



North West Regional Monitoring

MAY 2017
ISSUE 8



Southport Pier, Sefton by Jennifer Warner

NORTH WEST REGIONAL MONITORING PROGRAMME NEWSLETTER

Introduction

Welcome to the May issue of our NW newsletter. As you may know this is a biannual newsletter for the North West Regional Monitoring Programme. We aim to provide news on the programme, spotlight specific issues and provide an outline of upcoming monitoring, reporting and events across the region.

Programme update

Just a reminder - the North West and North Wales Coastal group changed the name of their website. Please remember to make a note of the new name and also pay the site a visit at; www.mycoastline.org.uk

2016–2020 CERMS Programme

As many of you will know the CERMS funding for the new programme was reduced by 35%. In order to absorb this reduction and continue to deliver the programme, the CERMS partners have increased collaborative working and incorporated new ways of making the data collection “go further” and the least cost effective datasets have been removed from the programme. The Project Steering group have agreed to meet more often and quarterly meetings have been planned. The Project Team continue to assist the Channel Coast Observatory, who are the national lead coordinating body.

Data collection reports

Sefton continue to produce data collection reports for each NW Coastal

Local Authority, these were first produced at the beginning of 2014 and updated in September 2015. These were again updated in Spring 2016 and distributed. Feedback has been positive.

The data we collect and why?

Collaborating to deliver a programme of monitoring ensures that good quality data is captured to national specifications, quality controlled and stored securely. The programme’s purpose is to make all data collected freely available through an open government licence. The data we collect is vital to enable coastal managers to make effective decisions. At a time when many Councils are downsizing, working together with other Authorities and departments to deliver the CERMS programme is more important than ever, this is evident as more data is being downloaded from the CCO website than ever before! The next CERMS partnership meeting will be held in Sefton in May. In other news, an SMP Officer has been appointed, hosted by Sefton to revise and review the North West’s Shoreline management Plans, updating actions and coordinating and communicating across the partnership.

Contacts

- If you would like to know more about the North West Programme please contact: coastaldefence@sefton.gov.uk
- For the data web portal visit: www.coastalmonitoring.org
- North West and North Wales Coastal Group visit: www.mycoastline.org.uk



HIGHLIGHTS IN THIS ISSUE

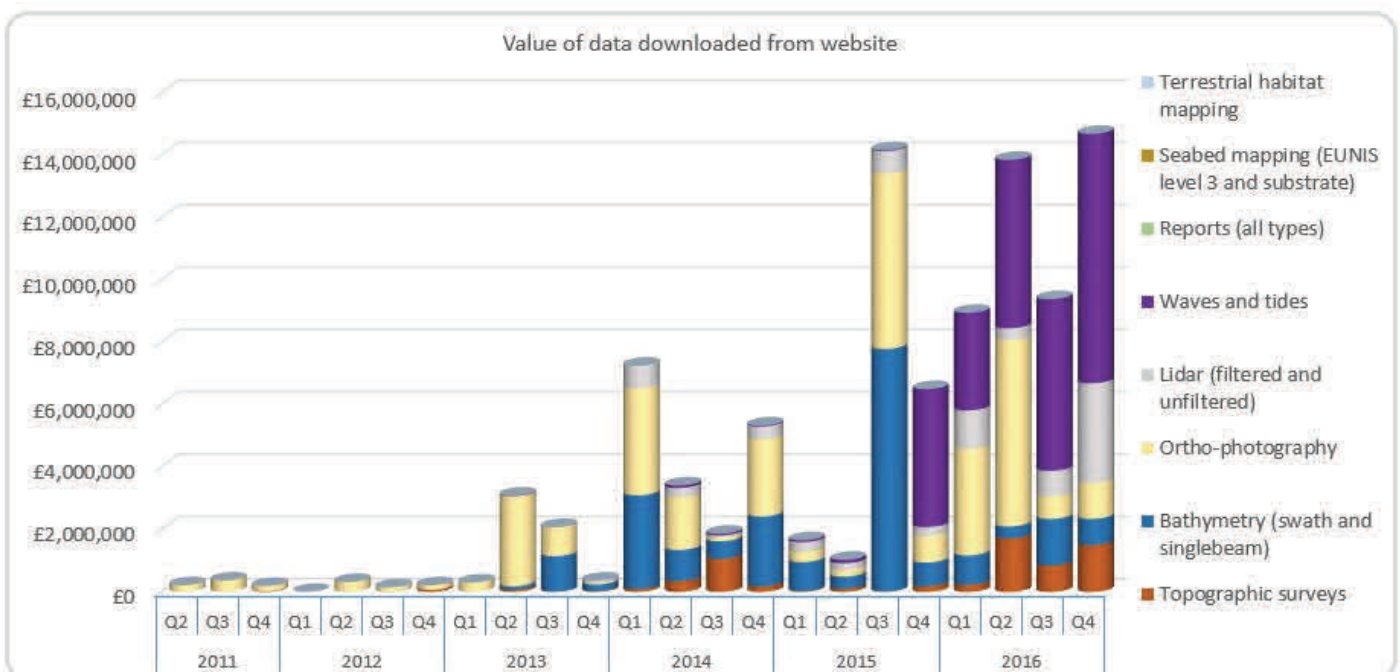
- CCO downloads update
- Rapidar—Radar Observation
- North West Staff News
- Crosby AWAC deployment
- Liverpool Institute’s new website
- Time & Tide exhibition
- Other North West news

CERMS PROGRAMME DOWNLOADS FOR NORTH WEST

Latest web download figures from the web portal by data type

The appearance of the downloaded summary from the Channel Coast Observatory website has changed, it now shows more information, broken down by sectors, quarters and data type, it also gives an indication of the financial value of being able to access the downloads in this way. The monetary value assigned to this shows the saving if the data had to be collected by a number of different organisations.

The range of data available is valuable, not just to coastal engineers, but to a much wider audience, including students and environmental organisations. Since the last newsletter, we can see Q3 and Q4 in 2016 are complete. The wave and tide data has increased in demand and there has been a big increase in use of LiDAR. Vertical aerial photography (ortho-photography) continues to be used as does the Bathymetry and Topographic Survey data. We can also see a big increase in downloads since Q2v2015, with the last 7 quarters being the busiest we've seen, this may be due to data being easier to download from the Channel Coast and better communications between the partners and other organisations, it shows how useful CERMS data really is to a wide range of people and professions. Remember the National Coastal Monitoring Portal have changed their web address to: www.coastalmonitoring.org



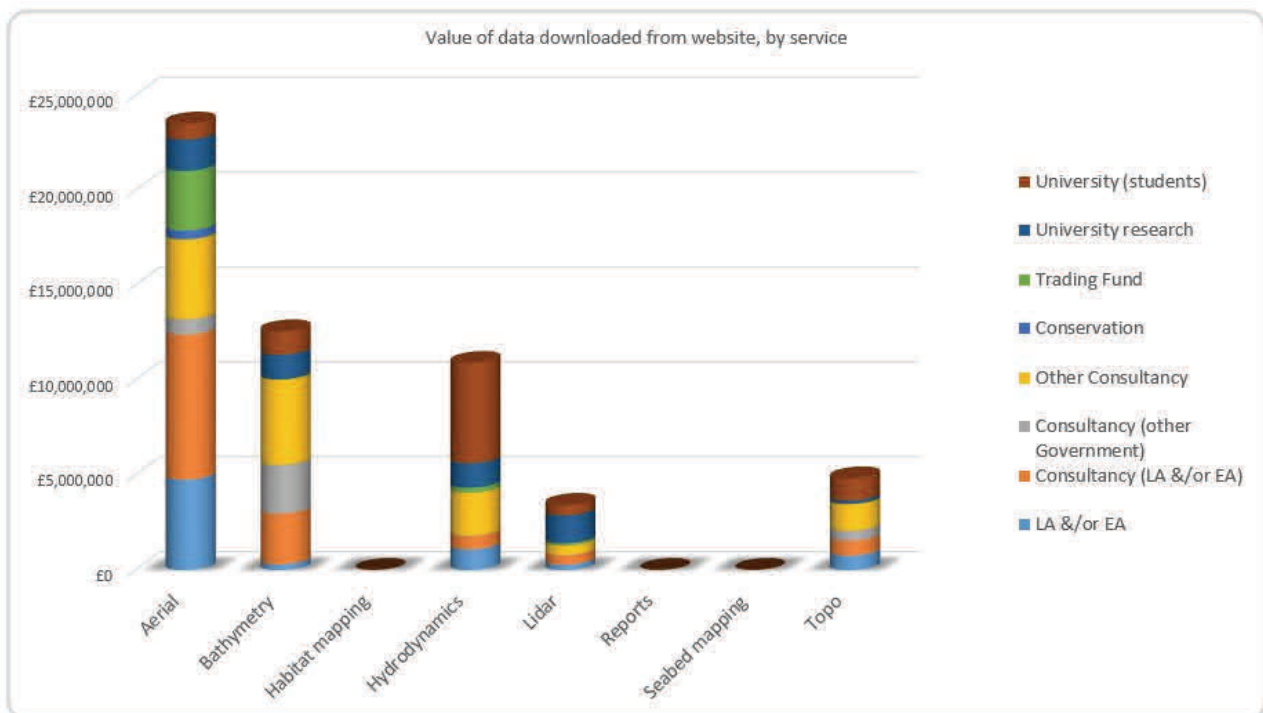
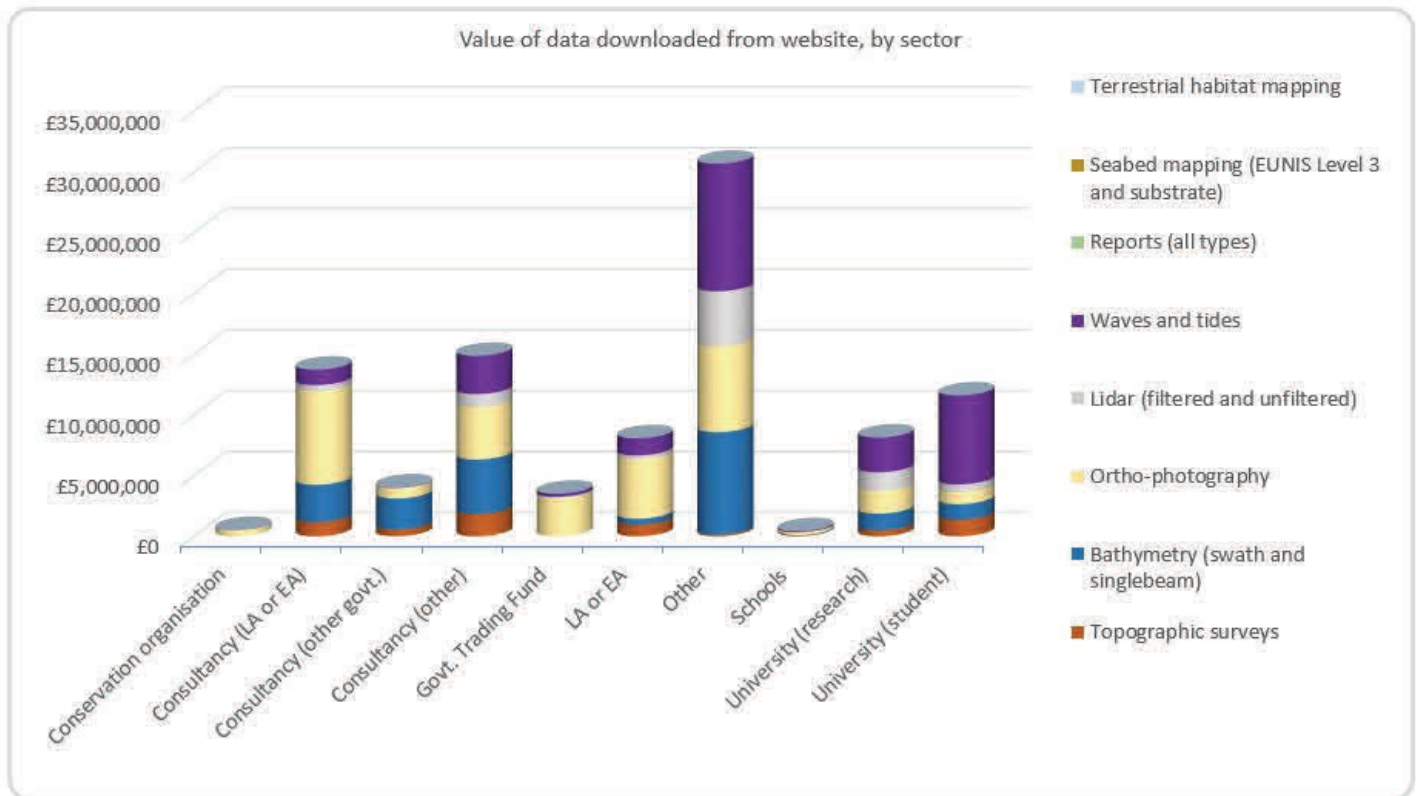
Local Government and Environment Agency consultancy as well as private consultancies have been the highest users of data since 2011. This data is vital for Local Authorities to conduct coastal monitoring as in these times of cuts and reduced budgets it is unlikely they would be able to commission data collection independently. University research and university students completing their dissertations are also high value users.

Schools and Conservation organisations are much lower value users however this is important as they probably have the least money available to spend on data collection needed for project research and education. So the graphs prove that CERMS data is being increasingly used and is of great value across a range of sectors, including helping environmental students qualify to become next years environmental professionals.

The latest graph shows a fairly even distribution by "OTHER" for Wave, Bathymetry, Lidar and Ortho-Photography. The final graph shows the financial value by Service for each type of data. This shows very clearly the value of Aerial photography to a wide range of users. This data, provided by the Channel Coast is also valuable when revising the CERMS programme as it provides and insight into how useful each type of data really is.

All the data is available for legal and non commercial/profitable use under an Open Government Licence. The number of users describing themselves as "other" has actually reduced, these figures could include members of the public as well as users who don't fall into any of the stated categories.

CERMS PROGRAMME DOWNLOADS FOR NORTH WEST



Demonstrating value for money

At a National level there is a directive to continue to demonstrate the value for money the CERMS programme provides and to do this additional ways of measuring are needed. At a practical level this means demonstrating the links to EA programmes and how CERMS data is used in big investment programmes, for example how many large schemes couldn't go ahead without the use of CERMS data, emphasising the cost effectiveness. Quantifying the comprehensive value of our coastal data is recognised as a project in itself and the Steering Group have been looking at ways to incorporate this into the programme, e.g. as part of a PhD, also how CERMS data has been used should be incorporated into every project scheme report.

Sefton council recently commissioned Marlan Maritime Technologies to deploy a brand new, nearshore survey platform at the Coast Guard Station at Hall Road Crosby. This new radar-based survey system is designed to image a large area of the coast continuously for long periods of time and uses sequences of radar images along with a reliable tidal record to build up a topographical map of the intertidal area. The image below shows the system located inside the small blue container and a radar tower just to the right.



The rapidly deployable survey system was installed on Christmas Eve 2016 during the onset of storm Barbara and is tasked to remain until April 2017, this will allow changes in beach morphology to be monitored during the winter storm season.

Preliminary results show good coverage of the beach, with good estimations of beach elevation.

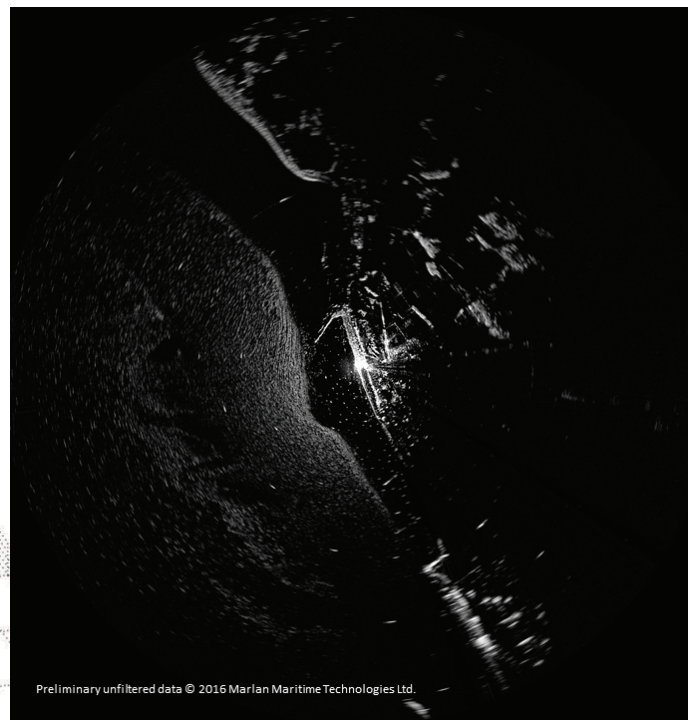
The Iron Men of Anthony Gormley's "Another Place" art sculptures are picked out well by the radar as they are submerged and exposed on the rise and fall of the tide and provide useful reference points for later assessments of the accuracy of the radar results.

Partners at the National Oceanography Centre are also using this radar data to perform "wave inversion" analyses to measure the depths of Crosby channel and

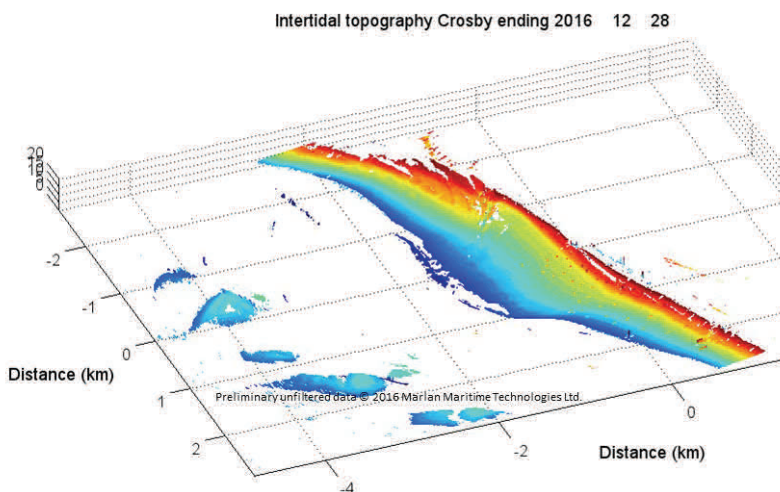
surface current directions and velocities that will enable dominant trends in sediment migration and forcings in the nearshore to be better understood.

The continuous nature of radar observation allows the generation of surveys on a bi-weekly basis, i.e. a survey each fortnight capturing a full spring-neap cycle and thus covering the greatest amount of beach. Surveys can also be produced pre- and post-storm to assess the effects of a given high energy event.

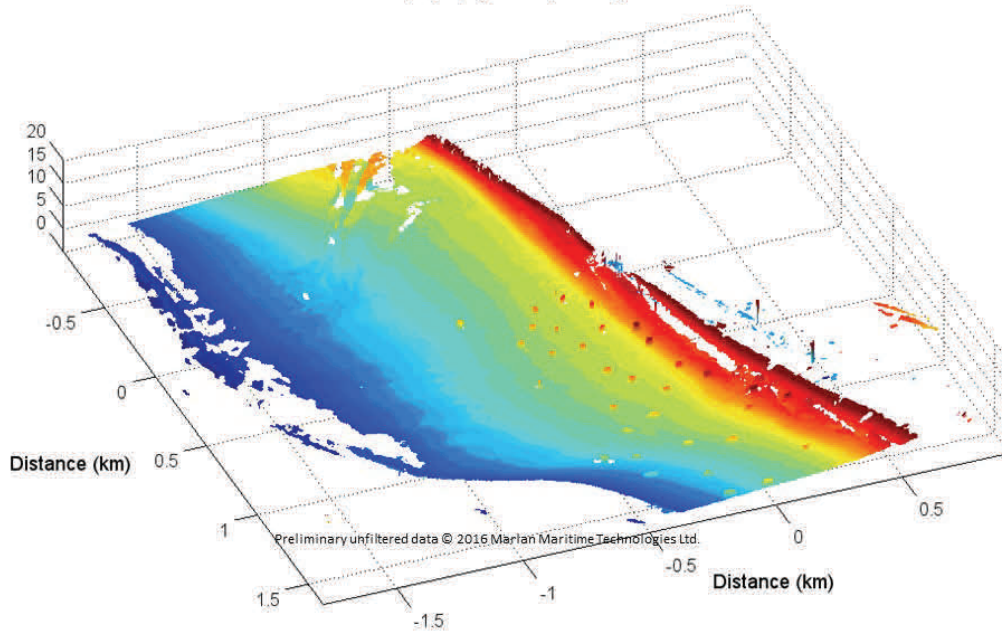
Multiple deployments of this radar system are planned around the UK and abroad later this year and it is hoped that the radar can provide an extra tool in the arsenal of coastal management that will allow better targeting of survey campaigns and monitoring efforts in vulnerable locations. It is also an ideal technology to cost-effectively monitor the before, during and after effects of coastal defence construction.



Preliminary unfiltered data © 2016 Marlan Maritime Technologies Ltd.



By Dr. Cai Bird. Principal Researcher at Marlan Maritime Technologies and Knowledge Transfer Associate at National Oceanography Centre.



The dots visible in the image above are Anthony Gormley's Iron Men art sculptures. Crosby beach is a very dynamic area, this survey was commissioned by Sefton as part of the Crosby to Formby Strategy and incorporates areas of post war rubble, the Alt training bank and Crosby promenade.

Incidentally our "rubble" was featured in episode two of Channel 4's recent series Britain at Low Tide, find out more about how the rubble came to be used as a coastal defence watch the programme at;

<http://www.channel4.com/programmes/britain-at-low-tide/on-demand/64335-002>



Christmas card competition

And the winner was.....

Caroline Salthouse ! Congratulations Caroline. It was a difficult job for the judge to decide between the two entries but in the end this very wintry image was the winner.

As many of you know Caroline Salthouse has now left Sefton Council but we are still in touch with her. On behalf of the Coastal group and all the partners we thank Caroline for the huge input and impact she has had on the coast. For numerous years Caroline worked across the



North West and delved into European coastlines. She was fundamental in driving forward Integrated Coastal Zone Management and Marine Planning and ensuring we all knew the relevance and importance they hold.

Her deep commitment to all things coastal means she is still involved in a number of ways and is now employed on an ad hoc basis to continue providing secretariat provision to the Liverpool Bay Coastal Group and currently volunteers to keep the North West Coastal Forum website up to date. Whilst at the moment she's taking a bit of a break to enjoy herself, I'm sure we'll be seeing her again in the near future. <http://www.nwcoastalforum.org.uk>

Shoreline Management Plan

Jennifer Warner was appointed in September 2016 to a new post created and funded by the North West Regional Flood and Coastal Committee. She joined the FCERM team at Sefton and is busy reviewing and revising the shoreline management plan's actions. This includes changing the language used to describe progress and make the plan altogether more relevant and dynamic. Jen also does some technical analysis using SANDS and coordinates closely with the EA and staff across the partnership, attending meetings of RFCC, CERMS Steering Group and the North West & North Wales Coastal group.

Crosby AWAC deployment

How do you measure waves and current, the obvious answer is an AWAC. AWAC is an acronym for *Acoustic Wave and Current*. AWACs are traditionally deployed in the sub tidal environment but what do you do if the area of interest is regularly dredged?

As the frequent newsletter readers will be aware, we have had a fair bit of bad luck/experience on losing AWACs and we weren't keen on explaining again to the insurance company how another one has gone missing, whilst potentially having a difficult conversation with the dredge boat captain that vacuumed it up. So deploying it in this area was a bit of an unusual challenge.

A conversation with the contractor suggested that theoretically an AWAC could be deployed in the intertidal area but they have not had experience of this, but were up to the challenge.

For those of you that don't know what an AWAC looks like, it is a small bit of kit that sits inside a large shiny metal frame, and doesn't easily camouflage into a beach, as you can see from the image.

So we faced a dilemma. Shiny things attract people, ask anyone who wears a hi vis jacket. Shiny expensive things may attract the attention of the wrong sort of people. Added to this was the unknown factor, would it work in the inter-tidal area, could wave action move it or sediment bury it?

Do we or don't we? Well I think we all know that we did, otherwise this would not make an interesting article.

On a cold February morning, with the assistance of a quad bike, the RNLI and Fugro staff the frame was carried out to its resting place, along with the clump weights, cables, batteries, AWAC and tether chain, in total over 150kgs of bulky kit. The majority of the setting up was carried out by the Fugro staff, but part of it saw us pirouette with the AWAC, they said it was to calibrate the equipment but I have my suspicions that it was just to give us something to do to keep us moving and warm. After dancing with the AWAC the fear of theft left my mind as I got a better appreciation of just how heavy and bulky these things are.



This lack of fear did not last long, no sooner had we reached the prom we were asked what's that, and before we had time to take off our wellies the person was on his way out to inspect it on our behalf. Thankfully the chap had a look and moved on.

As part of the deployment we did contact the emergency services to raise awareness and ensure it would not be confused with WW2 Ordinance. We also spoke to the RNLI who patrol the beach and the traders based on the car park. After a week of it being out there I spoke to them again and it was interesting to hear how much interest the "beach spider" had generated.

Before storm Doris we had planned on retrieving the AWAC at the end of March but Doris did us 2 favours, firstly it gave us a storm and hopefully good data, time will tell. Secondly, it lowered the AWACs profile on the beach as the storm scoured out an area around the frame. I should say I did go to the car park to see if the AWAC was still there after the storm and could not see it so I was concerned that I had some explaining to do.



As it is no longer a "feature" on the beach horizon, I am somewhat happier keeping it there until mid May, giving us 3 months of data.

As well as being a trial to assess the AWACs performance in an inter tidal environment, it was also there to help calibrate the Rapidar deployment.

And now it is just a waiting game until it is recovered and we find out whether it has worked and recorded good quality information. More to follow in the next newsletter...

Article by Andrew Martin

LIVERPOOL INSTITUTE FOR SUSTAINABLE COASTS AND OCEANS

The NW CERMS programme continues to explore links with Academia for research, collaboration and continued professional development. Jen Brown from Liverpool's National Oceanographic Centre recently shared some news about Liverpool Institute's new website; the Liverpool Institute for Sustainable Coasts and Oceans (LISCO) webpage which went live at the end of 2016. Here's the link if you are interested <https://www.liverpool.ac.uk/liverpool-sustainable-coasts-and-oceans/>

It's envisaged that as the website becomes better known the knowledge exchange potential will take off this year.

There have been some exciting developments in this area as some staff from Lancashire attended the JBA Consulting postgraduate qualifications and CPD training in Flood and Coastal Risk Management. A PhD student is carrying out an internship with Adrian in Lancashire, looking at satellite imagery.

The Rapidar technology (see AWAC article on page 6) has a huge potential to be used for further research and combined with the AWAC data, this could provide some very important results for Crosby beach in Sefton.

FCERM AWAY DAY



Still linked to Liverpool University, the FCERM team at Sefton enjoyed a learning "away day" recently which included a visit to the National Oceanographic Centre in Liverpool to explore the history of tidal science. The team saw the two Universal Tidal Prediction machines which have been restored and now form the centre piece of the Time & Tide exhibition.

The predicting machines are analogue computers designed to simulate the rise and fall of ocean tides. The machines consist of a motor which drives a series of wheels and pulleys and are very elegant and beautifully restored. Used during WWII to identify the



Tide Predicting Machines

Tide Predicting Machines are analogue computers designed to simulate the rise and fall of the ocean tide. Find out more about them and the fascinating history of their use.

best locations and times for the Normandy landings the machines can be used to predict tides at any location in the world. Housed for a period at Bidston Observatory, Liverpool had almost a world monopoly on tidal forecasting, tide timetables were produced for the majority of the world, three years in advance using recorded observations and harmonic constants to "programme" the machine. At the time there were only twelve tidal prediction machines in the world, 1 in India and the rest in the United States but Liverpool's were the best and most accurate so received the most orders for tide tables from major ports and harbours around the world.

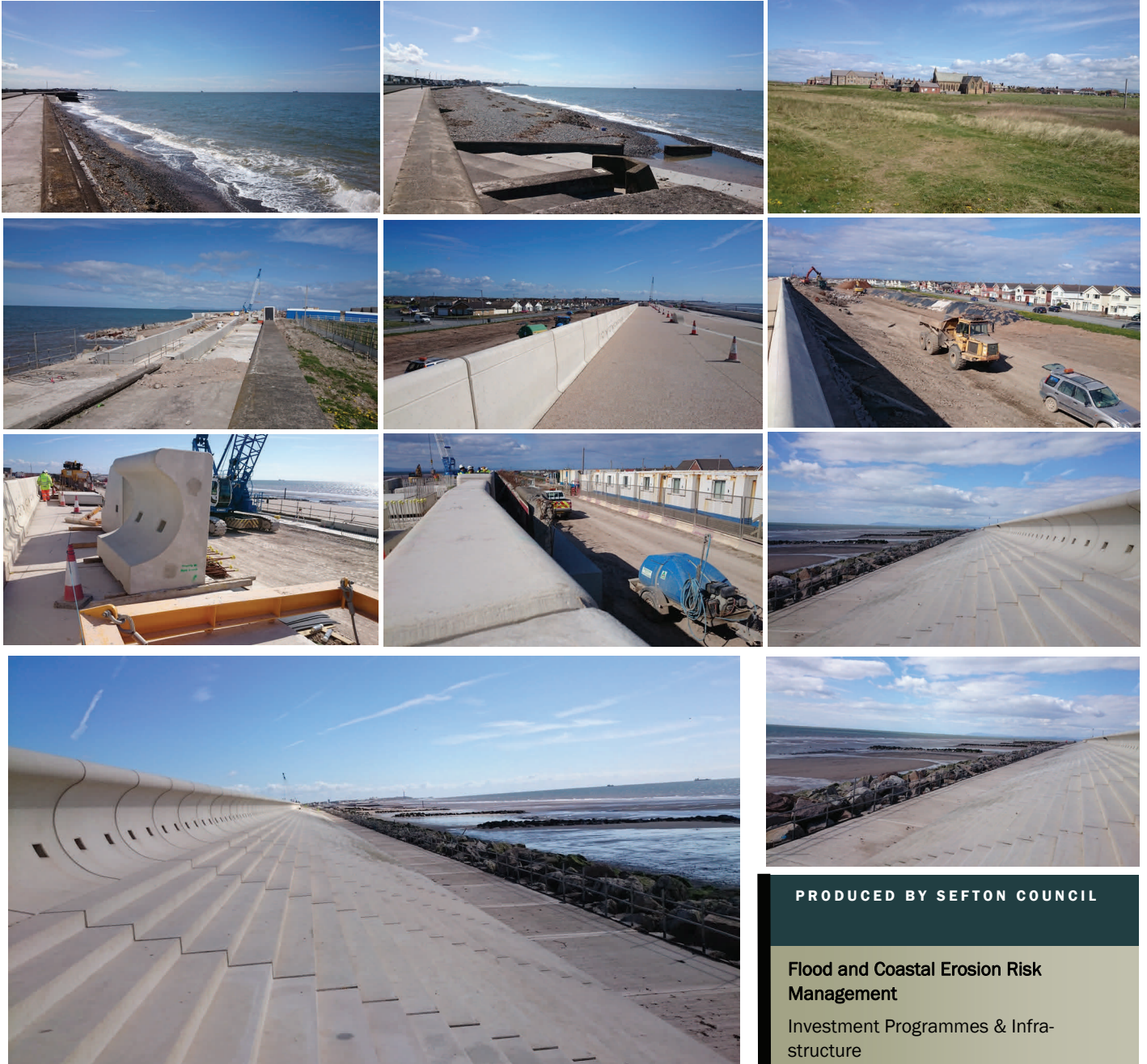
Before WWII, Alan Turing visited the machines when working on a formula to disprove a theory about the density of primes called the [Riemann zeta-function](#), it is said he was unimpressed but recognising that Liverpool's machines performed a summation of a similar series of calculations, he copied the design of the tide predicting machines in his mechanical formula in 1939. This machine became known as the Zeta Function machine. Indeed Alan Turing's application for grant support from the [Royal Society](#) for the cost of engineering this special machine, references Liverpool's Tidal prediction

machines. His application requested £40. The machine was never completed due to the outbreak of WWII, however Turing's recent work must have provided some inspiration for the code breaking work on Enigma so Liverpool's tide prediction machines played a number of vital roles in WWII.

The Time and Tide exhibition is open on the first Tuesday of every month between 3 and 4pm. The tour is free and is available to book online at <http://www.tide-and-time.uk/>

OTHER NORTH WEST NEWS

The Fylde Peninsula Coastal Programme (FPCP) is a partnership between Wyre Council, Blackpool Council, Fylde Borough Council, the Environment Agency, Lancashire County Council and United Utilities to construct an £86million coastal defence scheme at Rossall and Anchorsholme. This new sea defence will replace the previous structure which was known locally as “The Berlin Wall” and not without reason. Balfour Beatty were appointed as the main contractor and are making solid progress as can be seen from Andrew Martin’s photo’s taken when he visited the scheme on the 26th April 2017. A number of CERMS datasets were used to help with the design of the sea wall. This undoubtedly helped reduce overall costs to the scheme.



PRODUCED BY SEFTON COUNCIL

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If you have any coastal news or projects or any CERMS related stuff you would like to be in the newsletter, please send it through. We are always looking for news and articles from around the NW so please send me your stories or information about the latest scheme, staff or projects. Please send them to Viv.Pearson@sefton.gov.uk

Thanks to everyone who contributed to this newsletter, The next NW CERMS Newsletter will be published in October 2017.