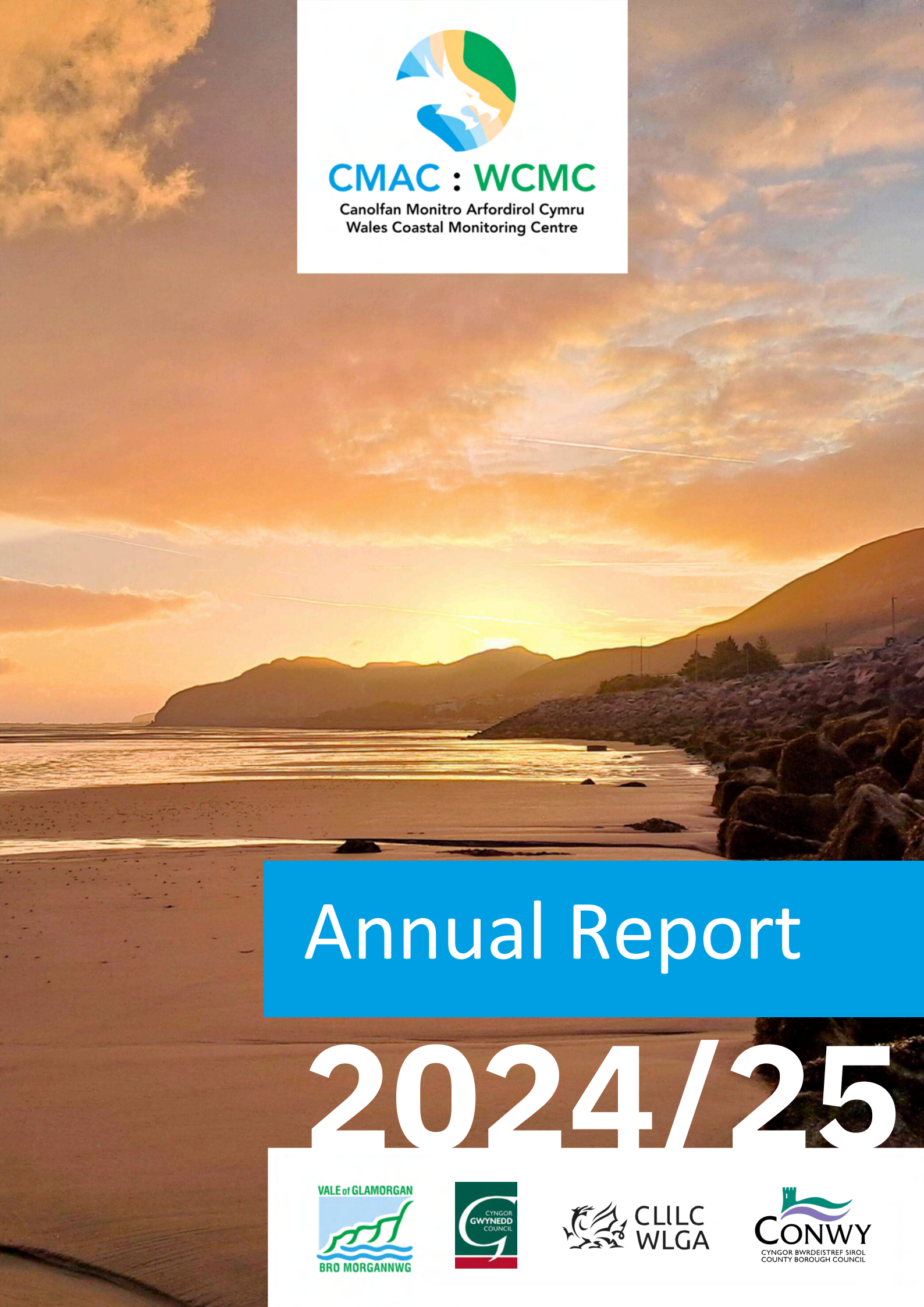


CMAC : WCMC

Canolfan Monitro Arfordirol Cymru
Wales Coastal Monitoring Centre

Annual Report

2024/25

VALE of GLAMORGAN
BRO MORGANNWG

CYNGOR GWYNEDD COUNCIL

CLlLC WLGA

CONWY
CYNGOR BWRDEISTREF SIROL
COUNTY BOROUGH COUNCIL

Contents

Strategic Direction

Purpose

Monitoring coastal change for informed risk management decisions, while promoting continuous learning and education for all stakeholders.

Vision

The vision for 2026 is to be a role model monitoring centre that provides an accessible platform of understandable coastal process data.

Mission

Delivering a dynamic evidenced programme, optimising access to coastal process data and engaging stakeholders.

Values

Our values, developed by our team, are at the core of all our decisions.

A Year of Coastal Insight and Action

Welcome and Overview

Welcome to this year's Wales Coastal Monitoring Centre (WCMC) Annual Report – a reflection on the people, partnerships and data that have helped us better understand and manage our coasts.

The past year has brought new challenges and opportunities, and in every case collaboration and shared purpose have been central to our progress. We continue to support climate resilience and coastal evidence-gathering thanks to our core funder, the Welsh Government. We have also received additional funds to support further surveys with Carmarthenshire County Council, Vale of Glamorgan Council, Neath Port Talbot Council, and the National Trust.

Much of the success in 2024 can be attributed to our dedicated survey teams. These include both our commercial partners and internal staff, along with teams from Gwynedd and Conwy councils. Whether working in harsh winter storms or sunny summer days, they've continued to deliver high-quality data across Wales.

We're proud to highlight the role of citizen scientists, the Wales Coast Path team and collaborations with local primary schools, and university researchers. Their contributions not only enhance our datasets but strengthen our connection with communities and future generations.

Finally, a special thank you to our in-house team. Their dedication, creativity, and commitment have enabled the WCMC to grow from a monitoring body into a trusted hub of coastal insight.

We hope this report captures our achievements and ambitions – and shows how coastal data can help shape a resilient future.

Gwyn Nelson,
Programme Manager

2024/25
AT A GLANCE

5 Survey teams

12 Projects completed

205 Survey Units along the Welsh coastline

Total profiles surveyed **2116**

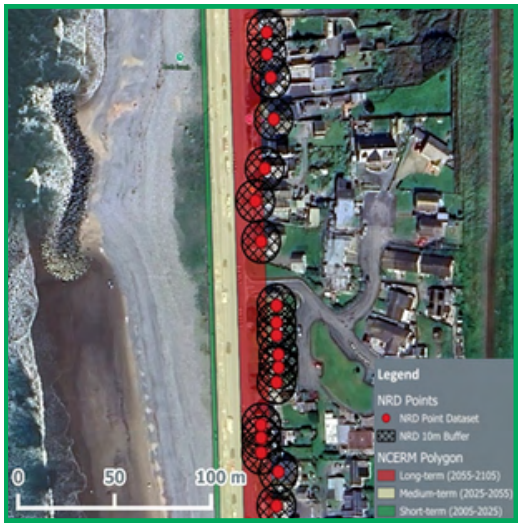
The Coastal Monitoring Team

2024/25 In More Detail

Understanding a Changing Coastline

Risk-Based Methodology V2

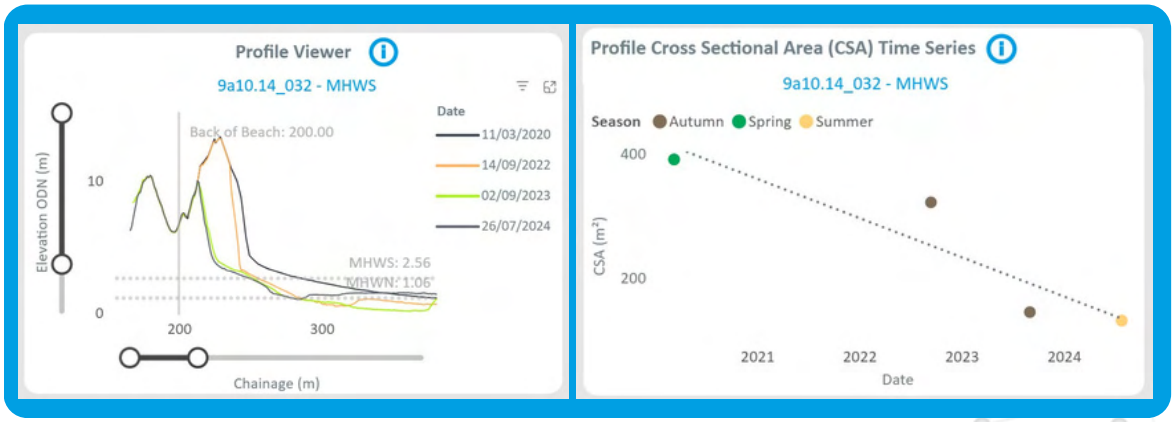
The third pillar of the WCMC is to 'continually ensure highest priority locations.' As we prepare for our next strategic phase in 2026, we have developed Risk Based Methodology Version 2 (RBM V2) using updated and refined data extraction methods, shown in the figure below. RBM V2 continues to incorporate Shoreline Management Plan policy units where future change is expected, strengthening the evidence base for adaptation and supporting Wales's wider climate resilience agenda.



A key enhancement is the inclusion of scoring based on our complete record of topographic profile data collected across Wales. Survey units showing long-term stability now receive a lower risk score, while highly dynamic areas are prioritised for monitoring and management. This combined with Future Coast (2002) beach behaviour dataset used in RBM V1, improves our assessments reflecting the most current evidence available.

Data Platform - insights into Welsh 'Hotpsots'

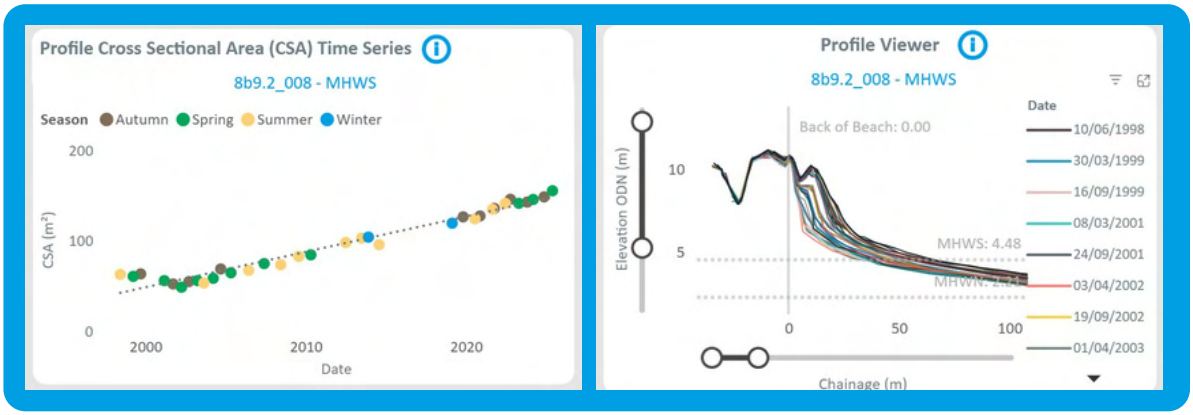
Natural sandy coasts are a defining feature of Wales, and their changing form is an important focus in the pan-Wales analysis that informed RBM V2.



Interactive Data Platform - available on our website

Our latest results highlight locations where dune systems have experienced notable changes in size and shape. In Pembrey/Pendine (Carmarthenshire) and Aberdyfi (Gwynedd), cross-shore profile data and cross-sectional area charts illustrate erosion hotspots. At Aberdyfi, for example, around 75% of the foredune has shifted since 2020 as the shoreline continues its natural landward movement.

In contrast, other locations show substantial dune growth. Baglan Burrows (Neath Port Talbot), Swansea Bay (Swansea), and Barmouth South (Gwynedd) are examples where foredunes have increased in volume. In Swansea Bay, foredunes have expanded by over 200% since 1998, reflecting the dynamic and adaptive nature of these coastal landscapes.

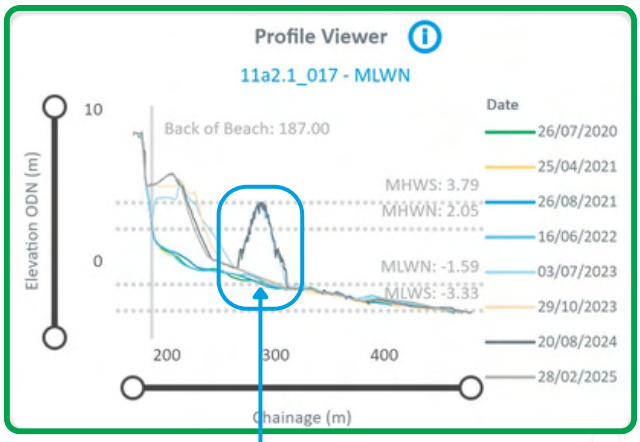


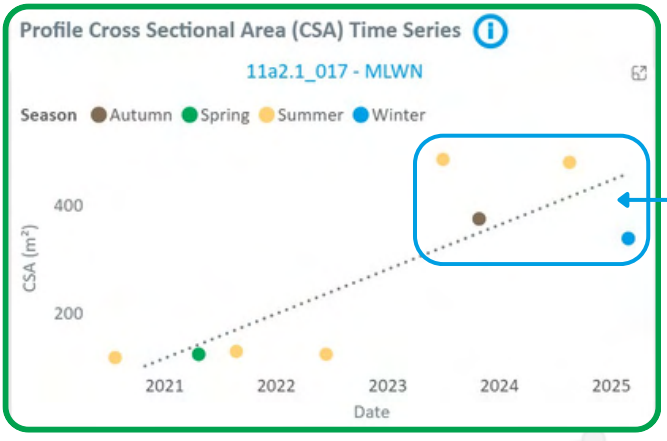
Interactive Data Platform - available on our website

By combining detailed cross-shore profiles with long-term datasets in the Data Platform, we can measure and visualise these shifts with precision. This evidence strengthens our understanding of natural coastal processes and supports adaptive coastal management into the future.

Did you know?

You can explore how intertidal morphology changes over time using the Data Platform. By selecting a vertical datum, you can tailor and refine the analysis to focus on exactly what you need.





The platform also helps identify contextual changes in the landscape – such as new coastal defence schemes – so results are interpreted correctly. For example, at Penrhyn Bay, the data clearly shows the effects of beach nourishment and the installation of a rock revetment between the 2022 and 2023 surveys.

Developing a Post Storm Workflow

Understanding how the coast responds to extreme weather events is essential for effective coastal management. Pre- and post-storm surveys provide valuable evidence of morphological change, helping us to measure both the immediate impacts and the natural recovery of the shoreline.

Whitmore Bay, Barry

This information is vital for supporting flood and erosion risk management. It can guide emergency response, improve the accuracy of predictive models, and inform long-term coastal planning.

This year, the WCMC carried out a preliminary post-storm survey at Whitmore Bay as part of testing our new workflow. These early trials help refine our approach so we can respond quickly and effectively when significant storms occur. In the coming years this is a service we hope to be able to provide across Wales.

With 95th percentile wave alerts now active, we'll be closely monitoring forecasts over the coming winter, ready to mobilise and capture high-quality post-storm data whenever the opportunity arises.

The Data Behind the Decisions

DJI L2 Newgale Survey

Survey technology and methods are two mechanisms for improving the quality of the data we collect and how efficiently we collect it. Our baseline surveys are now exclusively collected using Unmanned Aerial Vehicles (UAVs) with either a LiDAR or camera payload.

In May 2024 we trialled the latest DJI LiDAR payload, the L2. We have access to its predecessor the L1, which outperforms other legacy survey techniques in terms of collection efficiency, safety, and spatial coverage, however, the system does not guarantee the desired accuracies.

Using our extended flight UAV licence (Operational Safety Case), our survey team of three, surveyed over 3.5km of coastline in three days at Newgale producing deliverables that met the accuracy requirements of the WCMC Topographic specification.

As a small team it is essential that we embrace change, explore new technologies and support research projects that might come to fruition.We continuously work with suppliers and academics to develop and test new technologies to ensure we stay at the forefront of innovation.

Working Together for the Coast

Community & Collaboration

2024 has been a fantastic year for collaboration. From community events to student research, we've worked with partners across Wales to grow knowledge and inspire action.

Our academic connections have flourished. We delivered multiple guest lectures at Cardiff University and supported several coastal science and management dissertations. We also welcomed our first undergraduate placement from Bath University's Engineering Department – a great success. Their work contributed to analysing wave and water levels at Shoreline Management Plan (SMP) policy units.

We've expanded the CoastSnap citizen science project, more than doubling our cradle locations in just one year. This work wouldn't be possible without the support of dedicated walkers, coastal visitors, and the Wales Coastal Path team.

Sioned Humphries of the Wales Coast Path team told us:

"CoastSnap is proving to be an effective way of engaging with those who walk the Wales Coast Path and encouraging them to become citizen scientists. We are delighted that thousands of walkers have already submitted images and through taking part gain an understanding of the impact sea level rise, storms and erosion will have on the path in future. We look forward to continuing to work with the Wales Coastal Monitoring Centre to increase the coverage of the cradles and gain further insights into the changes affecting the path."

We were proud to support schools with our Climate Change and Coasts education programme, reaching hundreds of young learners. A secondary school careers event in Carmarthenshire also gave students a glimpse into the world of coastal science.

Accessible Data for All

Technology, Tools & Data Access

We're delighted that the WCMC's national Data Platform has been so well received. Coastal risk managers and academics alike are using it to learn about coastal change and to inform both short-term beach management and long-term SMP planning.

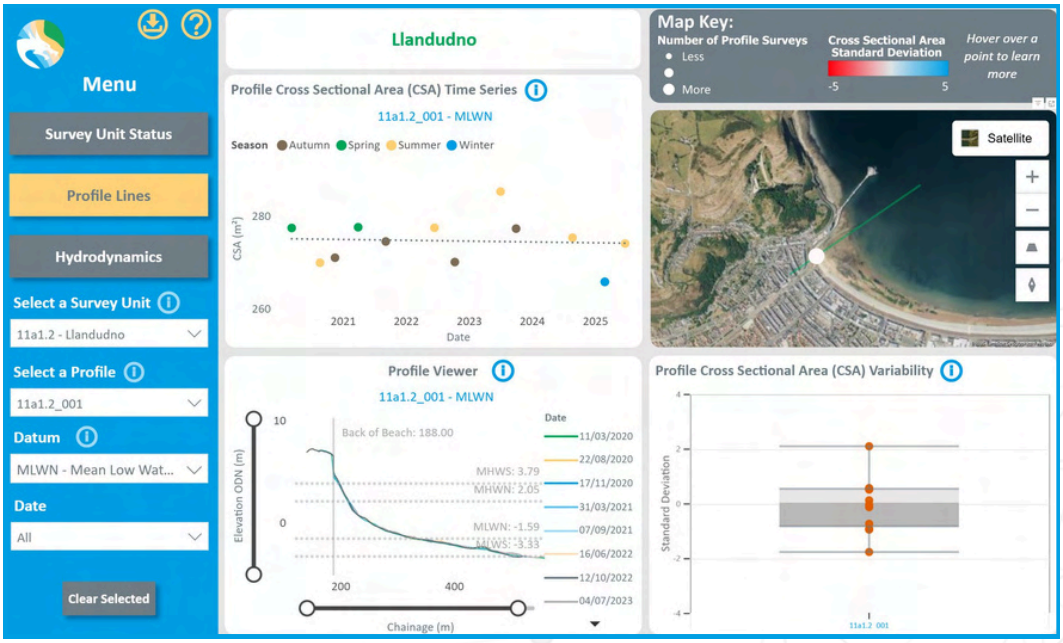
The platform helps turn complex data into accessible insight. One of many examples is the case of Criccieth, where Gwynedd Council used WCMC dataplatform to assess storm damage to timber groynes. Thanks to our beach profiles and time-series graphs, they were able to visualise beach level changes and share this with stakeholders. After repairs, the platform helped track the rate of recovery – reinforcing the value of up-to-date data.

Here's what Gwynedd Council told us:

"We use the Data Platform to assess long-term trends and impacts from interventions at many locations. Benefits include:

- ***Easily accessible information, no specialist software required***
- ***Wiki pages offering clear user guidance***
- ***Flexible visualisation tools to meet different audience needs"***

This feedback demonstrates our ongoing commitment: to not only collect high-quality data, but ensure it is usable and useful for all.



Interactive Data Platform - available on our website

Facing the Future Together

Climate Adaptation & Coastal Resilience

In October 2024, we brought together coastal stakeholders at Cardiff University to share knowledge, explore challenges, and shape the future.

Workshops revealed the need for:

- More spatial coverage across the coast
- Data triggers to support beach management and adaptation
- Better monitoring within estuaries

Together, we explored major themes such as sea level rise, increasing storm frequency, and impacts on vulnerable communities. These align closely with Welsh Government priorities under The National Strategy for Flood and Coastal Erosion Risk Management.

This year's conversations gave us clear direction for our strategic planning as we move towards our next funding cycle.

Adaptation to climate change is a complex and sensitive approach which can only be achieved by working together. The WCMC appreciates our role as evidence provider to support informed, forward-looking decisions.

Looking Ahead

What's Next for the WCMC?

Looking ahead, our focus is on building the next 5-year phase of the Wales Coastal Monitoring Centre.

With continued support from Welsh Government and guided by our recent stakeholder engagement and updated coastal risk scoring, we're preparing a new business case. Our aim: to use the high-quality evidence collected to date to reduce uncertainty around future flooding and erosion risks.

This will help deliver smarter, more adaptive coastal management across Wales – especially in light of a changing climate.

To do this, we need to adhere to our 3 Pillars:

- Consistently optimising access to interpreted coastal data
- Committed to ongoing engagement with all levels of stakeholders
- Continually ensuring highest priority locations

We're excited to continue working with you all, helping Wales face the future with coastal insight and confidence.

Contact the WCMC
Wales Coastal Monitoring Centre
Vale of Glamorgan Council
The Alps
Alps Quarry Rd
Cardiff
CF5 6AA
www.wcmc.wales

Gwyn Nelson WCMC Programme Manager
Email - gnelson@valeofglamorgan.gov.uk

William Russell Senior Coastal Scientist
Email - wrussell@valeofglamorgan.gov.uk

Benjamin Ranson Coastal Process Scientist
Email - branson@valeofglamorgan.gov.uk

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