



Pacific  
Community  
Communauté  
du Pacifique

***From Global to Coastal: Cultivating New Solutions and Partnerships for an Enhanced Ocean Observing System in a Decade of Accelerating Change***

***Perspectives from Pacific Small Island States***

**Zulfikar Begg**

**Coordinator Applied Ocean Science**

**Email: [zulfikarb@spc.int](mailto:zulfikarb@spc.int)**

# The Pacific Community (SPC)

27

Member Countries and Territories

600+ staff

6 Regional campuses

8 Technical divisions



Fisheries, Aquaculture & Marine Ecosystems

Education Quality & Assessment

Human Rights and Social Development

Statistics

Public Health

Land Resources

- Sustainable agriculture
- Biosecurity & Animal health

Climate Change & Environmental Sustainability

Geoscience, Energy & Maritime

- Ocean Science & Maritime Transport
- Geology & Energy
- Water & Sanitation
- Disaster Risk Reduction
- Earth & Marine Observation

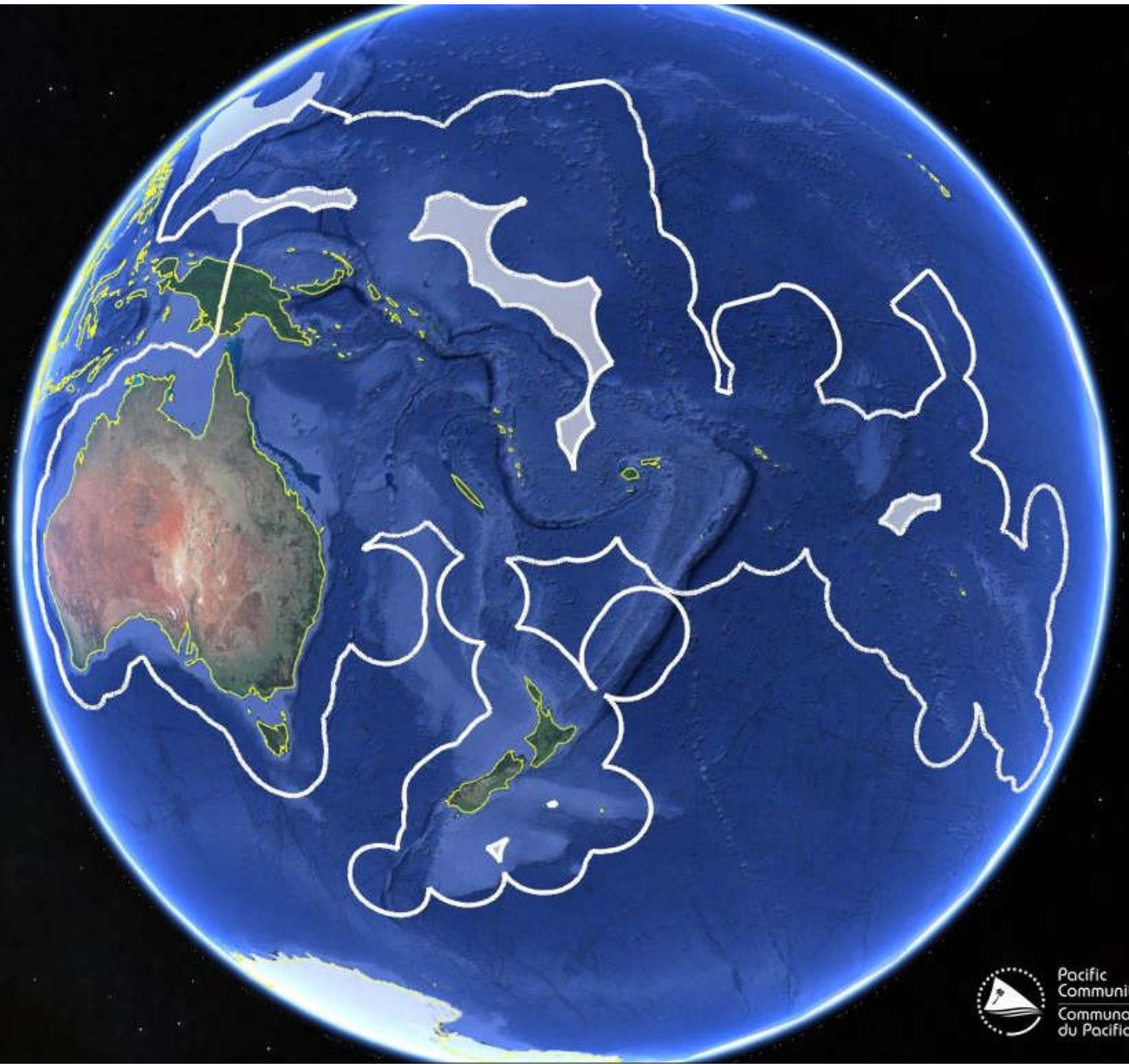
# The Blue Pacific Continent

**24** Pacific Countries  
and Territories

**42** million people

**42** million km<sup>2</sup>

**30%** of the world's  
Exclusive Economic  
Zones (EEZ)





There are more than **1500 Islands** in our Pacific island countries.

**1**



The average island is **90 km<sup>2</sup>** in size and you could walk around it in one day.

**2**



**50% of the population** in the Pacific live within 5 km of the coast.

**3**



**50% of all islands** are highly or very highly sensitive to future climate-ocean processes and sea-level rise.

**4**



**Coastal change** has the potential to severely impact island populations and economies.

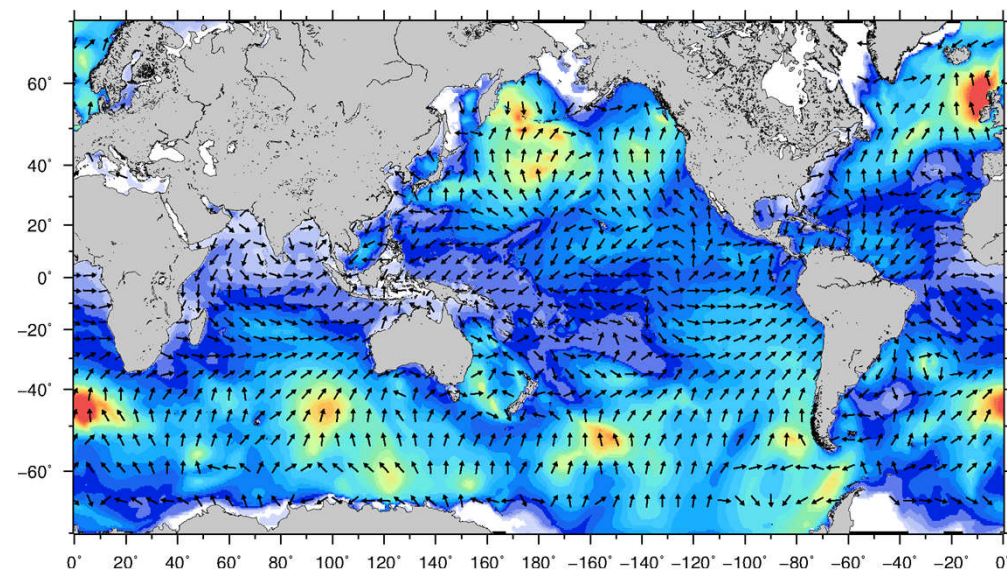
**5**



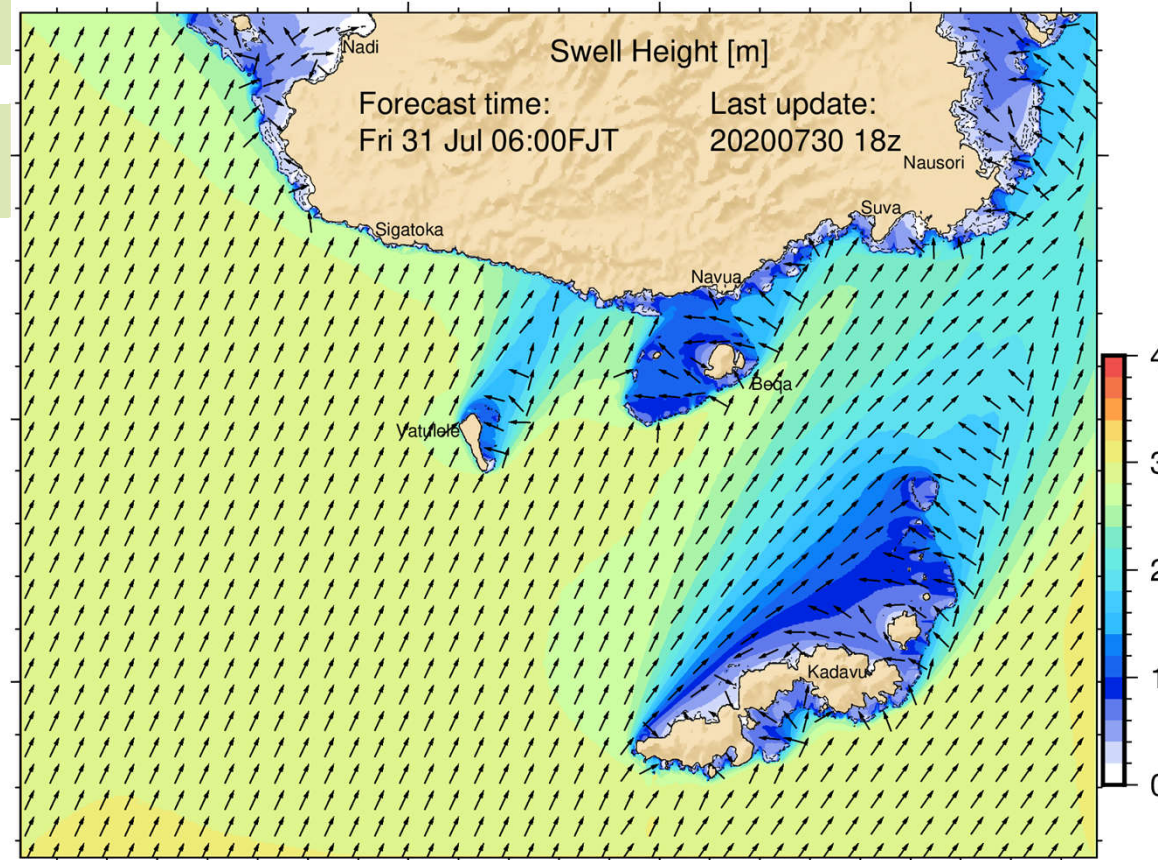
# GLOBAL TO LOCALISED, ACTIONABLE INFORMATION

**Global Wave Forecast:** - A  $H_s=3.2\text{m}$  South Westerly Wave  
- A 15 Knots South Easterly Wind

What ocean state to expect between Islands?  
Is there a risk for inter-island shipping?

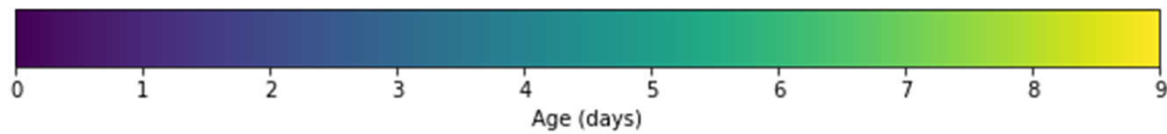
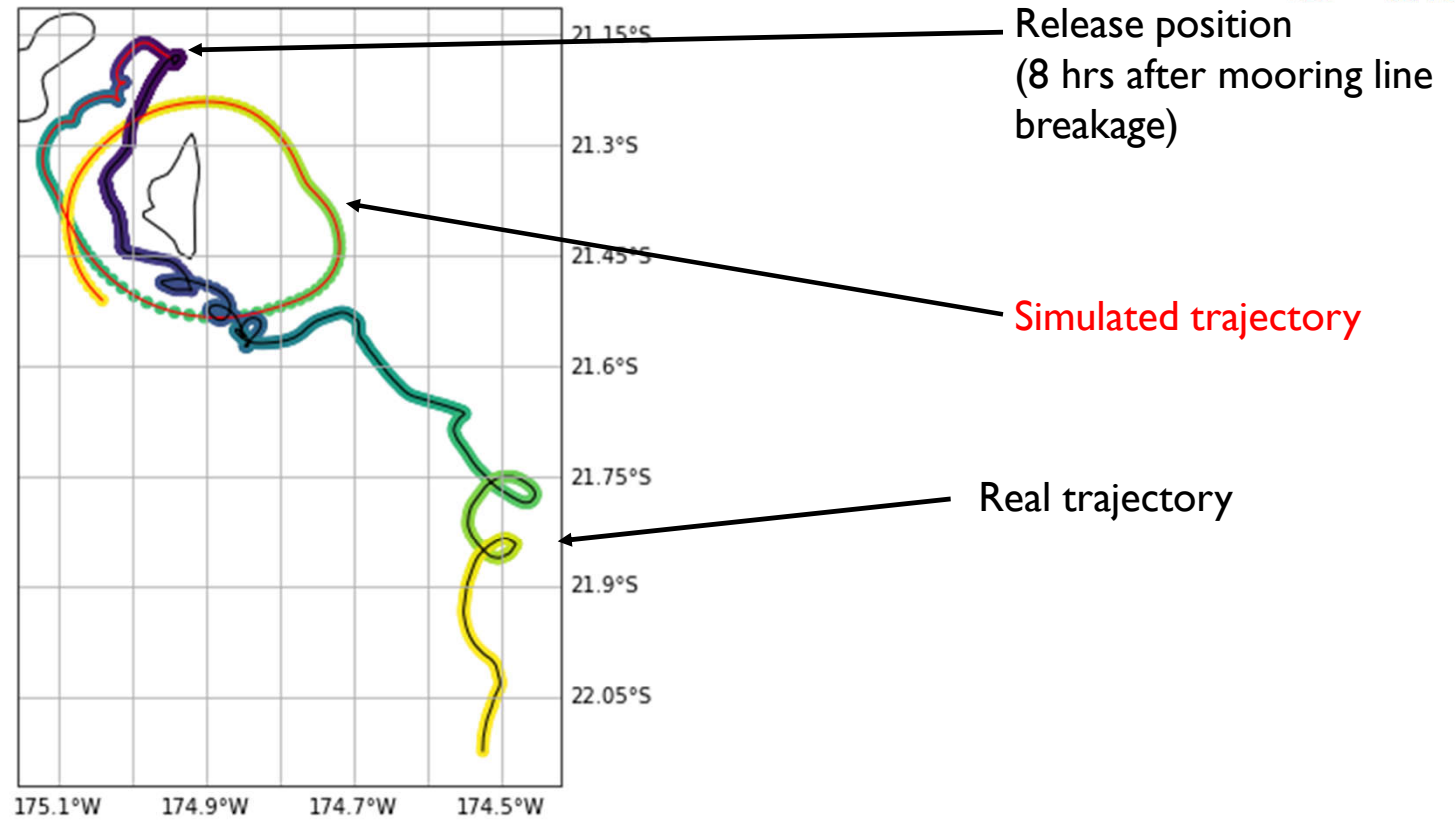


GLOBAL WAVE FORECAST



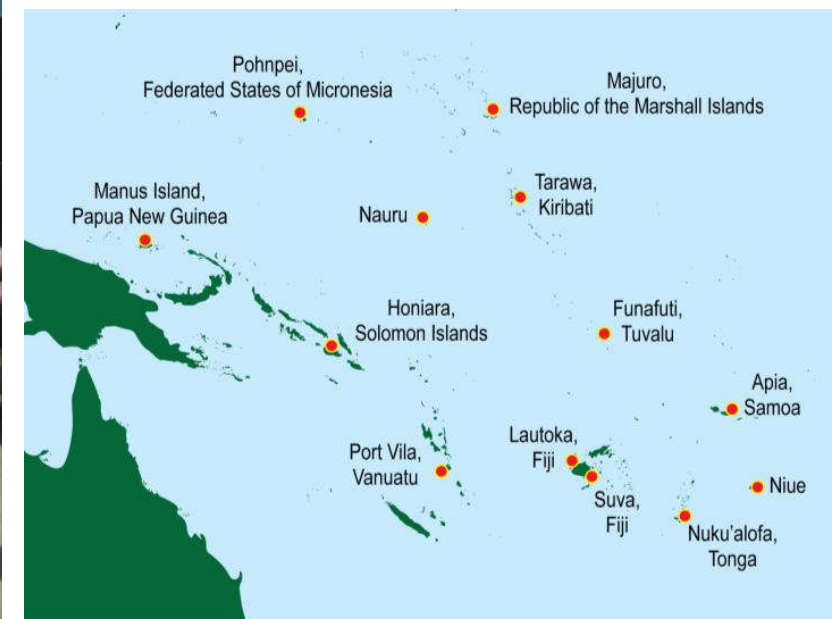
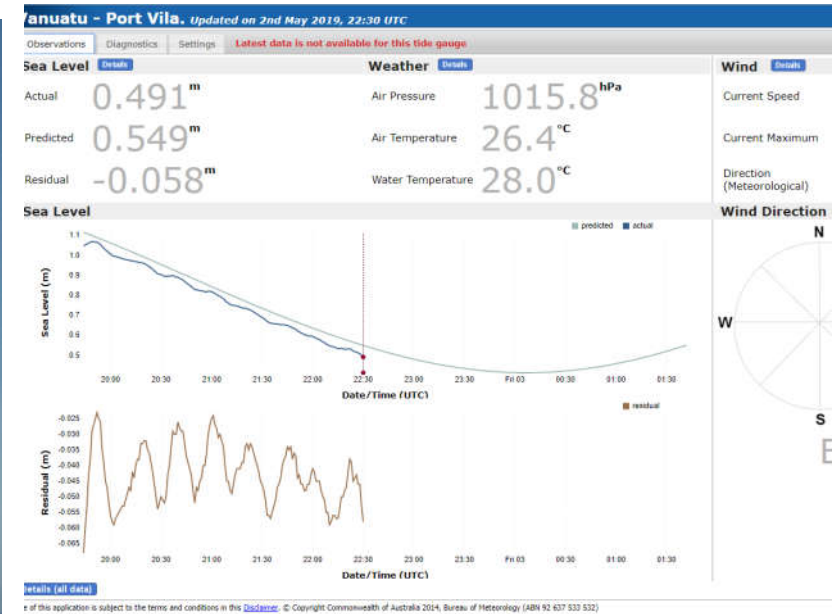
LOCAL WAVE FORECAST

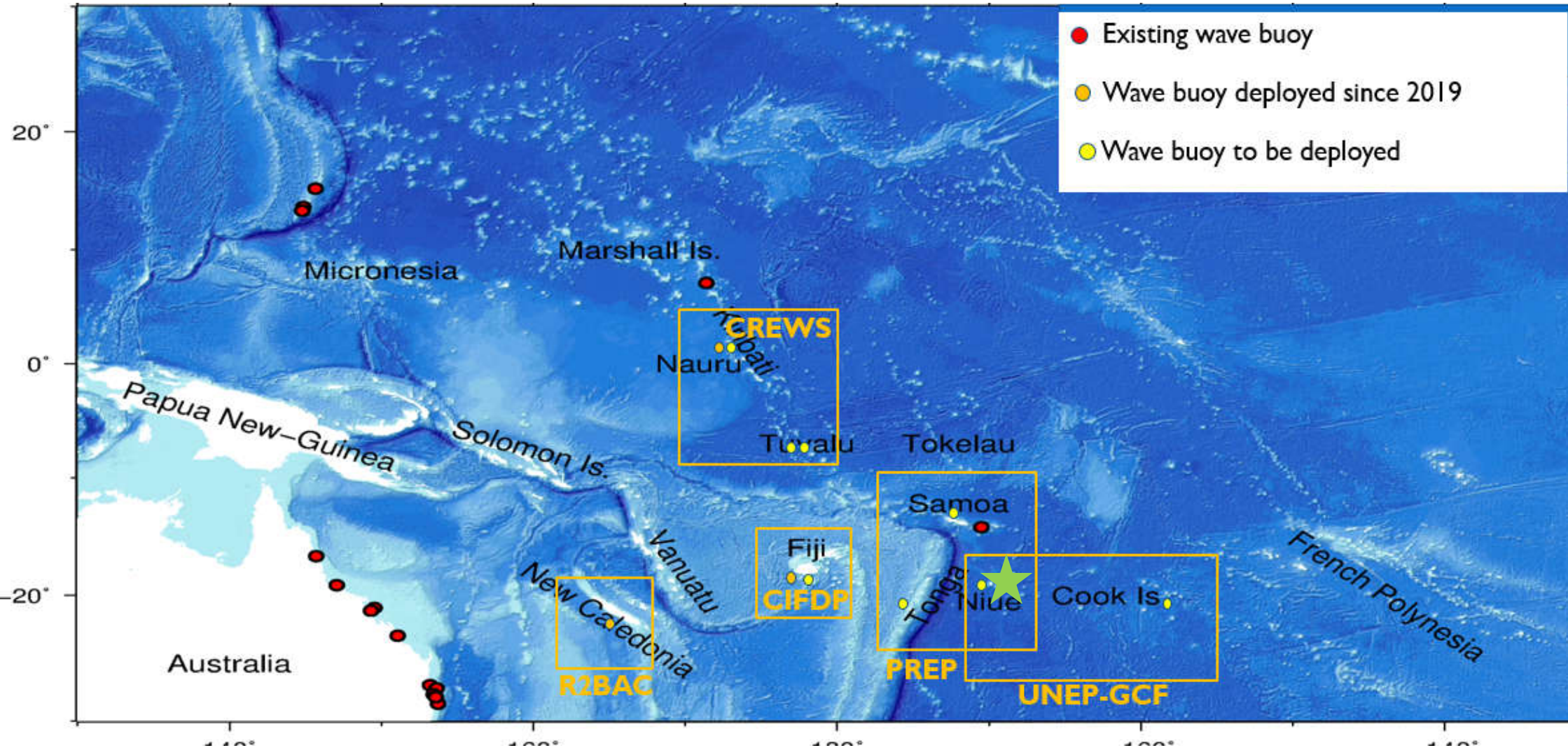
# GLOBAL MODEL-VALIDATION



## Climate and Oceans Support Program in the Pacific

- 14 stations around the Pacific since the early 90's
- Routine Maintenance and Calibration
- Data Quality control and Assurance
- Linked to GLOSS







# A WIDE RANGE OF LOCAL BENEFIT



Increased visibility

swellnet Surf Reports & Forecasts

### Analysis: New buoy records Fiji swells

By Craig Brokensha in Swellnet Analysis  
Tuesday, 29 May 2018

As groundbreaking as the 2012 Volcom Swell and the weekend's Ramon Swell at Cloudbreak have never been able to ascertain how big the open ocean swell was. That's because we've never had real-time observations to analyse the signature of each swell. There are no buoys in the path of Fiji swells. Not in the Southern Ocean, Tasman Sea, or around Fiji itself.

That all changed earlier this month when a new wave buoy was deployed off Fiji's Coral Coast, off the small village of Cuvu, approximately halfway between Cloudbreak to the north-west and Frigates to the south-east.

**New Wave Buoy**

In 1991 a buoy was deployed off Frigates, yet it only lasted a year, but this new buoy is permanent and will fill a crucial data gap in the South Pacific Ocean, while also helping calibrate global wave models.

The bonus for surfers is not only to geek out on the data from the weekend's back to back XXL swells, but to use the buoy to confirm the arrival of new swell energy across the region and plan trips out to the reefs.

Coming back to the past weekend (see images below) and we can see that the two swells weren't dissimilar in size at their peaks.

The first kicked strongly Friday afternoon and peaked overnight to a significant wave height of 4.67m before

SEARCH SIGN IN

CAMS FORECASTS FAVORITES NEWS

BY THE NUMBERS BREAKING

### By The Numbers: Cloudbreak Swell, SoCal Buoy and Hurricane Predictions

Some swells decay, some stay consistent and some come with destruction

Charlie Hutcherson

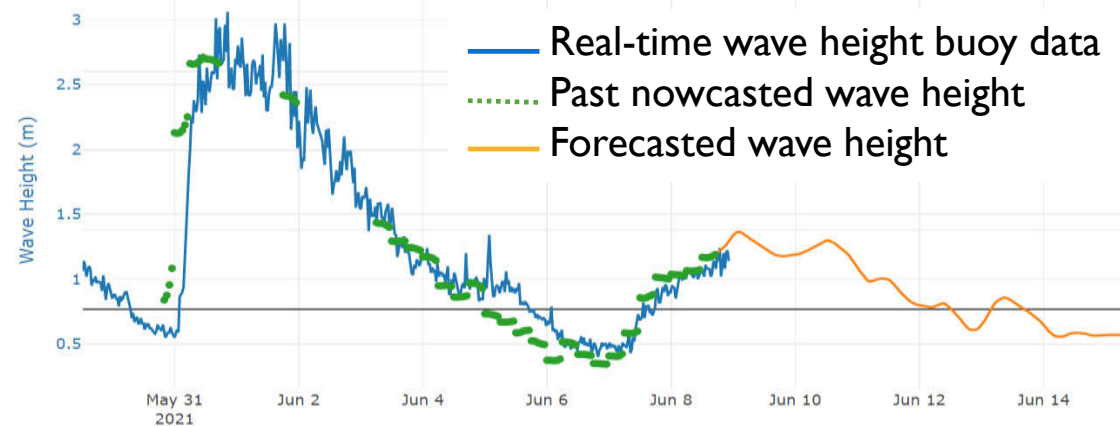
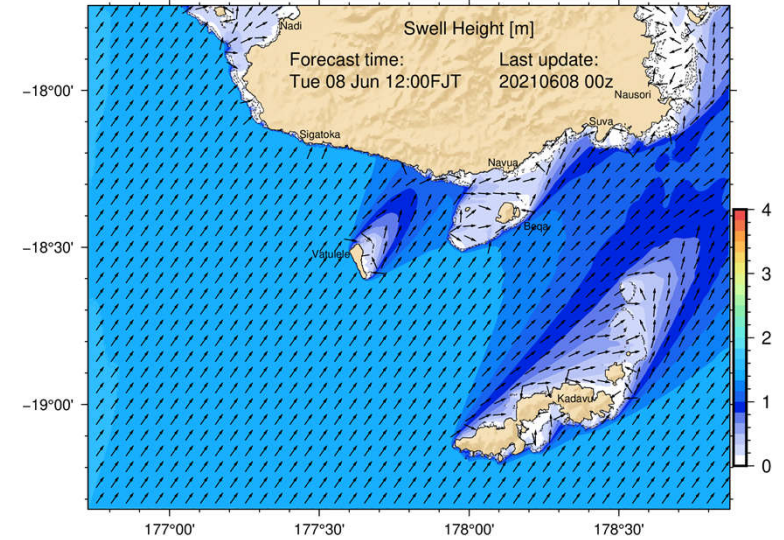
By the Numbers is a series designed for our increasingly data-driven and rapid-consumption world. You'll find some of the numerals below that have, or will, stand out from the crowd this week in the world of surf, swell, and weather.

### Biggest Buoy Reading: 16 feet at 17 seconds

Buoy readings of significant wave height (in meters) off Fiji for both of last weekend's large swells. Source: PacGeo

Peak swell reading at a buoy off Nadi, Fiji last Sunday during the XXL Cloudbreak swell. This reading was a spike in the swell with the bulk of the swell in the 13-15 foot at 15-17 seconds range. This swell signature is very similar to past notable XXL swells back in 2012 (the Volcom Fiji Pro swell) and in 2011 which we broke down before last Sunday's mayhem. Interestingly, the preceding swell on Friday before the XXL swell also came close to this magnitude. That swell, however, was much quicker to peak and drop while Sunday's swell held large for a longer duration. And swells of this intensity don't just disappear, they persevere, as you'll see.

## Improved Ocean Service: real-time validation



# Data Accessibility



Pacific Community  
Communauté du Pacifique

## Pacific Ocean Portal

Tourism



Ocean Monitoring



Coral Reefs



Sea Level



Fisheries



Shipping



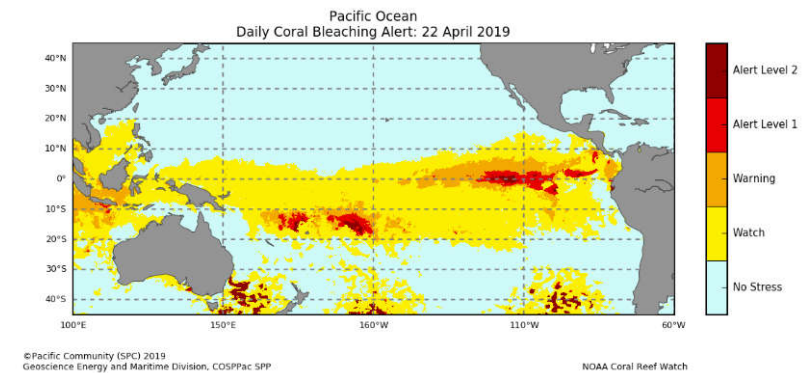
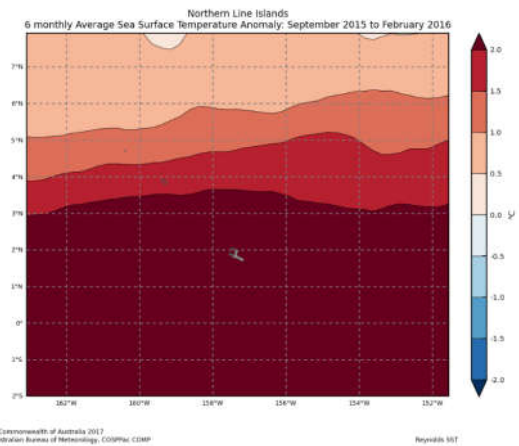
Library



Pacific Tides App



© 2019 Geoscience, Energy and Maritime Division, Pacific Community (SPC)



# OCEAN KNOWLEDGE PRODUCTS



Pacific Community  
Communauté du Pacifique

## Wave climate reports



Understanding the wave climate in the Pacific region is critical for coastal management and climate change adaptation. The Changing Waves and Coasts of the Pacific (WACOP) project is using the latest research tools to assess the baseline wave climate and its variability as well as the predicted changes in wave climate in the Pacific region.



## Wave Climate Report

### Maui Bay

Fiji nearshore wave hindcast

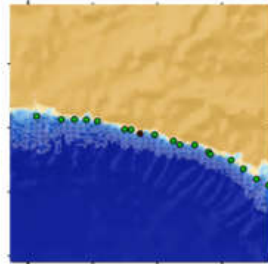


Figure 1. Location maps of the site. The map on the left shows the region. The map on the right shows the island and its surroundings. The red point shows to the actual site and green points (if present) indicate other available wave climate reports in the region.

For more informations contact:  
Cyprien Bosserville  
Secretariat of the Pacific Community (SPC)  
Applied Geosciences and Technology division  
Postal address: Private Mail Bag, GPO, Suva, Fiji Islands  
Street address: Mead Road, Nabua, Fiji Islands  
Office Tel: +679 338 1377  
Email: cyprienb@spc.int

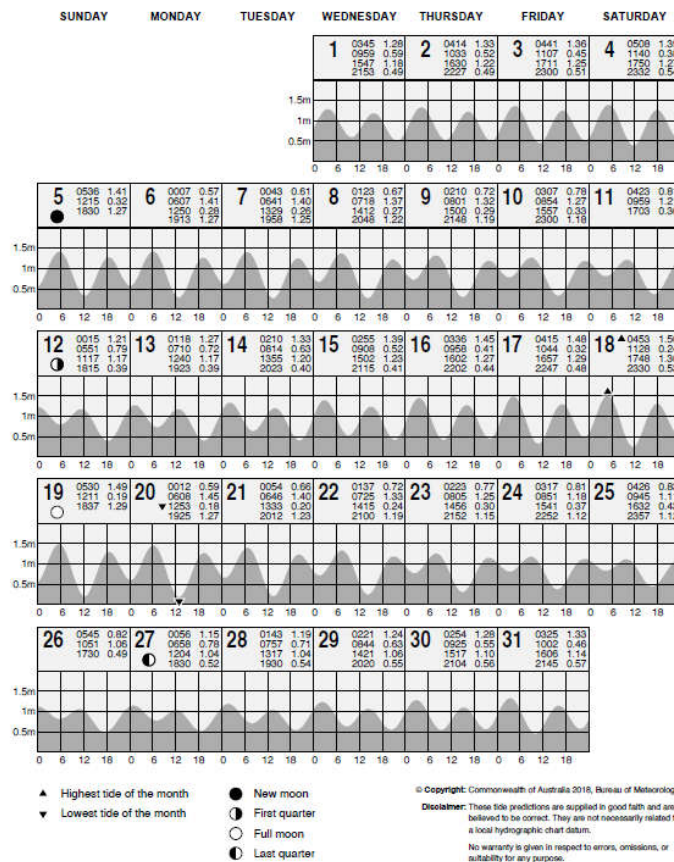
A copy of this report is available  
at <http://gsd.spc.int/wacop/>



## Tide Calendars

TIDAL PREDICTIONS FOR VANUATU - PORT VILA

MAY 2019 Local Standard Time



Tide gauge zero is 3.6037 metres below VAN1

## Ocean Bulletins



SOLOMON ISLANDS GOVERNMENT  
METEOROLOGICAL SERVICES DIVISION  
MINISTRY OF ENVIRONMENT CLIMATE CHANGE DISASTER MANAGEMENT AND METEOROLOGY



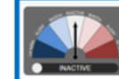
### Solomon Island's Ocean Bulletin

- Issue Outline
- Ocean Bulletin Summary
- Sea Surface Temperature
- Coral Bleaching Outlook
- Productive zone
- Tidal Forecast

Issue: 05\_2021 Ocean Bulletin Summary May 2021

- Fragments of Pacific Warm Pool (PWP) spreading eastward towards central Pacific.
- Overall Coral bleaching outlook will remain at WATCH for this month
- The convergence zone moves further up north of the Solomon Islands waters
- Higher waters in the Solomon sea and Temotu Province

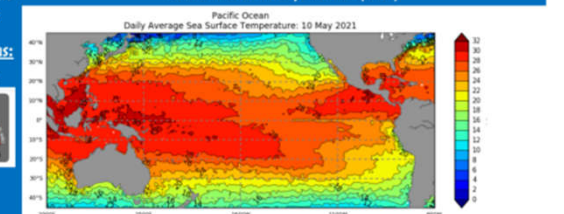
Climate Status:  
ENSO Update:



Sea Surface Temperature:



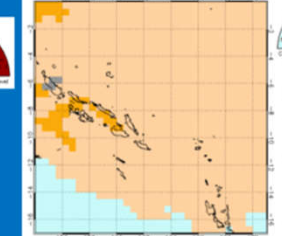
Coral Bleaching Outlook



The PWP that has remained in the Western Pacific ocean is making its way towards the central Pacific. More fragments of warmer waters on the ocean sub-surface has been seen more frequently towards the Central Pacific—Samoa, Kiribati, Cook Islands. However, the above average SST over our waters will remain for at least few weeks from today's release. (Image courtesy: Ocean Portal, SPC)

### Coral Bleaching Outlook

Solomon Islands 80% Probability Bleaching Alert Level Outlook (45)  
Weeks 1-4 (Outlook issued on: 2021-05-11)



(Image courtesy: NOAA)

The current Coral Bleaching Alert Level for Solomon Islands released on the date

2021-05-11:

**Bleaching Status:**

Current for Solomon Islands:

**Watch**

Outlook as of 11<sup>th</sup> May

- Week 1-4: **Watch**

- Week 5-8: **Warning**

- Week 9-12: **Alert Level 1**

Dummies:

- Watch & Warning—not so serious. Alert level 1—needs attention as the reefs are prone to bleaching

# CAPACITY BUILDING AND KNOWLEDGE TRANSFER



Ocean Science to Service Training workshops

NMS attachments

Internship opportunities

6-monthly infrastructure maintenance

Instrument deployment

PhD and Masters Supervision

Publication

## Ocean Decade Challenges



Understand and map land- and sea-based sources of pollutants and contaminants and their potential impacts on human health and ocean ecosystems, and develop solutions to remove or mitigate them.



Understand the effects of multiple stressors on ocean ecosystems, and develop solutions to monitor, protect, manage and restore ecosystems and their biodiversity under changing environmental, social and climate conditions.



Generate knowledge, support innovation and develop solutions to optimize the role of the ocean in sustainably feeding the world's population under changing environmental, social and climate conditions.



Generate knowledge, support innovation and develop solutions for equitable and sustainable development of the ocean economy under changing environmental, social and climate conditions.



Enhance understanding of the ocean-climate nexus and generate knowledge and solutions to mitigate, adapt and build resilience to the effects of climate change across all geographies and at all scales, and to improve services including predictions for the ocean, climate and weather.



Enhance multi-hazard early warning services for all geophysical, ecological, biological, weather, climate and anthropogenic related ocean and coastal hazards, and mainstream community preparedness and resilience.



Ensure a sustainable ocean observing system across all ocean basins that delivers accessible, timely and actionable data and information to all users.



Through multi-stakeholder collaboration, develop a comprehensive digital representation of the ocean, including a dynamic ocean map, which provides free and open access for exploring, discovering and visualizing past, current and future ocean conditions in a manner relevant to diverse stakeholders.



Ensure comprehensive capacity development and equitable access to data, information, knowledge and technology across all aspects of ocean science and for all stakeholders.



Ensure that the multiple values and services of the ocean for human well-being, culture, and sustainable development are widely understood, and identify and overcome barriers to behaviour change required for a step change in humanity's relationship with the ocean.

Moving from the ocean we have to the ocean we want



## DECIDE OUTCOMES 'THE OCEAN WE WANT'

- DECIDE CHALLENGES**
- 1 Understand and beat marine pollution
  - 2 Protect and restore ecosystems and biodiversity
  - 3 Sustainably feed the global population
  - 4 Develop a sustainable and equitable ocean economy
  - 5 Unlock ocean-based solutions to climate change
  - 6 Increase community resilience to ocean hazards
  - 7 Expand the global ocean observing system
  - 8 Create a digital representation of the ocean
  - 9 Skills, knowledge and technology for all
  - 10 Change humanity's relationship with the ocean

- A clean ocean
- A healthy and resilient ocean
- A productive ocean
- A predicted ocean
- A safe ocean
- An accessible ocean
- An inspiring and engaging ocean

# THE OCEAN DECADE

The Science We Need for the Ocean We Want

## 10 Years. 10 Challenges. 1 Ocean.

**Pacific solutions for a healthy Blue Pacific Continent: Integrated Ocean Management to sustain livelihoods today and into the future**

**Officially Endorsed Action**



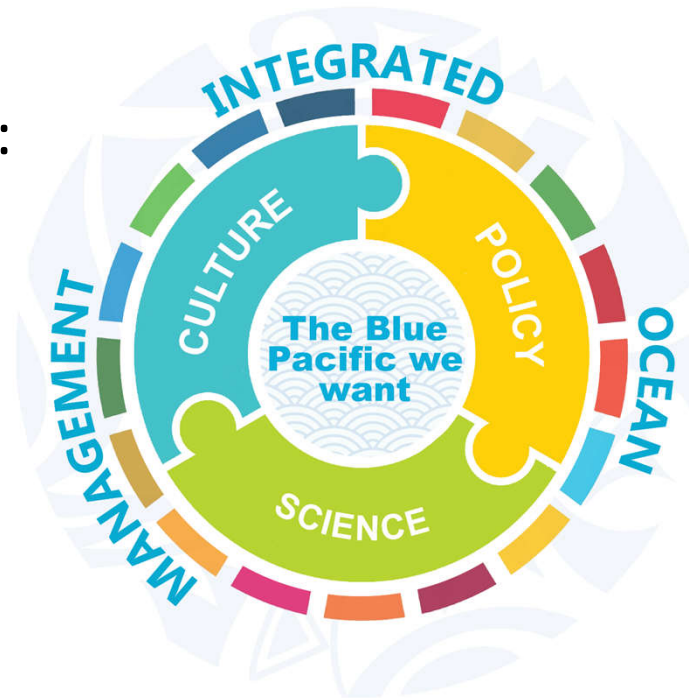
**2021** United Nations Decade  
**2030** of Ocean Science  
for Sustainable Development

# Integrated Ocean Management



## **CULTURE & TK:**

Actions are inclusive of traditional knowledge



## **LAW & POLICY:**

Robust legal instruments and policy frameworks

**SCIENCE:** Improved decision support systems



*Cultivating New Solutions and Partnerships for an Enhanced Ocean Observing System in a Decade of Accelerating Change*

- *Enhanced Ocean and Coastal Observations*
- *Investment into baseline data*
- *Higher resolution products*
- *Data accessibility and usability*
- *Capacity Building opportunities*
- *Strengthen Ocean services and partnerships*
- *Communications and knowledge products*
- *Impact based Forecasting*
- *Strengthening Marine Weather Services*
- *Supporting Navigational Safety and Maritime Energy Efficiency*
- *Supporting Search and Rescue Operation*
- *Supporting Lagoon Health Forecast*
- *Development of Marine Heat Wave forecast*
- *Management of Oil spill*
- *Management of Marine Resources*



Pacific  
Community  
Communauté  
du Pacifique

**Vinaka and many thanks**

For more information, email: [zulfikarb@spc.int](mailto:zulfikarb@spc.int)