Pacific Community Communauté du Pacifique JUNE 2019 | ISSUE 75

ISSN 1728-4473



# **Pacific Maritime Watch**

Published by the Pacific Community

## **Pacific Maritime Watch**

June 2019 | ISSUE 75

10

14

#### CONTENTS

#### **MARITIME ENERGY**

Solomon Islands saves the planet one LED light bulb at a time

Cook Islands maritime industry committed to make shipping and port greener

Integrating Green Port strategies into the ADB Nuku'alofa Port Upgrading project

#### WOMEN IN MARITIME

Progress toward gender equality and attainment of the UN Sustainable Development Goal 5: Partnership with regional and national networks of Women in Maritime

Fiji WIMA represented at the World Maritime University Third International Women's Conference

Fiji WIMA empowers members in leadership workshop

#### **MARITIME SAFETY**

Understanding ocean weather and tracking vessels in the Pacific Ocean: Technology to help prevent and respond to maritime casualties

From stars to satellites: The use of technology to improve safe navigation in the Pacific

Government of New Zealand supporting delivery of PIDSS: 2018-2021

Boosting border protection with dormant charters

#### MARITIME LEGAL

The SPC Oceans and Maritime Programme: Legal and policy services and assistance

OCEAN

The Pacific Community Centre for Ocean Science









Design and Layout: innoV8.fiji

Pacific

Community

Communauté

du Pacifique



This 75<sup>th</sup> edition of *Pacific Maritime Watch* comes after an event in Vanuatu in May that gathered various national stakeholders to discuss the implementation of Vanuatu's National Ocean Policy. Implementing such a policy and the associated measures requires coordination across several sectors, such as marine spatial planning, fisheries, marine tourism, maritime transport, deep-sea mining and disaster risk management. This weeklong event in Port Vila, entitled 'Ocean and Tides: Science to Services', looked at the critical information needs and priorities for ocean-related sectors. It also looked at the monitoring tools and applications that are available to inform the sustainable development of ocean-related sectors, which will ultimately feed into the implementation and monitoring of Vanuatu's Ocean Policy.

Thierry Nervale Deputy Director, The Pacific Community (SPC), in collaboration with the Vanuatu Meteorology and Geo-Hazards Department, carried out consultation and delivered a workshop during this event - a highlight for the Pacific Community Centre for Ocean Science (PCCOS). PCCOS is a platform at SPC to coordinate

Oceans and Maritime Programme and deliver multi-disciplinary, multi-sectoral integrated programming, providing excellence in ocean science, knowledge and innovation to conserve and sustainably use ocean, sea and marine resources in the Pacific region. An article is dedicated to PCCOS in this edition.

In this edition, we also explore how science and innovative technology can offer solutions to sectors that must contribute to the sustainable use and protection of our ocean. Innovative technology helped the Solomon Islands Port Authority reduce greenhouse gas emissions by 11 per cent in just one year, which will save USD 100,000 each year. Observation systems can assist in tracking vessels, while technology can help prevent and respond to maritime casualties and improve safe navigation in the Pacific.

At SPC, we are fortunate to receive support from, and work closely with, partners that are also committed to assisting the Pacific maritime sector. The New Zealand Ministry of Foreign Affairs is providing funding support to SPC and its Pacific Islands Domestic Ship Safety programme, as well as the associated legal and policy services that fall under the Pacific Memorandum of Understanding on Flag State Implementation for Domestic Ships in the Pacific islands region, known as the Pacific MoU. Since 2002, the International Maritime Organization (IMO) has been a strong partner in all areas related to maritime affairs. In the last two years, IMO has worked to progress low carbon shipping and support women in maritime. Read more about these issues and partnerships in this edition.

Enjoy reading this new issue of Pacific Maritime Watch, and do not hesitate to send feedback and articles should you wish to contribute.

#### Merci beaucoup, and thank you very much.

#### **Thierry Nervale**

**Deputy Director, Oceans and Maritime Programme** 

Do you receive SPC's regular Maritime Information Bulletin? Comprising key maritime news items from the region, the bulletin is essential reading for anyone involved in the industry.

Email: edd@spc.int to subscribe.

Disclaimer: All care and diligence has been used in extracting, analysing and compiling this publication, SPC however, gives no guarantee that the information provided is without error.

#### Pacific Maritime Watch Editorial

#### Welcome to the first edition of Pacific Maritime Watch for 2019.





*Eranda Kotelawala (with helmet), CEO, Solomon Islands Port Authority talking to Lee Adamson of the International Maritime Organization about the port energy savings* 

## Solomon Islands saves the planet one LED light bulb at a time

Solomon Islands Ports Authority (SIPA) saved an estimated SB\$1 million accumulating from energy savings of 185,760 kWh in the past 12 months as a result of collaboration with the Maritime Technology Cooperation Centre in the Pacific (MTCC-Pacific) and Green Pacific Port project initiatives of the Pacific Community (SPC). MTCC-Pacific functions to reduce greenhouse gas emissions within the maritime sector in the Pacific through training on environmentally-conscious vessel operations and installation of solar panels.

The Green Pacific Port initiative aims to improve efficient and resilient port operations and infrastructure, whilst reducing environmental and carbon footprints. This requires an integrated approach toward the quality, energy and environmental management of ports and its operations. The SIPA Chief Executive Officer, Eranda Kotelawala, highlighted "new investments in solar power to supply perimeter LED lighting for both Honiara and Noro ports; and to provide electricity to all refrigerated containers and newly invested yard-handling equipment." He added that "we have adopted ambitious targets to contribute to country efforts in reducing energy consumption and greenhouse emissions. We have a clear vision of green ports in Solomon Islands and to transform Noro Port into a carbon neutral port by 2030."

MTCC-Pacific is part of the Global MTCC Network (GMN), a project implemented by the International Maritime Organization (IMO) and funded by the European Union, to build the capacity of developing countries for climate mitigation in the maritime industry and thereby contribute to the Nationally Determined Contributions (NDC) of Pacific Island countries and the broader Sustainable Development Goals (e.g. SDG 14 Oceans).

MTCC-Pacific successfully completed trainings related to the energy efficient operation of vessels



for all its target countries. It is now monitoring the results of energy efficient operations. Cook Islands and Tonga, though not target countries, have expressed keen interest in the MTCC-Pacific initiative. For this reason, national workshops on the energy efficient operation of vessels will be conducted in both countries within the months of April and June 2019.

#### For more information, please contact: -

Lore Croker MTCC-Pacific Administration and Information Assistant SPC Email: lorec@spc.int



Workshop participants

## Cook Islands maritime industry committed to make shipping and port greener

The Cook Islands Ministry of Transport, together with national ship operators, port operators and stakeholders have called for greater initiative in energy efficient operations in order to reduce greenhouse gases. The call was made at its first National Workshop on Energy Efficient Operations of ships, which was delivered by the Maritime Technology Cooperation Centre in the Pacific (MTCC-Pacific) 15-17 April.

The Cook Islands is a small island developing state comprised of 15 small islands with an exclusive economic zone (EEZ) of nearly two million square kilometers in the South Pacific Ocean. Globally, the Cook Islands contributes to only 0.00012% of GHG emission, which is an insignificant amount relative to the total global emission of 2004 (IPCC Report, 2007). Yet, collectively, the consequences of the global emission via climate change is detrimental to ecosystems, infrastructures, economy, and therefore the livelihood of Cook Islanders.

The three-day workshop provided participants with an understanding of the latest developments at the international level, in particular new technologies, tools and methods available to monitor and reduce fuel oil consumption from the operations of ships in Cook Islands, in order to contribute to national efforts to reduce greenhouse in the world and forms part of the Global MTCC emissions and Nationally Determined Contributions Network (GMN), implemented by the International (NDC). Maritime Organization (IMO) and funded by the European Union. SPC hosts MTCC-Pacific in In his welcome remarks, Cook Islands Director of collaboration with the Secretariat of the Pacific Maritime, Mr Ngatokorua Ngatokorua (Jnr) said Regional Environment Programme (SPREP) as part "Cook Islands is committed to reduce its carbon of its approach to support sustainable maritime footprint to achieve its national vision, which is transport in the Pacific with a focus on the safety 'to enjoy the highest quality of life consistent with and energy efficiency of domestic shipping.

In his welcome remarks, Cook Islands Director of Maritime, Mr Ngatokorua Ngatokorua (Jnr) said "Cook Islands is committed to reduce its carbon footprint to achieve its national vision, which is 'to enjoy the highest quality of life consistent with the aspirations of our people, and in harmony with our culture and environment'. We are also thankful to MTCC-Pacific to conduct this workshop here and provide information to participants on how to mitigate emissions in the maritime sectors which has the potential to provide significant economic benefits."

MTCC-Pacific's Maritime Industry Energy Efficiency Adviser reiterated the commitments from MTCC-Pacific, its host institutions and its partners to assist the Pacific region in climate mitigation in the maritime industry. "There is a need for the ship operators to adopt the Safe Operations Plan (SOP) integrated with the Ship Energy Efficiency Management Plan (SEEMP), which is essential for safe and efficient sea transportation."

MTCC-Pacific is one of the five centres established



MTCC-Pacific technical assistance is provided in conjunction with the SPC's Pacific Islands Domestic Ship Safety (PIDSS) programme that was held in Cook Islands in October 2018 and aims to support domestic ship operators in implementing safety management systems on board their vessels. This constitutes a consistent approach in raising safety and efficiency standards in domestic shipping. Similar national workshops and ships visits will be organised in other Pacific island countries in 2019.

#### For more information, please contact:

Lore Croker MTCC-Pacific Administration and Information Assistant SPC Email: lorec@spc.int

Pacific Maritime Watch 2019 | Issu



Queen Salote International Wharf at the Port of Nuku'alofa

## Integrating Green Port strategies into the ADB Nuku'alofa Port Upgrading project

In May 2018, Ports Authority Tonga (PAT) embraced piloting the Green Pacific Port initiative developed by the SPC. The aim of this initiative is to strengthen PAT's capacity to improve the efficiency of port operations while attaining its Quality Management System. Toward this end, it seeks to broaden the capacity of the Port of Nuku'alofa to contribute actively to reducing the port's carbon footprint through effective energy management strategies that, in part, help prevent port marine pollution.

PAT is currently working with the Asian Development Bank (ADB) on a USD25 million project to upgrade and re-plan PAT's container wharf – Queen Salote International Wharf (QSIW) – to handle the growth in international container and other international sea freight traffic over the next 20 years. Led by Mr Juan Gonzalez (ADB Transport Specialist) and deputised by Mr Cha-Sang Shim (ADB Transport Specialist), preparation for the project began in January 2019 with an anticipated duration of 18 months and the upgrade of the Queen Salote International Wharf at the Port of Nuku'alofa will begin in 2021 and is expected to be completed by 2023.

Awarded to oversee preparation of the project, the leading independent project management, environmental, engineering and consultancy service provider, Royal Haskoning DHV-Australia began working with PAT as of January 2019. Led by Mr Michael Sanders (Team Leader), the Royal Haskoning DHV team – including Mr David Perbey (Deputy Leader), Mr James Lewis (Metocean Lead), Mr Justin Cross (Port Operations), Mr Sian John (Environmental Lead) and Mr John Adrechem (Geotechnical Lead) – support both PAT's efforts and its merit in becoming a Green Port. This is through embracing the Green Port fundamentals and best practices into the feasibility study in the project preparation and the designing of the modelling concept and detailed plan of the best options to upgrading QSIW.

Upgrading the international container wharf will include: enlarging and reorganising the berthing areas; improving the surface and circulation of port facilities and the international container yard in order to increase yard operational and energy management efficiency, capacity and security; considering inclusion of Green Port projects such as upgrading the drainage system, solar PV, redesigning LED and solar lighting and lifting light poles from 15 metres to 30 metres, organising reefer towers, and rewiring the port area and weigh bridge. These projects are anticipated to help increase the efficiency of the port of Nuku'alofa, thereby reducing its carbon footprint while maintaining safety at a resilient port.

During March 2019, ADB – through the Royal Haskoning DHV Smart Port Expert - Mr Bastiaan van Dijk, began dialoguing on the opportunity to build and strengthen the capacity of the ports of Nuku'alofa and Pacific Island Countries to become "Smart Ports". Considering the integration of various infrastructures (physical and IT) in port operations, "smart" in the context of the global port and terminal network means becoming more attractive and competitive, productive and efficient by doing more for less, without wasting port space, time, money and natural resources. Ports therefore need to be audacious and creative in developing technological solutions (like the





PAT Management and Royal Haskoning DHV Teams

Internet) and artificial intelligence to help improve port flow and customer service. These relate to the challenges faced by ports, including the pressure to be more productive under resource constraints and the need to become or Grow Green. Becoming a smart port is directly related to PAT's pursuit of its Green Port mission in an environment where smart practices and technology are effectively deployed to share information where PAT and its stakeholders would benefit while maintaining an efficient and resilient port.

#### -For more information, please contact:

'Etikeni Samani

Manager Risk & Compliance

Ports Authority Tonga Email: etikeni.samani@portsauthoritytonga.com

Pacific Maritime Watch 2019 | Issu

## Progress toward gender equality and attainment of the **UN Sustainable Development Goal 5:Partnership with** regional and national networks of Women in Maritime

Vanuatu: Women in Maritime, 07 February 2019. During the SPC technical assistance mission to Vanuatu to conduct the national flag state ships inspection training, held 04-08 February 2019, members of the Vanuatu Women in Maritime Association (VanWIMA) met with the SPC team to discuss progress made since the 2nd Regional Conference held in PNG, in April 2018. Activities discussed included those planned for 2019 among others, such as the Day for Women in Maritime (D4WIM), scheduled for 18 May, and activities leading up to the Seafarers Day plus the World Maritime Day (WMD) in September. The IMO WMD theme, "Empowering women in the maritime community", reinforces the work plan for VanWIMA to initiate dialogue with the maritime community stakeholders, in particular the Office of Maritime *Regulatory (OMR), and to coordinate planning with them to capitalise on the theme and hold* related activities to engage the public. The meeting was hosted at the OMR and provided an opportunity to meet-and-greet new VanWIMA Executive Committee members.

The President of VanWIMA, Ms Mary Navaika, highlighted progress made, activities anticipated to drive membership and to mobilise the public to connect with the ship operators and female seafarers serving domestically. She further, acknowledged SPC's support to PacWIMA and its members in progressing and promoting the role of women in the maritime sector, highlighting the need to better engage with OMR and relevant maritime stakeholders to ensure necessary support for activities this year and, in particular, to ensure success of the D4WIM.

The meeting also provided an opportunity to share the progress of the Regional Strategy for Pacific Women in Maritime Sector (2020-2024), and acknowledged the contribution of Ms Navaika who is part of the strategy drafting committee. During the meeting, VanWIMA agreed to provide accurate data on the women employed nationally in the maritime sector. This data will be collated and provided to PacWIMA to reflect the status, challenges and progress of Vanuatu women in the maritime.







Women in Maritime, 12–14 February 2019

2019 PacWIMA is a member of the Pacific Islands Governing Council (PIMC) and also a member The national maritime stakeholder consultation of the PIMC Training and Safety Subcommittee. meeting on the Regional Strategy for Pacific PacWIMA is represented by the Chairperson Ms Women in Maritime Sector (2022-2024) was held Patricia Oii, who is also the Legal Officer, Legislation 23 February—01 March in Niue. The one-day at the PNG National Maritime Safety Authority. group consultation was held 25 February with Representation within PacWIMA seeks to ensure the 22 representatives from the maritime sector and voices of Pacific women in the maritime sector are related agencies. A one-on-one meeting was recognised in the PIMC and that capacity-building also held 26 February-01 March with individual needs are addressed collectively at these meetings. agencies and representatives to discuss the content Inclusion of PacWIMA on the PIMC demonstrates of the Regional Strategy. An exit meeting was held progress within the sector toward greater inclusivity 01 March with respect to the following key summary and diversity at national, regional and global recommendations: levels. During the meetings, PacWIMA's progress is shared with PIMC members, including regional recognise the existing representation of women representatives from the maritime administration, leaders in the sector, as well as the ongoing port authorities, training institutions, and Pacific need for additional awareness and advocacy legal associations. SPC assumes a secretariat role with respect to women's access to maritime within the PIMC and its related subcommittees.

PacWIMA has been especially active since its relaunch in Tonga April 2016. The establishment and operationalisation of eight national Women in Maritime Associations (WIMA), moreover, is a reflection of the commitment of its Executive Committee and members. More work is needed, but the progress has been commendable.

PacWIMA has also been tasked to undertake some of the work earmarked for PIMC under the 2019 work plan in order to ensure that PacWIMA not only participates on the PIMC but also helps deliver and meet target activities under the PIMC GC. Reach out to its national WIMA is on the rise.

<sup>1</sup>PIMC is the principal interactive forum and key advisory body for national government agencies responsible for maritime affairs and sectors within the region and is a united voice for maritime affairs and sectors in the Pacific. PIMC is comprised of members from the Pacific Maritime Transport Alliance (PMTA), Pacific Maritime Association (PacMA), Pacific Island Shipowners Association (PISA), Pacific International Maritime Law Association (PIMLA) and PacWIMA. The PIMC Secretariat is housed under the Pacific Community (SPC) in Suva, Fiji.

PacWIMA envisages continuing to participate meaningfully in the PIMC and linking its 2018-2020 work plan to that of the PIMC in order to supplement and complement the work under the PIMC GC.

Since its representation and membership in 2016, it is safe to say, the profile and role of women in the maritime sector continues to reflect its own existences, its purpose and vision. By continuing to prioritise gender equality, the engagement of women in the maritime sector is likely to grow, through continuous partnership and networking with SPC and the IMO and firm support of maritime administrations across the region.

## Niue: Women in Maritime, 23 February—01 March

- employment opportunities, maritime education and training opportunities, and local community schools;
- share existing models that promote equal participation of women in the workplace with agencies;
- ensure the roles, networks and NGOs providing services in the sector in Niue are known.
- increase support for the regional strategy, reaffirming its vision, purpose and pillars;
- ensure specific roles (search andrescue divers, marine radio operators, environment protection officers, border security officers, VHF radio operators) unique to Niue are clearly defined;





- analyse the composition of men and women in the sector to demonstrate the gender gap and factors contributing to it;
- support establishment of the Niue Women In Maritime Association (NWIMA) to ensure the support for, and sustainability of, the NWIMA; and
- access funds under the UN Women Program (GEF) to support implementation of activities in the region and the women's financial literacy programme under the Chamber of Commerce; and
- use the Regional Strategy as a tool to support funding requests for capacity building and other relevant activities.

The Ministry of Transport requested assistances to develop Niue's Women in Maritime Association (Niue WIMA) Constitution, including drafting the Cabinet Paper in support of establishment of the Niue WIMA. The team developed both the Constitution of Niue WIMA and the Cabinet Paper, and delivered it to the Maritime Administrator.

#### *Kiribati: Women in Maritime, 11–15 March 2019*

Although the people of Kiribati continue to face challenges with respect to climate change, the local communities and families strive to lead normal lives. This is no different in the maritime sector of Kiribati. Under the leadership of Captain Ruoikabuti Tioon, Director of Marine, Marine Division, Ministry of Information, Communication, Transport and Tourism Development (MTCTTD), the marine division continues to fulfil its roles and responsibilities to the best of the division's capacity and ability.

Captain Ruoikabuti Tioon is one of the champions who has demonstrated continuous support, resources and space provision for women in the maritime sector, in particular members of Kiribati Women in Maritime Association (KWIMA). He was instrumental in supporting the division's female staff to mobilise and encourage women employed in the maritime sector to attend and participate in the National Workshop on Energy Efficient operation of vessels led by the Pacific Maritime Technology Cooperation Centre (Pacific MTCC) in June 2018.

During this workshop, SPC met at the Marine Training Centre to collaborate with some of the women present to establish the KWIMA and define the nature of the network as well as its membership and objectives. The women present appointed an interim committee to commence administrative work related to establishment of the KWIMA. This was made possible through the support of the Kiribati Port Authority (KPA), given the current interim President, Ms Tiantaake Mariana was also the Human Resource Manager at KPA. Ms Tiantaake Mariana mobilized members and garnered the support of the maritime community and relevant government agencies to enable KIMA to complete the KWIMA constitution and registration and to open its bank account, thereby facilitating its administrative operation and finances. The KWIMA was officially launched on 15 March 2019 as the seventh member country to join the regional network of Pacific Women in Maritime Association since its relaunch in April 2016 in Tonga.

The Sustainable Development Goal (SDG) 5: Achieve gender equality and empower all women and girls requires addressing structural issues, such as unfair social norms and attitudes, as well as developing progressive legal frameworks that promote equality between women and men. It is also the responsibility and obligation of individuals, families, organisations, communities, leaders and countries to ensure girls and women fulfill their lives potential and aspiration in a meaningful way. The newly established KWIMA, is a testament of the country's aspiration, commitment and progress toward achieving this United Nations SDG.





Nauru: Women in Maritime, 17–21 March 2019

Ms Margaret Kepae and Ms Mel-June Detenamo are the two focal points for women in maritime in Nauru. During the 1stRegional Conference for Pacific Women in Maritime Sector in Tonga in April 2016, Margaret was the Nauru representative nominated to attend the Conference. Two years later, Ms Mel-June Detenamo represented Nauru at the 2nd Regional Conference for Pacific Women in Maritime Sector in April 2018.

The Nauru technical assistance mission was planned for 18–21 March 2019 in order to hold an in-country consultation related to the *Regional Strategy for Pacific Women in the Maritime Sector (2020-2024)*. Ms. Kapae and Ms. Detanamo played a critical role to facilitate and coordinate the national stakeholders meeting.

The one-day group consultation was held 18 March at the Manen Hotel with 22 representatives from the maritime sector and related agencies. A oneon-one meeting was held with individual agencies and representatives 19—21 March to discuss the content of the regional strategy.

During this mission, the need for greater awareness, dialogue and advocacy with respect to the maritime sector and what it represents was evident. Noting Nauru has domestic ships, only receives 2 foreign going vessels per month and the maritime administration is represented by a staff employed

by Port Authority of Nauru (PAN). Despite the unique structure set up, there are number of women employed by PAN and also by the shipping company.

At the conclusion of the one-day consultation, participants discussed establishing the Nauru Women in Maritime Association (N-WIMA), and Ms Detenamo was elected as its interim president while Ms Kepae was elected to represent PAN on the N-WIMA Interim Executive Committee. There were no strong objections to the establishment of the N-WIMA, as it helps meet the objective defined in the regional strategy to foster the engagement of women in the maritime sector through, for instance, capacity building for the members of N-WIMA.

#### – For more information, please contact: -

#### Ore Toua

Maritime Training Adviser IMO Technical Officer SPC Email: oret@spc.int

#### Mavis Joseph-Logavatu

IMO Technical Officer SPC Email: mavisj@spc.int



Ms.Jane Koi, Drafting Committee member of Pacific Women in Maritime Association (PacWIMA), also President FIJI WIMA presenting on the Regional Strategy for Pacific Women In Maritime Sector (2020-2024)

### Fiji WIMA represented at the World Maritime University Third International Women's Conference

The third International Women's Conference, organised by the World Maritime University (WMU) in Malmo, Sweden, was held 04—05 April 2019. The theme for this conference was "Empowering Women in the Maritime Community".

The representative of the Pacific Women in Maritime Association, Jane Koi, described the conference as an opportunity for the association to become better informed of ways to enhance and expand upon the work of women in the maritime sector in the region. Speaking to the Fiji Sun, Koi said: that "having to attend the conference is a step in the right direction, we have never had a rep before but now that we do, we look forward to healthy discussions and exchanges with associations from around the world on the way forward for the region in strengthening approaches to empowering women a male dominated industry like the maritime sector."

The Conference welcomed the decision by the

IMO to use the theme, "Empowering Women in the Maritime Community", for World Maritime Day 2019. The participants urged international organisations, governmental entities and stakeholders in the maritime and ocean communities, including those in shipping, ports, fishing, seafood harvesting, marine and energy research and other sea-related activities to:

- develop, adopt and enforce genderresponsive policies and related programmes while ensuring that the policy development process is consultative, participatory and includes all relevant international organisations, governmental entities, industry and other non-governmental • stakeholders;
- improve the visibility of women professionals
  in all sea-related sectors by mapping out
  the number and positions they occupy
  and taking measurable actions that can
  contribute to progress;
- promote role models for women in the maritime and ocean communities that can inspire and attract younger generations to sea-related activities, empowering women to acquire the skills necessary to achieve leadership positions and break the glass ceiling;
- motivate women and girls in primary and secondary education to pursue career paths in the maritime and ocean fields and, in particular, to raise their awareness in the fields of science, technology and IT, engineering and mathematics;
- open early-career job opportunities for women and develop attractive career paths for them;
- organise mentoring, sponsorship and networking programmes that increase the recruitment and retention of women in the maritime and ocean communities;
- mainstream gender in the maritime and ocean professions to enhance respect for

diversity and achieve a work environment free from violence, discrimination and harassment;

give priority to funding gender research on maritime and ocean fields, particularly in occupational health and safety matters;

raise awareness of the significant economic contribution of women in all sea-related activities, including the special needs and role of indigenous communities;

provide gender-sensitive working and living conditions on board ships;

implement conciliation measures to make work time compatible with private and family life for all workers, regardless of gender;

ensure equal employment opportunities, including equal pay for women in the maritime and ocean communities;

introduce gender equality as a business case for initiating commercial partnerships;

develop and implement corporate policies and best practices with respect to the employment of women;

implement a plan to enhance diversity and equality at all levels;

ensure a consultative approach in global development, taking into account those communities that are dependent on the oceans for their survival; and

include women in all decision-making related to policies and regulations.

#### For more information, please contact: -

Jane Koi FijiWIMA President Email: jane.koi@ssfl.com.fj

## Fiji WIMA empowers members in leadership workshop

Empowering women in the maritime industry to become strong leaders undoubtedly will help the sector advance in a more positive direction. A leadership workshop, sponsored by SWIRE Shipping and organised by the Women in Maritime Association (Fiji), was held at Muaiwalu House in Walu Bay, supporting female participants to draw on their leadership skills and apply them in their work.

As Jane Koi, president of WIMA-Fiji, said, "Not everyone is a born leader, so the workshop gives women a few pointers to becoming one and to push them in the right direction." Ms Koi added that "the maritime industry is considered a male dominant industry so we try to bridge that gender gap. The essence of the workshop was to get women to be empowered in positions that they have and know that they can do better in the future through this industry."

One of the challenges Ms Koi and her colleagues identified while establishing WIMA was the hesitance among women to come out and meet with the executives in order to share the challenges they experience in the sector.

WIMA-Fiji has 60 association members, 15 of whom participated in the workshop. Ms Koi expressed gratitude with SWIRE Shipping for sponsoring the workshop and noted that WIMA-Fiji partnered with BSP and that participants had received merchandise provided by BSP. She also noted WIMA-Fiji's objective of holding similar workshops in the west and establishing a Western Standing Committee.

For more information, please contact: -

Jane Koi FijiWIMA President Email: jane.koi@ssfl.com.fj



*FijiWIMA selected members at its first ever leadership workshop* 



# Understanding ocean weather and tracking vessels in the Pacific Ocean: Technology to help prevent and respond to maritime casualties

The SPC region lacks satellite eyes in the sky and AIS vessel tracking. Given the finding reported in a recent SPC newsletter – that there were over 1000 SAR events in the region in 2015-2017 - this is a critical lack.<sup>2</sup>

Climate change is associated with higher and more frequent waves in parts of the Pacific Ocean<sup>3</sup>, making for extremely perilous transport and an increased number of ferry accidents. In fact,

<sup>2</sup>http://gem.spc.int/node/17 Pacific Community Newsletter 6/21/2018 citing Geoscience, Environment and Marine Division website.

<sup>3</sup>https://www.nature.com/articles/s41467-018-08066-0Published: 14 January 2019 "A recent increase in global wave power as a consequence of oceanic warming" byBorja G. Reguero, Iñigo J. Losada & Fernando J. Méndez Nature Communications Vol. 10, Number: 205 (2019)

<sup>4</sup>"AIS: Increasing Ferry Safety with the Big Data Tool You Already Have on Board"

David Hewson and Roberta Weisbrod webinar http://info.genscape.com/increasing-ferry-safety-webinar-october-2017

<sup>5</sup>http://www.ferrysafety.org/ideas.htm#2019conf Panel 2 Hazardous weather and navigation information via enhanced AIS messaging, Captain Kevin Kiefer, US Coast Guard Marine Transportation Systems

<sup>6</sup>David Hewson, Vesseltracker. Location of Pacific Community Region AIS Antennas https://mail.google.com/mail/u/0/#inbox/Qgrc JHsHkKXcSmrKRbCzjCnwjqBzmBLbqHQ?projector=1&messagePartId=0.1



Nano-satellite

according to the Worldwide Ferry Safety database, which draws on media reports to document fatal ferry accidents that have occurred since 2000, large waves have been increasingly cited as a cause of fatal ferry accidents in the Southern Hemisphere. One way to help predict the weather is more frequent high-resolution satellites; however, there has been a dearth of satellite coverage in the equatorial Pacific. This dearth also hinders communication between sea vessels.

Similarly, the tracking of vessels was initiated to help avoid collisions, but it also helps prevent vessels from harm and enables them to be located if they are in danger. IMO mandated Automatic Identification Systems (AIS) for collision avoidance and rendered nations responsible for its implementation. AIS has many uses, not only for locating vessels in SAR events but also mining tracked vessel data for management and planning purposes<sup>4</sup> and, in the near future, to serve as a medium for enhanced messaging of imminent hazardous weather<sup>5</sup>. The SPC could reverse its low rate of adoption<sup>6</sup> by taking advantage of a commercial service, which provides free antenna placement and AIS in exchange for hosting the antenna.

Satellites and vessel tracking would help detect large waves in the South Pacific Ocean, and locate and track vessels in potential peril.

Newer technology, including nano-satellites, represents a potential solution to the demands for data and increased maritime situational awareness. A nano-satellite is a smaller version of a traditional satellite (i.e. the size of a shoebox, weighing just 4-5 kilograms). Such small size and low weight result in their comparatively lower total cost and, thus, less expensive data. Typically, nano-satellites carry 1-2 specialised payloads, such as Class A AIS transponders and dedicated machine-to-machine (M2M) equipment, enabling quick message

transfer. Since nano-satellites provide flexible platforms, a range of different options for on-board instrumentation is expected in the coming years, thereby expanding their utility for maritime safety.

By late 2019, a system will be installed to provide a steady coverage zone of +/- 20 degrees from the equator, reaching up to +/- 37 degrees. It will provide regional AIS Class A data, long range channels data, and Application Specific Message (ASM) channel information, with a 3-8 minutes latency and a 15-minute maximum update rate.

Currently, data service agreements are being discussed with a number of governmental agencies, including those from the South Pacific region. More agreements are expected soon.

Satellite-based AIS data, combined with terrestrial AIS data from harbors and coastal areas, as well as ASM channel data, will contribute significantly to increased situational awareness and thus safety at sea for the SPC.

#### For more information, please contact: —

#### Roberta Weisbrod

Executive Director Worldwide Ferry Safety Association Email: ferrysafety@gmail.com

Karsten Pedersen CEO Aerial-Maritime Email: kip@aerial-maritime.com

David Hewson Genscape Vesseltracker Email: kip@aerial-maritime.com



SDB around Nomuka

The image above shows the SDB data around Nomuka. You can see the difference between the data and the chart. This is due to the methods and technology used in the late 1800s and early 1900s to position the islands. Using modern technology, such as GPS, the islands can now be correctly located. The SDB shows the outline of the island in the correct position.

# From stars to satellites: The use of technology to improve safe navigation in the Pacific

In early 2016, in the face of rising maritime accidents in the Pacific region, the Pacific Community started the Pacific Safety of Navigation Project in 13 Pacific Island countries and territories (PICTs) with support from the International Foundation for Aids to Navigation (IFAN). The aim of the project is to improve safety of navigation in the Pacific region through enhanced aids to navigation (AtoN) capacity and systems. In fact, the delivery of safety of navigation (SoN) services in the Pacific region (including through meteorological, oceanographic, hydrographic, AtoN and ship routeing services) is essential to achieve greater efficiency and particularly contribute to energy-efficient shipping and enhanced safety while supporting sustainable development of remote Pacific communities.

Safe navigation in the Pacific has advanced significantly since the use of star compasses or sextants by early navigators traveling the oceans. There are still nautical charts used today that show data collected in the late 1800s when sextant and lead-line were the latest technology.

Today, we are able to measure the depth of the oceans from space using satellites, from aeroplanes using lasers, and from unattended boats.

In late 2018, a combination of satellites, planes and



ALB around Nomuka

The image above shows the ALB coverage around Nomuka. You can see the island now aligns with the data. Using the SDB data, the chart was moved to ensure the islands aligned with the data.

boats was used to survey and map the seafloor in the Ha'apai island group in the Kingdom of Tonga, revealing features that had previously been undiscovered and helping improve safe navigation in the region.

The surveys were undertaken for Land Information New Zealand (LINZ), in partnership with New Zealand's Ministry of Foreign Affairs and Trade, as part of the New Zealand Government's Pacific Regional Navigation Initiative (PRNI).



*A series of mini-volcanoes identified close to the island of Tofua.* © *iXblue*]

LINZ is the New Zealand agency responsible for A number of previously undiscovered and out producing and maintaining nautical charts for New Zealand and a number of Pacific countries, including Tonga, the Cook Islands, Niue, Samoa and Tokelau. LINZ contracted survey research companies, namely iXblue, Geomatics Data Solutions (GDS) and EOMAP, to undertake the work in Tonga.

Using state of the art technology, images of Tonga were taken from satellites orbiting high above the earth and used to determine the water depth in the shallow waters around its islands. This technique recorded using today's technology. - known as Satellite Derived Bathymetry (SDB)collected images of the whole of Tonga. When the data was processed, the depth of water around the islands was calculated every two metres to depths of 15 metres. The result is one of the largest areas in the world covered by SDB technology to such a high resolution.

After measuring Tonga, satellite-based technology - airborne (i.e. taken from a plane) laser bathymetry or ALB technology – was used to measure the deeper water around the islands. This technology collected data to a depth of 20 to 30 metres, with up to 36 data points per square metre.

Following the collection of airborne data, acoustic sounding technology was used to collect further information about the seafloor. This work was carried out by the survey boat, the MV Silent Wings and an Unmanned Surface Vessel, named Drix. Both vessels were fitted with high-end, multi-beam echo sounders and tasked with collecting bathymetry in deeper water, especially along the routes taken by Tonga's domestic ferries, as shown below

of place features were found during LINZ survey in Tonga, including coral reefs and underwater volcanoes.

In one area, in water over 300 metres deep, a small, isolated coral reef rises up just six metres below the sea surface. The same reef is shown on Tonga's existing nautical chart at a depth of five metres (or 23/4 fathoms). However, the reef is recorded in the existing chart over a kilometre from where it is

The survey work in Tonga is now complete and LINZ will begin creating new nautical charts, expected to be released mid-2020.

While the surveys were primarily undertaken to develop nautical charts and products to support safe shipping in Tonga, the detailed underwater maps provide valuable information about Tonga's coastal and marine resources. These maps will enable researchers and planners to understand better the habitat of marine life that exists around the volcanic islands of the South Pacific archipelago, and enable modelling such things as sea level rise to prepare for the future.

#### For more information, please contact: -

#### Stuart Caie

Manager Hydrographic Survey New Zealand Hydrographic Authority Email: scaie@linz.govt.nz



## Government of New Zealand supporting delivery of PIDSS: 2018-2021

The Pacific Islands Domestic Ship Safety (PIDSS) programme was implemented in 2010 as a pilot project focusing on Tonga and Kiribati, following two tragic maritime accidents which happened in both locations in 2009. Funding for this pilot project was provided by the Government of Australia, managed and delivered by the then Economic Development Division (EDD) of the SPC,2010-2012.

PICTs	Year PIDSS introduced
Tonga	2010
Kiribati	2010
Marshall Islands	2013
Vanuatu	2013
Solomon Islands	2014
Tuvalu	2015
Federated States of Micronesia	2016
Samoa	2016
Fiji	2018
Cook Islands	2018



PIDSS November 2018 Samoa training

- Considering the need and importance of this programme, EDD continued to extend and introduce it to other Pacific Island countries and territories (PICTs). As at the end of 2018, SPC had supported 10 PICTs to participate in this programme.
- In October 2018, the Government of New Zealand through the Ministry of Foreign Affairs and Trade (NZ MFAT), signed the Grant Funding Arrangement (GFA) with SPC, with funding of more than NZD 2 million in support of the delivery of the PIDSS Programme for another three years in the region -2018—2021. In this arrangement, SPC Oceans and Maritime Programme (OMP) of the Geoscience, Energy and Maritime Division (GEMD) (formerly EDD), in partnership with Maritime New Zealand (MNZ), is continuing to deliver PIDSS in the region.





more countries by2021, lending to a total of 13 PICTs participating in this programme.

PIDSS will be extended and introduced to three Sincethe signing of the GFA in 2018 SPC OMP, in partnership with MNZ, has conducted the following activities under the PIDSS Programme.

PICTs	Dates	Activities
1. Chuuk – FSM 29 Nov	29 October – 02	1. Introduce PIDSS.
	November 2018	2. Conduct Safety and SMS Training
		3. Provide technical assistance in developing SOPs
2. Apia - SAMOA	12 – 16 November 2018	1. Conduct FSI Training
3. Nukualofa - TONGA	19 – 22 November	1. Conduct Safety and SMS Training
	2018	2. Provide technical assistance in developing SOPs
4. Funafuti - TUVALU	28 January –	1. Conduct Safety and SMS Training
	01 February 2019	2. Provide technical assistance in developing SOPs of <i>mv Nivaga III</i>
5. Port Vila - VANUATU	04 – 13 February	1. Conduct FSI Training
	2019	2. Conduct Safety and SMS Training
6. Tarawa - KIRIBATI	04 – 15 March 2019	1. Conduct FSI Training
		2. Conduct Internal Audit Training
		3. Conduct 3 SOP Audits
		4. Conduct Legislative Review and Drafting
		5. MNZ conduct practical training on wooden boats
7. Port Moresby - PNG	08 – 12 April 2019	1. Introduce PIDSS
		2. Conduct Safety and SMS Training
		3. Provide technical assistance in developing SOPs

For more information, please contact: -**Omirete Tabureka** 

Ship Safety Audit Adviser SPC Email: omiretet@spc.int



70 m SLV. Same vessel but in different colours

## Boosting border protection with dormant charters

In 1911, following an 18-month tour of each state and territory of Australia, Admiral Sir Reginald Henderson wrote a recommendation for the protection of Australia's coast. At the time, there were 4.5 million people in the states and territories of Australian, and Admiral Henderson recommended a fleet of 52 vessels (including nine submarines, 14 cruisers, 12 torpedo boat destroyers and 3 depot ships) at AUS 46.5 million and recommended that the fleet increase proportionally with population growth.

With a population of 25 million today, Australia has a naval fleet of just 49 vessels, 70% of which are small and many of which are non-combatant, and their submarines are diesel electric, which can neither compete against a nuclear sub in operating range nor capability and which would not be considered a deterrent by any potential enemy.

Defence, and the Navy in particular, is generally the first budget item to be cut by politicians running a rearguard action covering financial shortcomings in their leadership.

Sensible Governments have their Defence fleet capability significantly enhanced by "dormant charters" of commercial vessels. The Falklands War

- was a classic case where ships taken up from trade (STUFT) totalled 45 vessels. The main transport task of materials and equipment was carried out by Liners, Roro Ferries, container ships and freighters, totalling 21 vessels, all of which were fitted with helipads prior to departure to the war zone.
- Facing budgetary constraints after decades of bickering leadership and spiralling debt, anation should focus on financially effective dormant chartering of newer coastal vessels capable of assuming multiple tasks simultaneously.
- Admiral Henderson proposed a fleet of four armoured cruisers and five protected cruisers to the sub base port of Thursday Island in the Torres

23

Strait, which is presently Australia's area of highest border incursions. Today, there are no naval vessels based at Thursday Island.

Admiral Henderson visited Cooktown, Cairns and Thursday Island and suggested that the protection of the northeastern seaboard extend to the south Pacific neighbouring countries and that the defence Most coastal vessels have sizeable underdeck tank policy be treated as a whole.

Dormant charters are pre-signed at an agreed rate so that, in the event of a conflict or emergency, the vessel will come under naval control within an hour of notice.

South Pacific Nations, including Australia and New Zealand, have a variety of coastal commercial vessels 50-90 metres in size. Suggestions have been made for governments to incentivise operators to ensure that new coastal vessels have:6 x 2 berth cabins for personnel; extra dry and reefer stores; one communications centre; helipad capability; beach landing capability; and axle loadings for M1 tanks.

The incentives to boost these dormant charters could be by the Government providing the capital cost of the extra requirements, the loan guarantee, or both. This would be an economical way to boost defence capability and active training facilities.

These small coastal vessels work on a schedule visiting several ports and include up to three berthings/sailings per day in different port conditions, providing a training opportunity for

navigators and deck officers. With diesel electric multi-screw propulsion, bow thrusters and automated cargo handling equipment, these would be effective engineering and electrical training centres. The helipad is an ideal aviation training platform for naval and fleet air operations.

capacity to carry fuel to remote communities.In the event of conflict, this extra fuel would be of key importance.

These dormant charter support vessels have two significant advantages in not requiring Defence capital budget expenditure and not having to run the slow and costly gauntlet of the naval vessel acquisition process. This would be comparable to the Border Protection fleet being increased by 100% in size without seeking budget approval.

Logistically a highly mobilised fleet accessing small ports improves the frontline options for emergency response, border protection and defence as a whole.

Could someone with the vision of Admiral Henderson make something like this happen in a South Pacific Nation?

For more information, please contact: **Dr Stuart Ballantyne** Chairman Sea Transport Corp Email: stuart@seatransport.com



## The SPC Oceans and Maritime Programme: Legal and policy services and assistance

The legal team: The OMP is one of the few programmes within the SPC that employees legally qualified staff to provide legal assistance (primarily in maritime law) to SPC Members. This has been a key role for the programme since its inception, when it was known as the Regional Maritime Programme (a precursor of OMP), in early 2000. Originally, only one member of staff carried out this responsibility. In November 2014, the number of staff serving this role increased to two when a Policy and Legal Adviser (PLA) and a Policy and Legal Officer (PLO) were recruited. The scope of their responsibilities was also extended to include maritime policy matters in addition to the existing maritime legal matters. The maritime policy role has been strengthened with the recruitment of a second officer in April 2018. Currently, the Legal Team consists of the PLA and two Officers. The PLA engages full-time on policy and legal services while the two Officers also perform other functions as well as providing either advisory or drafting services.

The Legal Team provides policy legal and advice in-house to other OMP staff members as well as to staff of other SPC divisions. Where requested, it also provides advice to SPC Members, individually or collectively. Most of the team's services to SPC Members involve reviewing and/or drafting legal and policy instruments. Outlined below are specific activities that the team has undertaken within the last two years and concludes with a statement of

MARITIME LEGAL

SPC maritime legal team supporting the Niue SAR workshop

- priority activities in the next two years.
- **PIM Laws:** The Pacific Island Maritime Laws (PIM Laws) is a set of templates or generic working drafts of bills and regulations pertaining to the maritime field in general. The SPC developed this resource in 2001 for use by SPC Members. Within the last two years, the team has added a template for a Search and Rescue (SAR) bill, as well as a template of a regulation for the Safety of Convention Vessels and



for Ships' Energy Efficiency and Fuel Oil Data System. (MTP). This is underpinned by a template, which the

**Regional and sub-regional instruments:** TheTeam drafted regional and sub-regional instruments upon request from regional forums. The first is the instrument for the Pacific MoU (see PMW Issue 70), which the team developed for Ministers of Transport to sign in April 2017. The second is a template for a bill to facilitate implementation of the CPSC Agreement in the domestic jurisdictions of Member States, which the team developed for the Central Pacific Shipping Commission (CPSC). The third is a Protocol to the CPSC Agreement and bylaws that will be signed by Transport Ministers of CPSC Members in mid-October 2018.

**Country-specific requests:** The team also attends to individual requests from countries in relation to three main subject areas. The first is in relation to SAR for which it has finalised drafts of legislative **Future activities:** The Team anticipates continuing bills for Papua New Guinea and Niue and has submitted these bills for domestic consultations and processing through formal legislative enactment processes. It also has finalised a draft for Tuvalu and will develop one for Cook Islands. The second area is STCW for which the team finalised and submitted a draft of the STCW regulations for the Federated States of Micronesia in June 2018. The third area is in relation to domestic ship safety whereby the laws of countries reflect applicable standards of the Pacific MoU. Work is being carried out with Kiribati and Vanuatu to revise existing laws and introduce new laws in order to set up a comprehensive framework of laws to support domestic ship safety. Assistance to Kiribati and Vanuatu also includes mentoring of legal officers on legislative drafting from the respective maritime administrations.

Maritime Transport Policies: The team assists SPC Members to develop Maritime Transport Policies

team developed in 2016 and used to develop the draft Kiribati's MTP (see PMW 68) and Palau's draft MTP. The team has also reviewed and commented on draft MTPs for Tonga and Niue and is revising the draft for Vanuatu.

IMSAS audits: The team assists Pacific Island Members of IMO to prepare for IMSAS audits. This is underpinned by a template, which the team developed in 2016 as a Guide for Pacific Island Countries (PICs) in developing a strategy to implement relevant International Maritime Organization (IMO) instruments. The team also conducted visits to some States that were scheduled for audits in 2017-2019 in order to assist them in the development of roadmaps to guide their planning for IMSAS.

its work, as outlined above, subject to a proviso. Work will be prioritised based on areas with secured project funding, namely domestic ship safety, navigation safety, marine insurance and civil liability reaimes.

Despite these priorities, SPC Members are encouraged to request assistance from the Legal Team with respect to subject matter within the field of maritime law or policy beyond those outlined above, since the needs of the SPC Members is the team's overriding priority.

#### For more information, please contact: -

Yolisaguyau (Yoli) Tom'tavala Policy and Legal Adviser SPC Email: yolisaguyau@spc.int





Cross programme coordination between SPC's ocean, maritime and fisheries teams at the COSPPAC Vanuatu Ocean Policy & Stakeholder Engagement meeting

## The Pacific Community Centre for Ocean Science

The SPC has embarked in a game-changing initiative to better serve its members in their aspirations to protect and sustainably use their large ocean areas and contribute to Blue Pacific futures. This initiative is in line with a regional momentum to present the region not as a collection of fragmented small islands, but rather as united group of Large Ocean States.

#### Background

Improvements to management of ocean resources and marine ecosystems require significant collaborative commitment of shared resources and support at the regional level to enable sciencebased sustainable utilisation, management and governance for PICTs to accrue benefits from new opportunities such as: sustainable fisheries and aquaculture; deep sea mining; marine renewable energy; sustainable sea transportation; sustainable tourism; blue carbon; marine genetic resources;



- and assimilation of solid waste. Ocean science knowledge is paramount.
- In commemorating the SPC's 70<sup>th</sup> anniversary, the 10th Conference of the SPC in 2017 agreed to task SPC withestablishing a virtual Pacific Community Centre for Ocean Science (PCCOS) to be hosted bySPC and bring together SPC's internal scientific and technical expertise around ocean science. The goal is for the PCCOS to become a flagship for scientific excellence and a dedicated regional science information and knowledge hub that



brings together expertise in ocean and fisheries science through partnerships with other national and international scientific bodies.

#### What is PCCOS?

The PCCOS initiative is a multi-disciplinary, multisectoral integrated programming approach of SPC to assist its members in achieving SDG 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development), and contributing to other SDGs under the concept of Blue Pacific. SPC also actively contributes to strategic partnerships in ocean science with a large number of institutions and initiatives at the national, regional and international levels.

In this context, PCCOS has the potential to facilitate PCCOS delivers integrated ocean science and and promote cross-sectoral engagement and cooperation internally at SPC for better-integrated service to its members. In doing so, it will promote and projects that focus on developing innovative institutional efficiency and add value to existing SPC ocean science services. Externally, PCCOS is the impacts to marine environments and build, sustain,

platform to coordinate and integrate ocean science activities carried out by SPC with the work of its regional and international partners.

As outlined below, PCCOS has three overall objectives to deliver its mission.

PCCOS as the platform for coordination and integration of ocean science at SPC: The objective is to strengthen and enhance cooperation, collaboration, and integration of ocean science programme activities carried out by SPC's technical divisions and programmes in relation to ocean governance and management and to support implementation of regional frameworks and international instruments.

services to SPC members: Integrated ocean services are rendered by SPC through its programmes solutions to prevent and mitigate detrimental and drive blue economies in PICTs. Under its current programmes, SPC's integrated services include:

- advise on, and assist with, the development of coastal, ocean and maritime policy, legal and institutional frameworks across related sectors(e.g. marine energy, fisheries, marine tourism, deep sea mining, culture, marine environment, maritime transport, marine infrastructure);
- support women's empowerment and youth participation in ocean science and the sectors outlined above;
- facilitate marine spatial planning and Integrated Coastal Zone Management, including marine resources and ecosystems and development activities;
- conduct science-based hazard and risk assessments, and develop marine and ocean forecasting systems to support early warning systems;
- support the sustainable development of fisheries and aquaculture, and assist the development of safe and green shipping and ports, and safe seas;



OCEANS

- develop ocean literacy and maritime and fisheries capacity; and
- enhance data collection and provide data management services for fisheries and marine ecosystems, ocean observation and predictions.

PCCOS partnerships with international and regional partners in ocean science: SPC implements several partnerships with regional and international partners to make available the best of ocean science and deliver its programmes and projects in PICTs. SPC's scientific and technical services align and link to all relevant national, sub-regional, regional, and international ocean related frameworks, bringing together expertise in topics related to marine science, fisheries, governance, maritime transport, climate change and risk and disaster preparedness.

#### For more information, please contact:

#### **Thierry Nervale**

PCCOS Coordinator and Deputy Director, Oceans and Maritime Email: thierryn@spc.int





Objective 1	<b>Strategic Action 1.1:</b> Strengthen and enhance cooperation, collaboration, and integration of ocean science programme activities carried out by its technical divisions.
Be the platform for coordination and integration of ocean science at SPC	<ul> <li>Strategic Action 1.2: Identify, facilitate, coordinate, and strengthen scientific services that support and inform ocean governance, and ocean management and policy, and to support the implementation of regional frameworks and international instruments.</li> <li>Strategic Action 1.3: Coordinate and ensure adequate and relevant ocean science information to inform ocean governance, ocean management and policy, and ocean observation is readily available and easily accessible to PICTs and relevant stakeholders.</li> </ul>
<b>Objective 2</b>	<b>Strategic Action 1.1:</b> Strengthen and enhance cooperation, collaboration, and integration of ocean science programme activities carried out by its technical divisions.
Provide integrated ocean science and services to SPC members	<b>Strategic Action 1.2:</b> Identify, facilitate, coordinate, and strengthen scientific services that support and inform ocean governance, and ocean management and policy, and to support the implementation of regional frameworks and international instruments. <b>Strategic Action 1.3:</b> Coordinate and ensure adequate and relevant ocean science information
members	to inform ocean governance, ocean management and policy, and ocean observation is readily available and easily accessible to PICTs and relevant stakeholders.

#### **Objective 3**

Develop partnerships with regional and international partners in ocean science **Strategic Action 3.1:** Coordinate cooperation, collaboration, and integration of ocean science activities carried out by SPC with the work of regional and international partners.

**Strategic Action 3.2:** Coordinate and ensure ocean science services by SPC technical divisions are aligned, adhered, and linked to all relevant national, sub-regional, regional, and international ocean related frameworks, bringing together expertise in topics related to marine science, fisheries, governance, maritime transport, climate change and risk and disaster preparedness.



Pacific Community Communauté du Pacifique Oceans and Maritime Programme Geoscience, Energy, and Maritime Division Pacific Community Private Mail Bag, Suva, Fiji Tel: +679 337 0733 Fax: +679 337 0146 Website: www.spc.int