Te Hunga Takutai o Aotearoa
NEW ZEALAND COASTAL SOCIETY

Coastal News

Newsletter of the New Zealand Coastal Society: a Technical Group of Engineering New Zealand

Issue 84 • August 2024

AI heads for the surf...

AI has been applied to a remarkable variety of tasks, and in this issue we look at one with a coastal theme – can AI be used to identify rip currents? To find out, see the article beginning on page 3.

Piha Beach, well known for dangerous rip currents (Photo: Public domain).

ISSN 1172-6938

www.coastalsociety.org.nz

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CONTENTS

Contents numbers and blue web links in this pdf are active (clickable).

Word from the Chair

Kia ora all and welcome to our winter edition of the *Coastal News*. It's hard to believe we are already more than halfway through the year. Planning for this year's conference is moving along and it's shaping up to be a fantastic event. While the abstract submission has now closed, early bird registrations are open until 23rd September so best get yourself organised. We're looking forward to seeing everyone in Christchurch later in the year, hopefully with less fog this time!

In committee news, Sophie Horton has stepped into the University and Education Coordinator role, taking over from Sarah McSweeney. We would like to thanks Sarah for all her efforts as a valued member of the committee and welcome Sophie on board. We also have profiles on three new regional representatives from the Hawke's Bay (João Albuquerque), Canterbury (Jessica Green) and Otago (Mo Razzaghi) regions. Welcome to you all!

Bryony Miller and few others have been busy organising our scholarship awards for the year, with profiles on each of the winners contained within. Congratulations to Alaina Baker, Lucy Coulston and Saane Vaasen. We've included a short summary of their research projects in this issue of *Coastal News*, and look forward to learning more about them at the conference.

In this issue we have an interesting article in the use of AI in understanding rip dynamics. The development of AI in the coastal field will hopefully help with the processing of years and years of coastal data collecting dust around the country, and thus help us to improve on our beach safety statistics in the future.

On a similar theme, there is a piece on the CoastSnap program which is gathering momentum across the country. No such thing as too much data!

Also, we would like to strongly encourage you all to consider putting together an article for the *Coastal News*. Although we have an excellent team bringing you the news from around the country, it's still not easy putting these together and it is made harder when we have to rattle cages for articles. For details on how to contribute to the newsletter, see page 19 or have a look at the *Contributor's Guide* on the NZCS website.

Colin Whittaker and Sam Morgan
NZ Coastal Society Co-Chairs

About the NZCS

The New Zealand Coastal Society was inaugurated in 1992 'to promote and advance sustainable management of the coastal environment'. The society provides a forum for those with a genuine interest in the coastal zone to communicate amongst themselves and with the public. The society's mission is to take a leading role in facilitating robust discussion and nationally-coordinated interactions to better manage and learn about our coastal and marine environment.

NZCS members represent a wide range of coastal science, engineering, management and planning disciplines. They are employed in the engineering and environmental consulting sectors, in local, regional, and central government, in research institutes, in the tertiary education sector, and in schools.

NZCS is a technical group of Engineering New Zealand. The multi-disciplinary nature of coastal management in New Zealand means many of our members are from areas other than engineering. There are no entry criteria for the society and we welcome membership enquiries from anyone with an interest in the coast.

Membership applications can be sent to the NZCS Administrator Renée Coutts at: nzcoastalsociety@gmail.com

Automated rip current detection and localisation

Christo Rautenbach, NIWA

Artificial intelligence (AI) is the buzzword on everyone's mind these days. Its usefulness and applications seem endless, spanning industries from healthcare to finance. However, like every technology, AI has practical constraints and limitations. Despite the plethora of AI techniques currently being deployed, the training of these models is crucial to ensure their accuracy and bespoke nature. In general, AI models are constrained by the data they have been trained on; they can only identify patterns within the scope of this data. Nevertheless, the integration of physics-based predictions into AI models is being increasingly refined, promising to enhance their capabilities even further.

In coastal oceanography, there has been an enthusiastic uptake of AI technology across various disciplines, from enhancing operational forecasting to correcting time series data. Here, we will focus on recent developments in beach safety science, specifically the significant advances in identifying rip currents. A major challenge in current rip current prediction technology is the inherent unpredictability of beach morphology. As the 'shape' of the beach changes, so does the probability, location, type, and strength of rip currents. Additionally, numerical methods are computationally expensive, and beach morphology and dynamics do not necessarily scale well to different beaches. This variability is even more pronounced across various regions and climatic conditions worldwide. It's not just the beach morphology but also factors like tidal range, frequency, and wave climatology that play crucial roles in rip current formation and progression.

There are two crucial aspects to rip current-related beach safety: predicting rip currents and successfully identifying them. The latter is essential regardless of the method used (AI or numerical modeling) because both approaches require validation. Various methods use a combination of in-situ data and numerical models to build rip current probability prediction models, typically considering the beach type. However, our focus here is on how we identified rip currents in video or photographic images. The success of this method can help classify (containing a rip or not) large repositories of beach images, which can then be used to build a reliable rip current hazard prediction model. This technology becomes particularly powerful when combined with counting beachgoers (exposure). AI is also being used to predict exposure, as this parameter is influenced by prevailing metocean conditions, seasons, and social factors like public holidays. Combining exposure, hazards and beach goer vulnerability can then result in the effective prediction of beach hazards (e.g., 'Investigating the connection between metocean conditions and coastal user safety: An analysis of search and rescue data' – https://doi.org/10.1016/j.ssci.2019.03.029).

In 2021, Surf Life Saving New Zealand (SLSNZ) reached out to NIWA to explore the possibility of collaborating on developing rip current-related beach safety tools. Due to a lack of funding, we decided to create a prototype to test the feasibility of using AI to identify rip currents. As with most research projects, we began with a thorough literature review and found that, despite significant progress in this field, current technology was still plagued by assumptions and constraints. The most glaring issue was that these methods did not scale or generalise well. We then set out to investigate whether a different AI approach could overcome these generalisation problems.

A full technical description of our methods can be found in our open access paper, published in the *Journal of Remote Sensing* in 2022 (https://doi.org/10.3390/rs14236048). In summary, we used a method called Grad-CAM (Gradient-weighted Class Activation Mapping), which does not require a bounding box. Grad-CAM allows us to colour-code the pixels most important in making a classification. This method is particularly valuable because it enables us to see where the AI might be making errors in determining the presence of a rip current. This process, where the user can step into the AI training process and help interpret the results, is known as Interpretable AI, and it is visually

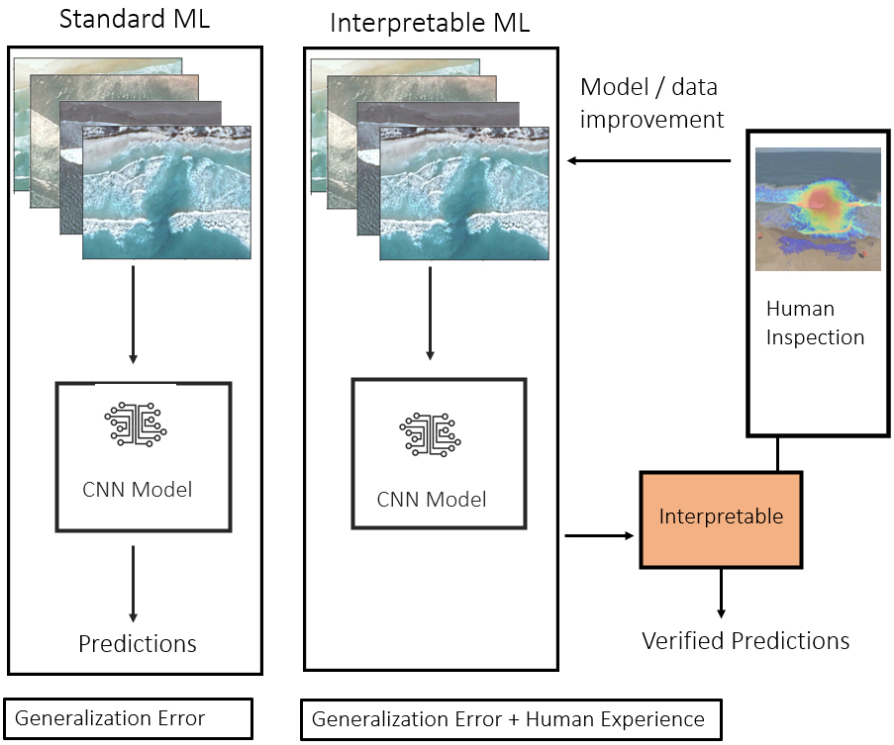

Figure 1: An illustration of our model training/improvement scheme. The standard AI approach is outlined on the left, with our Interpretable AI strategy outlined on the right. The interpretable AI strategy for model training/improvement uses Grad-CAM as interpretable AI step to create verified predictions (via human inspection) that can improve model development.

illustrated in Figure 1. It is also crucial to ensure that even when the AI is classifying an image correctly, it is basing its discernment on the correct features (e.g., identifying an actual rip current or lack thereof, and not mistaking a beach or breaking wave for a rip current).

Through this method, we discovered interesting insights. For example, our initial AI model was confusing large, exposed beaches with rip currents because it lacked the specific intelligence to discern between a beach and a rip current. To address this, we trained our AI to understand natural phenomena like coastal vegetation and various beach colours. We enhanced the model's intelligence by artificially augmenting our data set, adding synthetic elements such as shadows, fog, rain on the lens, different light exposures, blurs, and rain, among others.

We also employed transfer learning, a process where the AI's pre-existing identification capacity is used as a foundational step for new identification tasks. Specifically, we utilised MobileNet which is trained on 1.3 million images across over 1000 different categories in the ImageNet dataset. We further refined our AI with our Interpretable AI methods, using 1700 annotated images of rip currents and 700 without rips. Additionally, we ensured our model generalised well to different observation angles, making it effective for both aerial and oblique images. However, this method is not yet adaptable enough to be used directly from a beach angle, which remains an ideal goal we are working towards.

Through all of the modelling there are two really important lessons to always remember: (1) All models are wrong, but some are useful, and (2) Garbage in means garbage out. Remembering this will ensure that researchers really make sure that the quality of data (in this case images or videos) are of high enough quality and bespoke enough to address the particular problem. It's also a reminder that there is usually no silver bullet and that all models will have limitations. In our case, we managed to obtain a validation accuracy around 91% – given that CNN augmentation and transfer learning were both employed. In Figure 2 an example of using this method in identifying rip current is given.

The next step will be to roll out this technology across New Zealand. Over the last two years, we have struggled to secure funding to further our research. In the meantime, our colleagues in Australia have received funding for similar research, and we are collaborating with them to ensure that the progress we have made is not lost while we continue our search for research funding. If we do secure funding, our focus will be strongly directed towards observation methods. For instance, we need to determine whether to use drones on particular beaches and wide-angle cameras on others. Drones can patrol large expanses of patrolled beaches while cameras are not disruptive and require less maintenance. Each system will have its pros and cons, and the feasibility of these approaches needs to be investigated in the context of local community preferences and priorities as well. The ideal future scenario would be that identified rip currents are communicated to both lifeguards and the public though a web application, a lot like SafeSwim (https://safeswim.org.nz/) – following a rigorous, operational user validation campaign. User perceptions are also an important aspect of forecast

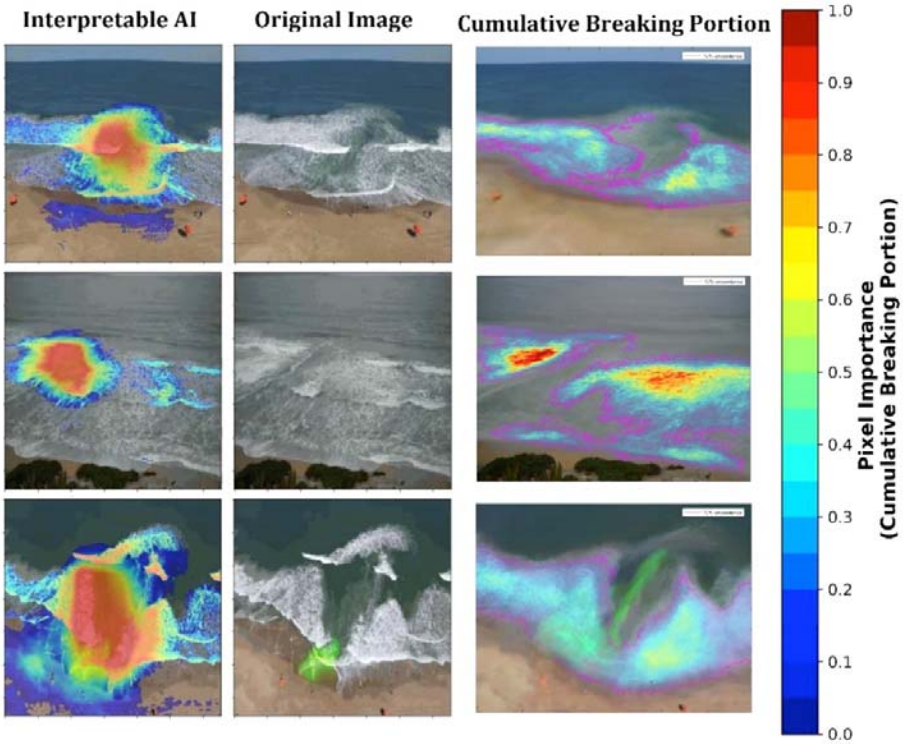

Figure 2: A comparison of rip detection using interpretable AI (left panels) compared to the cumulative breaking portion (right panels) with a still frame of the videos shown in the centre panels. Note that for the Interpretable AI (left panel), the warmer the colour, the more important that pixel is for the prediction of a rip current. For the cumulative breaking portion (right panel), the warmer the colour, the more breaking wave intensity within a pixel. The 10th percent exceedance contour is outlined in magenta. The shape of the 10th percent exceedance contour provides a relatively robust marking of the edge of wave breaking, defining the rip current boundary.

Figure 3: Christo and a lifeguard at the Mount, talking about the potential for this technology once rolled out to beaches across New Zealand.

communication and the reader is pointed to this study for more detailed information: 'Marine meteorological forecasts for coastal ocean users – perceptions, usability and uptake' (https://doi.org/10.5194/gc-4-361-2021) that is focused specifically on New Zealand and South Africa. Nevertheless, we believe that this approach and technology could save lives, as we aim to shift rip current drowning research from merely reactive responses to proactive prevention strategies. Our research was also featured in the first-ever full-length documentary on rip current research and technology.

A free version of the documentary is available here: https://youtu.be/RXgAGBlB9Vs?si=e2RppP1UYxfY4qwG. We also featured on the acclaimed NVIDIA podcast, and for those interested in listening to a more in-depth discussion about this technology, visit https://blogs.nvidia.com/blog/rip/.

Coastal Restoration Trust video series

The Coastal Restoration Trust of New Zealand hosts a wide variety of resources on its website, including a series of short videos (four to 14 minutes) that look at the natural processes at work along New Zealand's coastlines. While not aimed at the coastal professional, they are an excellent resource for NZCS members who interact with, for example, community or school groups, where an approachable and educational tool is needed (available at: https://www.coastalrestorationtrust.org.nz/resources/crt-resources/our-coast-video-series).

There are 13 videos available:

(1) How Beaches Work: natural coastal processes; (2) Coastal Squeeze: a problem of our making; (3) Sea Level Rise: why, how much, how fast? (4) Fighting Nature: our past response to beach erosion; (5) Working With Nature: a new approach to manage our coast; (6) Setbacks: managing risks from coastal hazards; (7) Dune Restoration Overview: restoring natural buffers; (8) Dune Restoration: plant zones and changes over time; (9) Estuaries: natural ecosystems; (10) Estuaries: human impact and sea level rise; (11) Estuaries: new approach mountains to sea; (12) Adaptive management: for sea level rise on coasts; and (13) Human Roles: in restoration and management.

The Trust is a nationwide organisation that utilises the knowledge and experience of communities, iwi, management authorities, industry and science agencies to restore coastal ecosystems, and to support and encourage the development of cost effective practical methods for coastal communities and others to restore coastal ecosystems and their function.

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CoastSnap in Christchurch: Harnessing community science for coastal monitoring

Ruby Clark, Christchurch City Council

What is CoastSnap?

CoastSnap was developed by the Water Research Laboratory in New South Wales, Australia, and is now a global initiative that engages the community to help monitor coastal environments. It involves setting up fixed photo points where community members can take and upload photos of the coast. These images are then used to analyse shoreline changes over time. The project utilises smartphones and the enthusiasm of local communities to gather valuable data that might otherwise be too costly or logistically challenging to collect.

CoastSnap in Christchurch

Christchurch has a diverse and dynamic coastline, presenting a great opportunity for coastal monitoring through CoastSnap. It was introduced to help educate people on coastal processes, and how sea level rise is increasing our exposure to coastal hazards. Supported by Environment Canterbury and the University of Canterbury, the Coastal Hazards Adaptation Planning programme here at Christchurch City Council has now installed five CoastSnap stations across our coastline, the oldest of which is four years old. Since then, we have successfully reached hundreds of people who have submitted images, all with very little promotion.

CoastSnap sign at Taylors Mistake Beach, Christchurch (Photo: Ruby Clark).

Taylors Mistake Beach, Christchurch, under a somewhat threatening sky (Photo: Ruby Clark).

How It Works

1. Installation of Photo Points: Fixed photo points are installed at key locations along the coastline. These points are strategically selected to capture significant changes in the coastal environment.
2. Community Participation: Residents and visitors are encouraged to take photos from these fixed points using their smartphones. Each photo point has a specific frame or mount to ensure consistent angles and perspectives.
3. Uploading and Analysis: Participants upload their photos to the CoastSnap platform via a dedicated app or website, or send them to us via email. The CoastSnap shoreline tracking technology helps to analyse the images to track changes in the shoreline and other coastal features.

What we consider are the key benefits of CoastSnap in Christchurch

Community engagement and education

Through the use of CoastSnap in Christchurch we are aiming to build the adaptive capacity of communities through increased awareness and understanding of coastal hazards and by providing a meaningful way for them to contribute to our monitoring of these risks and changes over time.

Cost-effective data collection and analysis

CoastSnap offers a more cost- and resource-effective alternative to traditional coastal monitoring methods. The continuous flow of images over time provides a valuable dataset that can help us track changes and predict future trends. CoastSnap has also been the subject of several student projects at the University of Canterbury, providing us with useful information and assisting us with the image analysis.

All in all...

CoastSnap is a low cost and effective community science initiative that we recommend to anyone. The CoastSnap licensing fee is currently covered by the New Zealand Coastal Society, leaving you to focus on the set-up.

If you have any questions on how we went about setting up our CoastSnap network here in Christchurch then please reach out to ruby.clark@ccc.govt.nz

Light pollution affects coastal ecosystems too – this underwater 'canary' is warning of the impacts

Kathleen Laura Sterup[a] and Abigail M Smith[b]

In the early 20th century, canaries were used[1] as early warning systems in coal mines to alert miners to rising levels of carbon monoxide.

A small unremarkable fish may fill a similar role in coastal ecosystems around Aotearoa New Zealand.

Triplefins, or kokopara, are common in a range of shallow coastal habitats across the country. They are a diverse group of fishes[2], with 26 endemic species living on our shores, and they make excellent "canaries" for the coastal marine environment, helping us to understand and possibly address pollution.

Research using triplefins has already shown increased consumption of microplastics[3] by fish living closer to urban areas. Studies have also identified molecular responses to multiple chemical pollutants[4] and described cognitive damage caused by loss of habitat complexity.

Noise pollution from small boats[5] also has negative effects on coastal fish. And now, new research[6] is investigating the surprising impact of light pollution on coastal ecosystems.

We are finding what is called "skyglow" affects triplefin growth patterns, with consequences for their ability to forage.

An underwater 'canary'

Human activity around coastal waters is intense, about triple the rate of other areas[7], and it affects ecosystems such as beaches and wetlands.

Coastal urbanisation introduces a range of challenges for near-shore ecosystems, including pollutants, plastics, sound and light.

Light pollution is often recognised for the limitations it imposes on astronomers and stargazers[8], but a growing body of research has begun to document effects on the health of animals and ecosystems.

Scientists have found coastal fishes in tropical and temperate environments, including the common triplefin, reproduce and grow in a cyclical pattern which follows the monthly lunar cycle[9].

Patterns in nocturnal illumination (known as artificial light at night, or ALAN) of surface waters have a surprisingly large impact on these fish. The prevalence of light pollution from cities (in this case New Zealand's capital Wellington) can potentially interfere with their breeding cycles.

Long-term trends in skyglow over the Wellington region have revealed elevated levels of nighttime illumination up to 60 kilometres from the city centre.

Analysis of triplefin samples from nearby waters has identified altered growth patterns, manifesting in different body shapes. The health consequences include decreased swimming and foraging ability and make life harder for fish developing in brighter waters.

Bright city lights

It may not seem that the effects of light on a tiny fish are a big deal, but triplefins are a clear indicator of what could be happening in other fish.

In marine ecosystems, small changes have a way of propagating further up the food chain.

In the light pollution example, theory suggests small-scale, relatively short-term fluctuations in small prey species like the common triplefin are likely to appear later as long-term fluctuations in larger species at a greater spatial scale, with genuine implications for pelagic fisheries[10].

In an instance such as this, the triplefin is indeed acting as a canary for potential changes affecting the entire marine food web.

We know what affects one fish species may not affect others. But equally, we can't carry out experiments on every species. What the humble triplefin can tell us is that coastal ecosystems are in trouble, not just from water quality and pollution, but from the lights and sounds of our big cities.

Like the miners, we need to pay attention to the animals we use as indicators. The triplefins are asking us to embrace the dark and there are many ways[11] in which our cities can do this.

Communities can choose LED lightbulbs and shaded fixtures for street lights, so they only point down. Sensible use of dimmers and timers will help turn off unnecessary lights. In fact, Aotearoa New Zealand hosts two of the world's few dark sky reserves, in Aoraki-McKenzie and, more recently, in the Wairarapa[12], as well as two dark sky

The Common triplefin Forsterygion lapillum (Photo: Ian Skipworth, public domain).

a Postgraduate in Marine Biology, Te Herenga Waka-Victoria University of Wellington.

b Professor of Marine Science, University of Otago.

sanctuaries (Aotea/Great Barrier Island and Rakiura/Stewart Island).

New Zealand could be on track to become the second dark sky nation[13] in the world (after Niue).

References

1 https://review.gale.com/2020/09/08/canaries-in-the-coal-mine/

2 https://www.nzgeo.com/stories/triplefins/#

3 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4695585

4 https://www.sciencedirect.com/science/article/pii/S0045653521030629

5 https://www.nature.com/articles/s41598-023-33684-0

6 https://openaccess.wgtn.ac.nz/articles/thesis/The_natural_of_coastal_light_pollution_and_its_relationship_with_morphological_variation_in_a_larval_fish_around_Wellington_New_Zealand/25130843

7 https://www.jstor.org/stable/4299200

8 https://darksky.org/resources/what-is-light-pollution/effects/night-sky-heritage/

9 https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2609

10 https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467-2979.2008.00272.x

11 https://darksky.org/resources/what-is-light-pollution/light-pollution-solutions/

12 https://darksky.org/news/wairarapa-dark-sky-reserve-becomes-new-zealands-second-international-dark-sky-reserve/

13 https://www.nationalgeographic.com/travel/article/new-zealands-quest-to-become-a-dark-sky-nation

New coastal-related course introduced at Auckland University

The University of Auckland is running two pilot transdisciplinary courses in semester two of 2024. The first of these courses, *Our Environmental Futures: Te Taiao Tāngata*, examines the complex relationships between environmental systems and humans, and the impacts of human practice on these systems.

As a transdisciplinary course, the aim is to provide students with the skills and mindset necessary to respond to a range of environmental issues. One of the issues students will explore is coastal vulnerability and how this creates challenges for people living near the coast.

In class, students will look at the threats to coastal property and consider the range of different approaches available i.e., avoid, protect, accommodate, retreat. They will also watch pre-recorded videos from coastal experts (i.e., in engineering and coastal geomorphology), plus other relevant disciplines that consider a wide range of contributing factors (i.e., cultural perspectives, law and psychology).

In groups, students will then be challenged to take on the role of a local council and apply the knowledge they have learned to a fictitious island – Matau Moto. Each group will be faced with three different settlements that are experiencing coastal erosion and/or inundation and will need to decide on the best approach to managing or living with these changes. This session will focus on decision-making, integrating a variety of different knowledges, and acknowledging that, the more we know, the better informed our decisions can be.

It is hoped that through this exercise students will gain a better understanding of the dynamic nature of coastal environments and the need to reform our relationship with land and sea, including reimaging spatial boundaries and navigating loss.

Coastal News – proposed distribution changes

Like just about everything else, the costs of printing *Coastal News* have continued to climb, to the extent that the Management Committee are considering changing how the newsletter is distributed to members.

Some of you might remember that NCZS trialled digital-only printing some years ago, but this was not universally popular with the membership and we reverted to paper copies. The intention this time is not to do away with printed copies altogether, but rather to give members the choice of receiving a paper or digital newsletter. There are two benefits to getting the digital version – you'll get the newsletter a week or more in advance of the paper version, and the web links that are now an integral part of the newsletter will be active (clickable) in the pdf. No more copying lengthy strings of characters!

Members will be asked at the 2024 conference which version of the newsletter they would like to receive. We're not intending to make this change until the March 2025 issue, so there's plenty of time to decide. If you have any comments about this change, please let the Editor Charles Hendtlass know (cellwairmonk@gmail.com).

Advertising in *Coastal News*

Coastal News is published three times a year (in both print and electronic formats) and the total readership per issue is estimated at 500+, comprising professionals in coastal science, engineering and planning, employed in the engineering industry, local, regional and central government, research centres, and universities.

There are a good variety of advertising opportunities available, from small notices to a full page spread – if you are interested in placing an advertisement, download the *NZCS Advertiser's Guide* from www.coastalsociety.org.nz/view/publications or email Renee, the NZCS Administrator, at nzcoastalsociety@gmail.com

NZCS Scholarship winners 2024

Saane Vaasen (University of Auckland) Student research PhD Scholarship

Using fieldwork and modeling to unravel the physical controls on shifts in the mangrove-marsh ecotone

Sanne is a PhD student at the University of Auckland, and is originally from the Netherlands. After finishing her masters in Marine Science at Utrecht University, she embarked on her PhD journey in New Zealand under the supervision of Prof. Karin Bryan, Dr Andrew Swales and Joel Carr.

Through her work she aims to increase our understanding of how different estuarine vegetative species compete over space, and how the distribution of their habitats will change over the coming decades. She is particularly interested in the mangrove-marsh ecotone, since over the last decades we have observed substantial expansion of mangroves in New Zealand estuaries, including the encroachment of mangroves into saltmarsh ecosystems.

Using a combination of fieldwork and modelling, Sanne aims to unravel how changes in sea level rise, estuarine sediment input and the frequency and intensity of storm events alter estuarine hydrodynamics and sediment pathways, thereby facilitating shifts in the mangrove-marsh ecotone.

Ultimately, the insights gained from her research will help us predict how estuarine morphodynamics and coastal ecosystems will transform over the coming decades, providing valuable knowledge for informed coastal management and conservation efforts.

Alaina Baker (University of Canterbury) Student research MSc Scholarship

An automated approach to mapping variability of hāpua morphodynamics in New Zealand

Alaina is completing a Masters of Environmental Science at the University of Canterbury, having completed her BSc in Geography and Environmental Science at UC in 2022. Her final year project involved the digitisation of locally collected citizen data based along the Rakaia hāpua (river mouth lagoon). This project allowed her to hear concerns from local residents and has subsequently inspired her current research.

Her research project will utilise a deep learning (CNN) approach to mapping the variability of hāpua morphdynamics along the Canterbury Bight, and potentially the wider east coast of the South Island. Fine spatio-temporal satellite imagery will be used for the automated creation of water masks. The purpose of this is to create a region-wide time series that assesses hāpua morphology alongside variations in river flow, climate, wave, and tide data. As the Canterbury Bight is an eroding coastline and is particularly vulnerable to climate stressors, setting up a remote sensing network is vital. This research will provide a better understanding of hāpua dynamics so we can benchmark current conditions and predict any future changes that may occur at a system wide scale.

Alaina's goal is to add to existing tools for improved accessibility and accuracy of coastal management. Thanks to the NZCS, she can widen this research scope to include more hāpua, engage actively with stakeholders, integrate higher resolution aerial imagery, and allow for more frequent ground truthing.

Saane Vaasen

Alaina Baker

Lucy Coulston

Lucy Coulston (University of Canterbury) Māori/Pacific Island Student research MSc Scholarship

Assessment of the barriers of indigenous engagement: a comparative case study of Waituna and Waitarakao coastal lagoons

Tena koe, Kō Takitimu, Te Awa Putahi me Titirangi ōku maunga, Kō Aparima, Taurekaitai me Uawa-nui-a-Ruamatua ōku awa, Kō Te Takutai o te Titi, Rongomaraeroa me Hauiti ōku marae, Kō Kāti Hine Te Wai, Kāti Huirapa, Ngāti Kere me Ngāti Pihere ōku hapū, Kō Kai Tahu, Kāti Mamoe, Waitaha, Ngāti Kahungunu me Te Aitanga-a-Hauiti ōku iwi, Nō Tairāwhiti ahau, Kei Otautahi tōku kainga inaianei, Ko Lucy Coulston tōku ingoa.

Lucy has been studying at Te Whare Wānanga o Waitaha/University of Canterbury for five years, having completed her Bachelor of Environmental Science with Honours in 2023. Her honours project was under the wider umbrella of the Iongario Project, looking at kōura around Te Pātaka o Rakaihautu/Banks Peninsula. This year Lucy is working towards her Master of Science, looking at the socio-ecological barriers facing mana whenua for enacting rangatiratanga over environmental taonga. This research sits within the Fish Futures Project. In both of her case studies these taonga are Waituna-type coastal lagoons in Te Waipounamu/South Island of Aotearoa.

Lucy's passion for te taiao (environment), wai māori (freshwater) and te moana (ocean) has stemmed from deeply intrinsic values planted and nurtured by her mātua and whānau. Growing up on the whenua and in the moana has deeply set in values of kaitiakitanga and manaakitanga – which underpin the fabric of whānau tikanga. It is through this that her drive for integrated wai māori and wai tai management stems from.

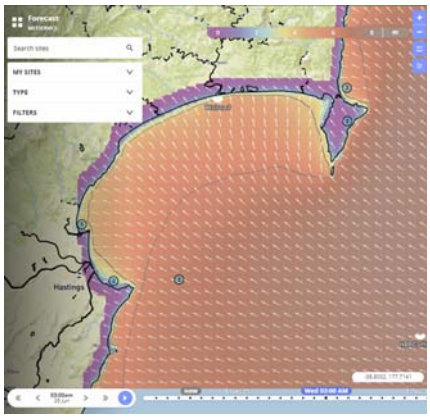
June high waves event in Hawke's Bay

João Albuquerque (NZCS Regional Representative)

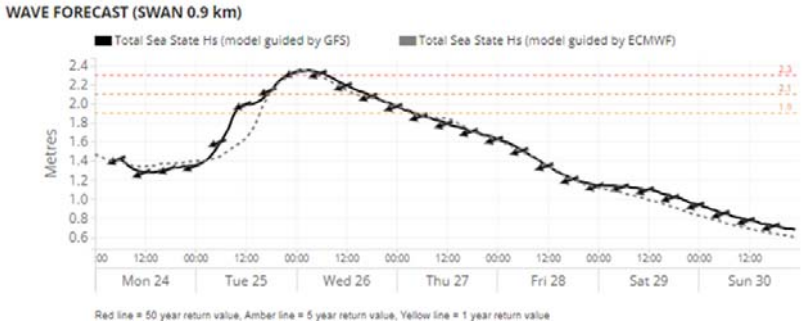
A large south-east swell event struck the Hawke's Bay coast from the 25th to the 27th of June this year, and a local state of emergency was declared. The direction of the swell allowed it to propagate towards most of the Hawke's Bay beaches, causing floods and evacuations in many coastal areas during high tides.

For the areas sheltered by Cape Kidnappers, the forecasted wave height during the peak of the swell was larger than a 1 in a 50-year event (the statistics do not include Cyclone Gabrielle). However, as the swell arrived, the measurements of HBRC's spotter buoy at Westshore showed wave heights significantly larger than what was forecasted.

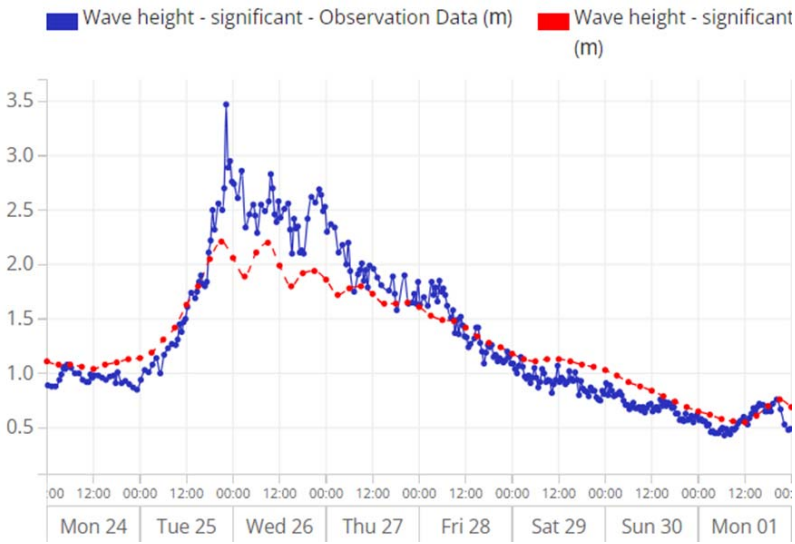
At Westshore, swell overtopped and washed away a significant portion of the gravel bund, also flooding two houses near the reserve, and eroding the area in front of the Westshore Surf Club. At Clive, gravel overwashed through Domain Rd and there was flooding at the Clive Grange Domain Reserve. At Haumoana, one house was flooded, and at Te Awanga the swell eroded part of the Maraetotara River stopbank. More signs of coastal flooding, such as debris and erosion, were also sighted at the Clifton motor camp and Clifton road.



Map of the forecasted swell during the peak of the event from 24/06/2024 (Data sourced from MetOcean Solutions's MIP platform).



Wave forecast for Haumoana on 24/06/2024 (Data sourced from MetOcean Solutions's MIP platform).



Wave forecast (red) vs buoy measurements (blue) at Westshore during the swell event (Plot sourced from MetOcean Solutions's MIP platform).

Westshore: erosion at the Surf club (left) and overtopping/flooding with NCC and HBRC staff working on the clean up (right) (Photos: João Allbuquerque).

Clive: gravel overwashed and the HBRC team rebuilding the gravel bund before the next high tide (top left); gravel and debris pushed over Domain Road and parking lot (top right and bottom left); the flooded campground (bottom right) (Photos: João Allbuquerque).

Clifton: debris washed over the sea wall and on Clifton road (Photos: João Allbuquerque).

Te Awanga: erosion of the Maraetotara River stopbank (top) and debris (bottom) (Photos: João Allbuquerque).

Coastal wetland blue carbon report published

Coastal ecosystems are increasingly seen as a way to mitigate climate change impacts, and a means to boost community resilience. These ecosystems, which include saltmarshes, mangroves and seagrass meadows can capture and store carbon (known as blue carbon) at higher rates than that of terrestrial forests (green carbon). Improving the health of coastal ecosystems has other benefits as well, such as storm surge protection, improved water quality and enhanced biodiversity. However, these ecosystems are also vulnerable to disturbance and destruction from sea level rise, agricultural activity and coastal development, thus limiting their ability to store carbon.

Research and implementation into coastal wetland blue carbon has been somewhat ad hoc to date, so the need was seen for a national-scale strategy to connect researchers, mana whenua and local communities. To this end, a project supported by The Nature Conservancy Aotearoa New Zealand and the Department of Conservation was begun in 2023 where researchers, practitioners, resource managers and mana whenua participated in a series of hui to share knowledge about current coastal wetland blue carbon projects and aspirations for the future.

A report of this work has now been published under the title *Coastal wetland blue carbon in Aotearoa New Zealand: Current projects, reflections and recommendations for a community of practice* with both the full report and an executive summary available to download from https://www.nature.org/en-us/about-us/where-we-work/asia-pacific/new-zealand/stories-in-new-zealand/aotearoa-blue-carbon-hui-report.

One valuable output from this work is a project catalogue, in which a timeline and mapping exercise built a picture of milestones and progress from ongoing coastal wetland blue carbon projects in Aotearoa. It also identified initiatives to enhance carbon sequestration science, covering areas such as carbon stocks and sediment dynamics, and including broader, national-level projects, such as mapping coastal wetlands (crucial for providing a comprehensive national overview). The report also identifies a number of steps that need to be taken in order to accelerate ongoing work in this area.

News from the regions

Welcome to our new regional representatives!

There have been some recent additions to the regional representative network, and we would like to welcome three new recruits (for their contact details, see page 16).

João Albuquerque (Hawkes Bay)

João is originally from Curitiba, a Brazilian city 100 km inland. While growing up, the beach was a holiday thing that got him into surfing at an early age. Despite his love for the ocean, his bachelor's and master's degrees were awarded from Federal University of Paraná… in Computer Science! After years of IT work and lecturing at universities, João stepped out of the IT field to pursue his PhD in Oceanography at The University of Auckland. His research work is on the potential effects of climate change on the wave climate of New Zealand.

Nowadays João is based in Napier, as the Coastal Specialist of Hawke's Bay Regional Council. He is passionate about beach morphodynamics and nature-based solutions for coastal management and adaptation. In his spare time, João can be found chasing waves, hiking or exercising. If he is at home, he may be reading, listening to music or cooking.

Jessica Green (Canterbury)

Originally from coastal California, Jessica grew up with a love and appreciation for the coastal environment. She has a Bachelor's degree from the University of California Santa Barbara and a master's degree from the University of Waikato. Her master's research focused on the morphological variability of *Zostera muelleri* in Tauranga Harbour.

Jessica is an Environmental Scientist at Beca, based in their Christchurch office. She is interested in, and passionate about, coastal hazards and nature-based solutions for coastal adaptation. Outside of work, she spends her free time reading, swimming, baking, and attempting to train her rescue dog!

Mojgan Razzaghi (Otago)

Mo, originally from Iran, is a coastal engineer/scientist who serves the community at the Dunedin City Council. With a rich background in mechanical and coastal engineering, she applies her skills and expertise to look after the coastline and coastal infrastructure.

She finished her PhD in Earth Sciences at the University of Waikato, where she researched estuarine hydrodynamics and processes following freshwater restoration with engineering interventions. The Maketū estuary, restored by the Bay of Plenty Regional Council, was the case study for her research.

Her journey has been driven by a deep commitment to understanding and preserving our coastal environments and she is honoured to serve NZCS as a regional representative for Otago.

Hawke's Bay

José Beyá and João Albuquerque, Regional Representatives

State of Emergency in coastal Hastings and evacuations

A state of emergency in coastal Hastings and early morning and midnight evacuations were undertaken by Civil Defence personnel during the high waves event in the locations of Clifton, Te Awanga and Haumoana.

Evacuations due to river flooding were also implemented in Wairoa.

Source: https://www.hastingsdc.govt.nz/home/article/3136/heretaunga-ward-state-of-emergency-updates

Wairoa flood damage aftermath

Severe flooding in Wairoa on June 26, 2024 has caused significant damage to the area. Over 500 properties were affected, leading to substantial losses. The Hawke's Bay Regional Council is working on flood mitigation and infrastructure development to support the affected communities.

The government has allocated an additional $3 million for flood clean-up efforts.

Offshore buoy going for a ride

On the 18th of June, HBRC's wave buoy broke free from its mooring and drifted for a couple of days before being rescued. HBRC's Coastal Specialist João Albuquerque suspects that biofouling (barnacles) at the bottom of the marker buoy and the wave action may have cut the rope that connects both buoys. "After three months of deployment we went back to the buoy for maintenance and were impressed by how fast biofouling develops at that spot" says João.

The team have reinforced the connecting line, and are on their way to re-deploy the buoy over the next few weeks. Once there, they will also conduct an investigation on what may have caused the issue so that it can be prevented in the future.

New subdivision for sale at Cyclone Gabrielle affected area

Twelve sections on Tangoio, a beach north of Napier, are being sold by a developer after being deemed unsuitable for permanent habitation following Cyclone Gabrielle. The developer mentioned that while the development did not proceed as planned, the properties could be ideal for caravans. Out of 25 properties in the development, all but three have accepted a voluntary buy-out.

The area was initially considered to have potential for residential dwellings, but was later classified as unsafe for habitation.

New NZCS regional representatives: João Albuquerque (left), Jessica Green (centre) and Mojgan Razzaghi (right).

Offshore buoy going for a ride: (left) spotter buoy drifting towards Hawke's Bay shores until the rescue arrival (Plot sourced from Spotter buoy dashboard); (right) biofouling growth after three months of buoy deployment (Photo: João Albuquerque).

Bay of Plenty

Jonathan Clarke, Scott Murray and Cole Burmester, Regional Representatives

Renewed Beacon Wharf, Tauranga waterfront

Beacon Wharf, situated at the northern end of the city centre waterfront on Dive Crescent, has had a comprehensive upgrade and is now open for the community to enjoy. The redeveloped Beacon Wharf area features a gangway leading to a pontoon, which will provide a great spot for keen fishers and swimmers. The site also includes improved landscaping and a viewing platform, along with a refurbished seawall, celebrating the connection between the community and Te Awanui Tauranga Harbour. The upgrade to Beacon Wharf marks a significant step in the transformation of the Tauranga Waterfront with several key projects set for completion by summer, such as the new waterfront playground, green reserve, shared pathway, boardwalk, rail underpass, and the living seawall.

Marine Park research and education facility

Tauranga City Council and the University of Waikato have announced they have signed an agreement to lease a site at Marine Park, Sulphur Point to establish a new state of the art marine research and education facility.

Beacon Wharf (Source: SunLive News).

The new facility will replace the University's existing Coastal Marine Field Station and will include research laboratories, classrooms, and public engagement spaces. It will be equipped with the latest technology to enable innovative research and education in marine science, conservation, and sustainability. The site will complement the research and education already being undertaken at the University's Durham Street campus in Tauranga City Centre and the Adams Centre at Mount Maunganui. The new facility is expected to open in 2027/2028.

Wellington

Holly Blakely, Greta Stuthridge and Karen Bell, Regional Representatives

Evan's Bay cycle way and seawall installation tour

A hardy lot of about 19 of us braved the cold weather and went on a site visit on 9th May 2024 to the concrete block sea wall that's being constructed at Evan's Bay adjacent to the cycle way. This seawall is being constructed by Downer using Redi-Rocks, a new concrete block solution for geotechnical and coastal projects. We saw the partially built wall and progress to date and had a chance to discuss the design and construction with the Downer (construction) team and the Duracrete (Redi-Rocks) team. David Hepburn from Duracrete gave us an excellent explanation of how the Redi-Rocks work on site. We then all assembled at NIWA where Dr Scott Nodder hosted us for a cuppa and a warm space for a further presentation from David about Redi-Rocks.

If you want more information on the Redi-Rocks system, please see the website at https://www.redi-rock.com or contact

Evan's Bay cycle way and seawall visit May 2024 (Photos: (top) Karen Bell and (bottom) Sarah Hucker).

David Hepburn on LinkedIn (https://nz.linkedin.com/in/david-hepburn-639b84119).

Special thanks to: ENG NZ Tech groups for your help quickly promoting this event; Renee at NZCS for also promoting it and answering questions; David Hepburn at Redi-Rocks for a very interesting and informative site visit and presentation; the Downers people for explaining things to us and answering our questions; Dr Scott Nodder NIWA for hosting us for a cuppa and a warm place to have the presentation; and Holly Blakey and Ryan Abrey for helping me organise my first NZCS event.

Contributed by Karen Bell

Wellington Harbour cruise

On the evening of 26th March, the Wellington branch hosted a joint harbour cruise with the New Zealand Geotechnical Society (NZGS). While the charter boat, *Sweet Georgia*, steamed around the Wellington Harbour, a series of talks took place on 'Te Ara Tupua's Nga Uranga ki Poti-One project' and 'Seaview Wharf upgrade'. This event was an opportunity for attending members to get a close look at work that's going on and pose questions on the projects.

The project's cultural and ecological significance, close proximity to live rail lines, the Wellington fault line and challenging coastal environment, presented great design and construction challenges.

The Te Ara Tupua's project team from Tonkin & Taylor Ltd, including Michael Paine (Senior Coastal Engineer), Mikias Yohannes (Senior Geotechnical Engineer), and Marcus Cameron (Senior Aquatic Scientist), provided insightful presentations on the project's coastal, geotechnical, and ecological design elements and the innovative approaches used to meet various challenges. The discussions highlighted the importance of collaboration, innovation, and adoption of new technology in resolving complex engineering issues.

The Seaview Wharf upgrade, a part of the Seaview Energy Resilience Project, aims to strengthen the 50-year-old wharf and pipeline, making it more resilient to earthquakes and severe weather. The Kaikōura Earthquake in 2016 caused significant damage to the wharf, prompting an urgent repair and upgrade to meet international standards for ship berthing and bulk fuel discharge. Liam Hall (Senior Structural Engineer from Holmes Consulting Ltd) and Matthew McKee (from CentrePort Ltd) presented details about the upgrade, with *Sweet Georgia* anchored in front of the enormous barge platform adjacent to the Seaview Wharf.

Scenes from the Wellington Harbour cruise (Photos: Shirley Wang, Tonkin & Taylor).

The event saw great participation with over 40 attendees, including representatives from NZGS Wellington Branch (Shirley Wang, Senior Geotechnical Engineer from Tonkin & Taylor Ltd) and NZCS Wellington Branch (Ryan Abrey, Principal Civil & Coastal Engineer from Stantec). Special thanks go to Holly Blakely (Coastal Engineer from Tonkin & Taylor) for her commendable organisation of the event, and to Engineering New Zealand for their invaluable support.

West Coast

Don Neale, Regional Representative

Westport's wave buoy deployed

The Sofar Spotter Ocean wave buoy purchased by the West Coast Regional Council was deployed off the coast of Westport on the 7th of June.

A team from Buller District Council and the West Coast Regional Council used Westport Harbour's vessel *Protector* to transport the buoy and moorings to the site, 1.5 nautical miles NNW out from the harbour entrance. The bright yellow buoy is 800 mm in diameter and tethered to a secondary buoy fitted with an amber flashing light to aid in navigation. It is powered by an array of solar panels and located off the tip heads, on the main lead line at 41 42.137'S and 171 34.766'E.

The buoy will be used to collect data in real time, including wave characteristics, wind conditions, sea surface temperature, and atmospheric pressure.

This information, collected over time, will form a valuable dataset able to be used to update the flood model that the National Institute of Water and Atmospheric Research (NIWA) has developed for Westport, in partnership with West Coast Regional Council.

Data collected from this one setup includes maximums, means and minimums for wave period, height, and direction, wind speeds and direction, sea temperature, and barometric pressure.

These datasets will also help those developing the flood models to set more appropriate downstream boundary conditions for the flood inundation maps that are created from the flood model forecasts. These currently use more national-scale datasets for sea level, wave height and wave period, so the local data will greatly increase their accuracy.

Spotter buoys seem to be very much in the news right now – the West Coast buoy being deployed (top left) and deployed (top right) (Photos: WCRC); and one of the three buoys recently deployed off the Otago coast (bottom left and right) (Photos: Mojgan Razzaghi).

Harbourmaster Domonic Venz says "The purchase of the wave buoy by the West Coast Regional Council is a long-term investment that will improve the Westport Flood Forecast's performance and refine the inundation maps, which are used by Civil Defence Emergency Management.

With the Westport Harbour team working in partnership with the West Coast Regional Council, we are now able to provide access to this real time data, sharing sea conditions just off the coast with all harbour users."

The wave buoy data is being telemetered to both Buller District Council and the West Coast Regional Council websites for the public to access, alongside the current rainfall and river level data (to access, see https://www.wcrc.govt.nz/environment/water/river-levels-rainfall).

The wave buoy falls under the 'accommodate' function of the Protect, Avoid, Retreat, Accommodate (PARA) framework for the Resilient Westport business case and was purchased using the Government's funding support for the Westport flood protection scheme.

This funding ($22.9m) aims to deliver an integrated package focused on longer term flood resilience covering structural protection for Westport (the ring-bank). For further information please contact: Domonic Venz (Harbourmaster) Domonic.Venz@bdc.govt.nz or Peter Haddock (Council Chair) Peter.Haddock@wcrc.govt.nz

Contributed by Paulette Birchfield, WCRC

Otago

Sorrel O'Connell-Milne, Amanda Riddle and Mojgan Razzaghi, Regional Representatives

Deployment of spotter wave buoys

As part of the monitoring program and in collaboration with Otago Regional Council and Port Otago Limited, Dr Mojgan Razzaghi, Coastal Engineer at Dunedin City Council and NZCS Regional Representative deployed three spotter wave buoys along the coast of Otago with the Otago Harbour Master.

The spotter buoys record a range of wave data and share them live via the Sofar platform which can be accessed through https://spotters.sofarocean.com/?user-filter=5473

St Clair-St Kilda erosion protection

Dunedin City Council Coastal Engineer and NZCS Otago Regional Representative, Dr Mo Razzaghi has led the Emergency Erosion Protection and maintenance work along St Clair-St Kilda Beach in Dunedin.

The project included reshaping and replenishing the rock revetment of the St Clair Seawall to prevent undermining and to add to the longevity of the seawall's life. The eastern side of the seawall was under the risk of undermining for the past few years and this project aimed to address that.

Delivered by Fulton Hogan, approximately 1100 tons of rocks ranging from approximately 0.8 m to 1.5 m diameter were placed and interlocked at the base of the seawall.

Dr Mo Razzaghi has also advised and manages the Moana Rua geobag (sand sausage) walls which are aimed to protect the historic landfill of Kettle Park from severe erosion caused by high swells and storms. They are a temporary measure and are expected to protect the historic landfill for at least five years.

The geobags will give us time to develop a long-term plan to prevent the escape of landfill material. Since landfill material was found extending into the beach's dune system, the risk of it being exposed following winter storms had to be mitigated.

This project includes installation of two layers of Mega Container Geobags for approximately a 500 m length.

St Clair-St Kilda erosion protection construction (Photos: Mojgan Razzaghi).

St Clair-St Kilda erosion protection project (Photos: Left and centre, Dunedin City Council; and right, Mojgan Razzaghi).

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NZCS archive & downloads site

The NZCS website houses an extensive archive of the Society's publications from its inception, including:

- back issues of *Coastal News* (1996 to date) and 'hot topic' reprints of significant articles from previous issues;
- newsletter author and article indexes from issue 1 to date (updated yearly);
- an author's guide to writing articles for *Coastal News* and NZCS special publications; and
- copies of the five completed NZCS Special publications (published 2014-2022).

All these can be accessed at www.coastalsociety.org.nz under the 'Media>Publications' tab on the main menu.

News in brief

Water temperature update

Stats NZ has updated its sea-surface data to include 2023, and the result is somewhat alarming – between 2022 and 2023, oceanic and coastal waters around the country reached their warmest annual temperatures since reporting began in 1982. Since that time, sea-surface temperatures have increased on average by between 0.16 to 0.26°C per decade (with the Tasman Sea having the highest average rate) and coastal regions have warmed on average by between 0.19 to 0.34°C per decade (with the east coast of the South Island having the highest average rate). For more, see: https://www.stats.govt.nz/news/oceanic-and-coastal-water-temperatures-highest-since-the-series-began

Coastal hazards and climate change guidance tool

The Ministry for the Environment has released an update to its 2017 Coastal hazards and climate change guidance document. The 2024 version incorporates a number of updates around sea-level rise projections from the IPCC and the NZ SeaRise Programme, advances in knowledge relating to the types of coastal hazards and how they interact with each other, and updated guidance on carrying out risk assessments and adaptation pathways planning. For more, and to download the document, see: https://environment.govt.nz/publications/coastal-hazards-and-climate-change-guidance/

Legal fight against forestry companies

In what has been described as a 'watershed moment', the Gisborne District Council has taken a large forestry company to the Environment Court to get it to remove debris and slash from local hills and coastlines. The problem of woody debris and slash being washed onto beaches and into the sea during storm and flooding events is an ongoing issue in the Gisborne area, and is one that has not been solved with fines against the company, leading to enforcement action being sought to finally tackle the problem. For more, see: https://www.stuff.co.nz/nz-news/350333618/watershed-moment-gisbornes-legal-fight-against-forestry-companies

Cathedral Cove 'lifeline'

Land access to one of New Zealand's more iconic scenic attractions, Cathedral Cove, has been off limits since the walkways were damaged by Cyclone Gabrielle. However, the Conservation Minister recently announced that funding of $5 million has been allocated to plan and build an overland track to restore access. The funding, part of a wider conservation package, comes from the international visitor levy, a $35 charge to most international visitors used to support conservation and tourism projects. For more, see: https://www.stuff.co.nz/travel/350337677/5-million-lifeline-cathedral-cove

Surviving a Milford Sound tsunami

A recent University of Canterbury Master's thesis has concluded that a landslide-triggered tsunami in Milford Sound could result in only 5.2% of people in the impacted area surviving. Worse still, the 5.2% represents a best-case scenario, that assumes the tsunami occurs at night during the winter, a time when fewer people would be in the area. The research suggests that if a large earthquake occurs in the area, there is a 44 percent chance it will trigger a landslide into the fiord and thus a tsunami. If this were to happen, escape would be difficult as the wave would arrive too quickly, safe areas are unmarked or difficult to access, and public awareness of the risk is lacking. For more, see: https://www.rnz.co.nz/news/national/519488/best-case-scenario-5-percent-survive-milford-sound-tsunami

Cuts to coastal mapping projects

Concerns have been raised that recently announced funding cuts to a coastal mapping project will put communities at risk. Land Information NZ is making cuts to its coastal mapping, which means that only 40% of the country's coast will be mapped instead of the original target of 85%. Due to the cuts, mapping will now be restricted to more heavily populated regions and areas with vulnerable infrastructure. For an audio discussion of the cuts and their impact, see: https://www.rnz.co.nz/national/programmes/ninetonoon/audio/2018946030/cuts-to-coastal-mapping-projects-will-put-communities-at-risk-scientists

My Coastal Futures game

NIWA has recently released The My Coastal Futures online game, which gives players the experience of making decisions about their coastal property as sea levels rise. Players can choose from a variety of adaptation options, but need to think about how they combine and time their choices, and to be prepared to make compromises between what is best for them and what is best for their community. The game can be played on any web browser and takes a little over 5 minutes to complete. It can be accessed at: https://niwa.co.nz/climate-and-weather/my-coastal-futures-online-game

Coming in issue 84...

The November issue of *Coastal News* will include an article relating to the Northern Seawall Renewal Project, Tauranga. Designed by WSP, the 200 m long rock revetment seawall incorporates proprietary precast concrete 'Living Seawall' boulder units, their first application in New Zealand. The products are designed with textured recesses intended to retain tidal waters between tidal cycles and replicate rockpool features typically found on natural rocky foreshores. The Bay of Plenty Regional Council and Toi Ohomai Institute of Technology personnel regularly conduct ecological monitoring of the units and hope to identify any impacts on marine growth and biodiversity relative to a 'standard' rock revetment seawall.

Accessing weblinks in the printed newsletter

Web links are an invaluable source of further information for readers, but in the printed version of *Coastal News* we can't include active links as we do in the pdf version.

We realise that manually copying long strings of seemingly random characters can be frustrating for readers, so for each issue we now produce a pdf file of live links – this can be found on the NZCS website at www.coastalsociety.org.nz/publications.

To make things even easier, you can access the pdf file by using the QR code to the right. The file contains every link published in each newsletter, organised by the pages where they appear, and all are active (clickable) links.

Te Hunga Takutai o Aotearoa
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Contributing to *Coastal News*

We welcome contributions for forthcoming issues of *Coastal News*. Please contact the Editor, Charles Hendtlass, at cellwairmonk@gmail.com if you'd like to submit an article, contribute a news item, have content suggestions or a photo to share, or to give some feedback on the newsletter.

The submission deadline for the next issue is 7 October 2024.

A Contributor's Guide is available for download from the Society's website at www.coastalsociety.org.nz (under the 'Publications' tab). This provides information on the style and format requirements when writing for NZCS publications. An index of articles previously published is also available for download.

2024 NZCS Conference

Christchurch | November 19-22

The NZCS 2024 conference is being held in Christchurch this year at the Chateau on the Park, commencing on November 19 and concluding on November 22. This is your annual opportunity to share knowledge across a range of coastal management topics and meet with peers from around the country.

Conference line up

This year's conference includes:

- The pre-conference welcome and networking function
- The Eric Verstappen emerging professionals breakfast
- Two days of speakers and presentations
- Field trips
  - *Lyttleton Harbour Black Cat cruise*
  - *Northern coast tour*
  - *Eastern Christchurch tour*
  - *Christchurch central rebuild walking tour*
- The conference dinner
- Other events to be announced.

For the full conference details (which are being regularly updated), see the Conference page at: www.coastalsociety.org.nz/conferences/2024/

Conference themes

The 2024 Conference themes are:

1 Data collection, monitoring and remote sensing
2 Coastal ecology
3 Resilience and adaptation to climate change
4 Port and coastal engineering
5 Coastal hazards
6 Planning and policy
7 Working with nature/Blue Carbon
8 Physical processes
9 Indigenous knowledge/Mātauranga Māori.

Registrations

Registrations for the 2024 Conference are now open, and you can register on-line at: www.coastalsociety.org.nz/conferences/2024/registration/

Full information is available on the registration page, but the important items to note are:

- Early Bird registration ends 23 September 2024.
- Full Registration includes the Icebreaker function, conference sessions and keynote addresses, morning and afternoon teas, lunches, the conference proceedings pack, fieldtrips, and the conference dinner event.
- 1-Day Registrations are available, which include the conference proceedings pack, coffee and tea breaks, and lunch on that particular day.
- Extra tickets can be purchased for the conference dinner – these are favourably priced 'at cost' (this to encourage partners and friends to attend the dinner).
- Non-member full registration includes a 1-year membership in the NZCS (details of which will be provided seperately).
- There is a special rate for student registrations – this includes everything in the full registration, except the conference dinner (the Society encourages student registrations so as to share new knowledge and expand our professional base).

Photo: Lyttleton Harbour as seen from the Sign of the Kiwi (Photo: Charles Hendtlass)

Te Hunga Takutai o Aotearoa
NEW ZEALAND COASTAL SOCIETY