.MAR, the International Campus of Excellence in Marine Science, and SEAEU (<https://sea-eu.org/>) European University of the Seas. Its base, the Strait of Gibraltar and its adjoining ocean basins environment, is one of the most important geographic and geostrategic points worldwide. CEI.MAR is an international benchmark in teaching and research in marine issues included in Science, Engineering and Humanities. The wider community will benefit from such a collaboration, as it will enable the exchange of expertise with a strong organisation in Spain, allowing knowledge exchange and strategic partnership.

### **Outputs (max 300 words)**

Has this exchange resulted in clear outputs, such as the generation of a proposal, research results, or publication? Please provide brief details here. Do any of these outputs have relevance to larger programmes such as the UN SDGs, Blue Economy Action Plan etc?<sup>1</sup>

As a result of this research placement, we published a joint paper in the journal Remote Sensing: Machine Learning for Detection of Macroalgal Blooms in the Mar Menor Coastal Lagoon Using Sentinel-2, E Medina-Lopez et al, Remote Sens. 2023, 15(5), 1208; <https://doi.org/10.3390/rs15051208>. We also published our work in a national workshop on water management and fair use of water resources in Spain, which outputs have been published here: Mirando los ríos desde el mar. Viejos y nuevos debates para una transición hídrica justa, 10.6018/editum.3003. This was of special interest given the policy focus of the event.

### **The Future (max 300 words)**

How do you plan to ensure a sustainable collaboration in the longer-term and maximise opportunities and impact in the future? How will you carry forward the benefits now the exchange has been completed? Please outline five concrete plans for future collaboration as a result of your exchange.

I am planning to host one of the PhD students of the ICMAN/CSIC group in the coming years to keep working on data-driven methods for remote sensing.

We are also planning to submit other abstract to relevant conferences at national level in Spain given the relevance of our findings in the management of coastal lagoons with agricultural input.

We are also discussing potential calls to expand our work, although we do not have any in particular in mind at present.

### **Any further comments (max 500 words)**

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<sup>1</sup> All successful applicants will be expected to represent, promote and formally acknowledge the sponsors (MASTS, SFC & Scottish Government) during the course of their project and in any subsequent related outputs. All research outputs and any material used publicly must carry the funders' logos. The following acknowledgement should be used in all publications resulting from this funding. ["This work received funding from the Scottish Funding Council Saltire Emerging Researcher Scheme and the MASTS pooling initiative (The Marine Alliance for Science and Technology for Scotland) and their support is gratefully acknowledged. MASTS is funded by the Scottish Funding Council (grant reference HR09011) and contributing institutions"]

Please use this space to provide any additional comments. These may include, but are not limited to; what you would do differently if you could take the exchange again; what contingency measures you had to use (if any); details of any unexpected benefits or problems; any significant variations in costs;

I would have probably gone for longer if I was to do this exchange again. However, at the time I was pregnant and I wanted to avoid the last months of pregnancy being away from home just in case (I applied for this exchange before knowing that I was pregnant, so all the planning had happened before I could rearrange travel dates).

The visit was pleasant and there were not any issues; no contingency measures were needed.

The amount of money spent was lower than what I asked for originally as the cost of day to day living was much lower than anticipated, which would have also promote the idea of a longer stay.

### Final expense report

| Item Number  | Description              | Cost per Unit | Number of Units | Total Amount (£) |
|--|--------------------------|---------------|-----------------|------------------|
| <b>1</b>   | <b>Transport</b>         | -             | -               | <b>£470,51</b>   |
| <b>2</b>   | <b>Accommodation</b>     | -             | -               | <b>£3,108.36</b> |
| <b>3</b>   | <b>Subsistence</b>       | -             | -               | <b>£383.13</b>   |
|  |                          |               |                 |                  |
| <b>Total</b>   |                          |               |                 | <b>£3,962.00</b> |
|  |                          |               |                 |                  |
| <b>In-kind contributions</b>   | <b>Staff time</b>        | -             | -               | <b>£2,640.00</b> |
|  | <b>Use of facilities</b> | -             | -               | <b>£900.00</b>   |
|  |                          |               |                 |                  |
| <b>In-cash contributions</b>   | -                        | -             | -               | -                |
|  |                          |               |                 | -                |
| <b>Grand Total</b><br>(Total requested from scheme + In-kind + Cash) |                          |               |                 | <b>£7,502.00</b> |