



15th South West Pacific Hydrographic Commission Conference



21-22 February 2018
Nadi, Fiji

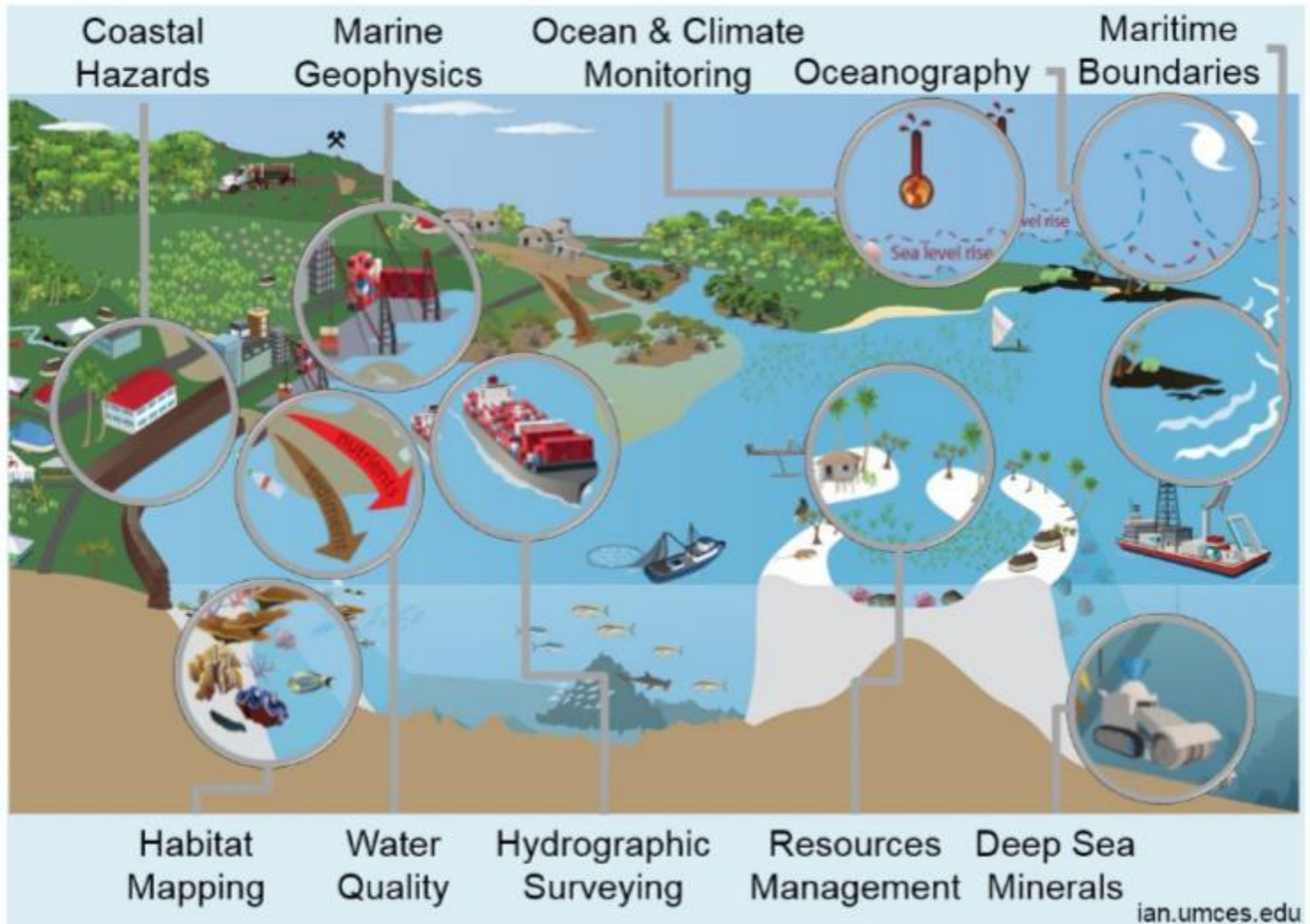
Geoscience Division

Hydrographic related activities in 2017

Salesh Kumar, Hydrographic Surveyor
saleshk@spc.int

Francesca Pradelli, Policy and Legal Officer
francescap@spc.int

15th South West Pacific Hydrographic Commission Conference



21-22 February 2018
Nadi



15th South West Pacific Hydrographic Commission Conference

- Hydrography Unit

TC PAM - Reinstatement of Chapuis Point Sector Light, Aore, Vanuatu
23/05/2017

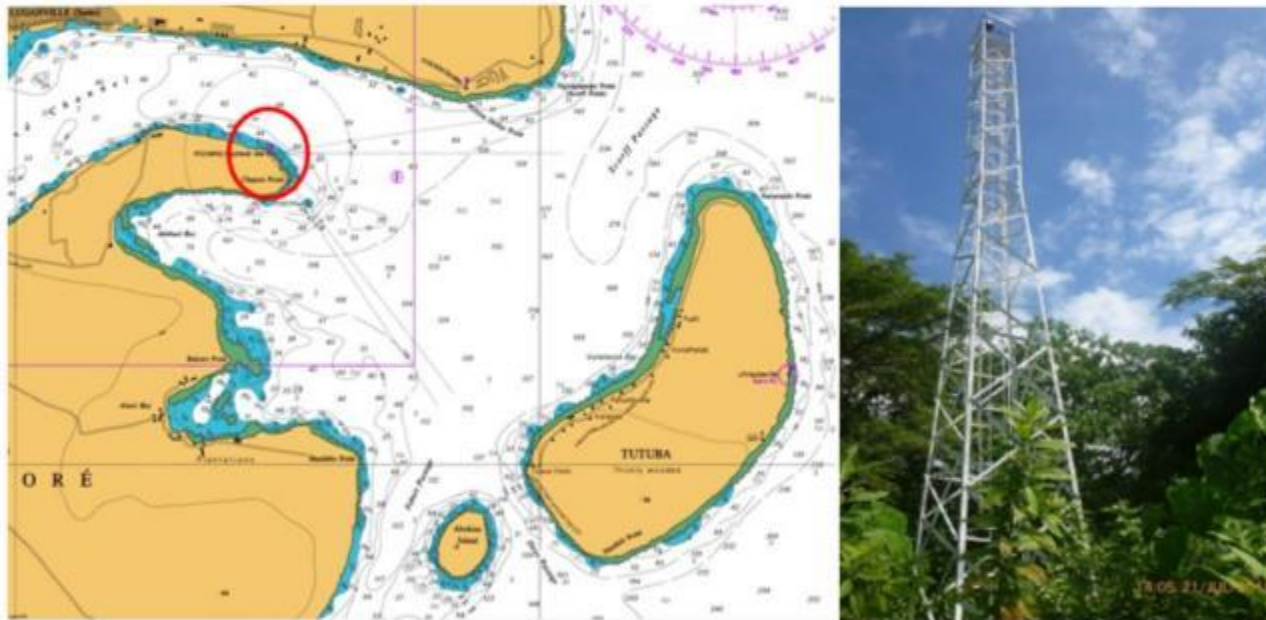


Chart BA1638

15th South West Pacific Hydrographic Commission Conference



ODSL (Omni-directional LED sector light 200)

15th South West Pacific Hydrographic Commission Conference



Volume K – South Pacific Ocean – Coral Sea – Vanuatu

ESPIRITO SANTO

Location, Name	Position	Characteristics	Elev	Range	Geo. Range	Description Height	Remarks
Luganville, Aore Island Chapuis Point	15°32'00.1"S 167°12'51.9"E	Fl(2)WRG 10s	24 m	W8 nM R6 nM G6 nM	10 nM	Tower 23 m	W262.5°-270.5°(8°) G270.5°-321.5° (51°) W321.5°-325.5°(4°) R325.5°-262.5°(297°) Obscured by vegetation 312°- 111°(159°)

21-22 February 2018
Nadi



15th South West Pacific Hydrographic Commission Conference

TC PAM - Reinstatement of PEL in Efate , Port Vila, Vanuatu - ongoing



Before TC PAM

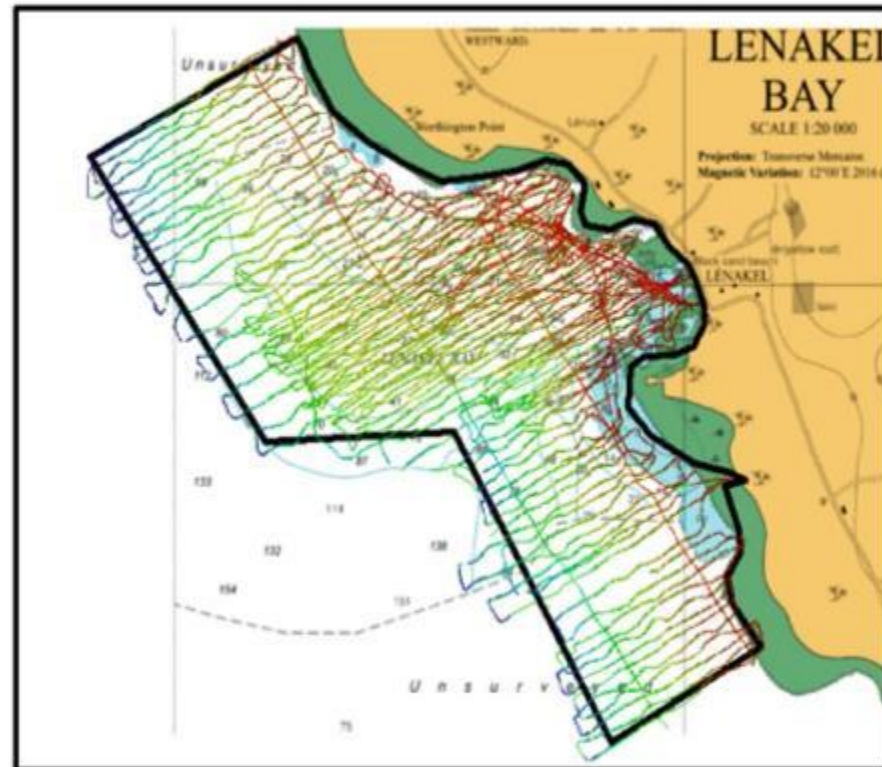
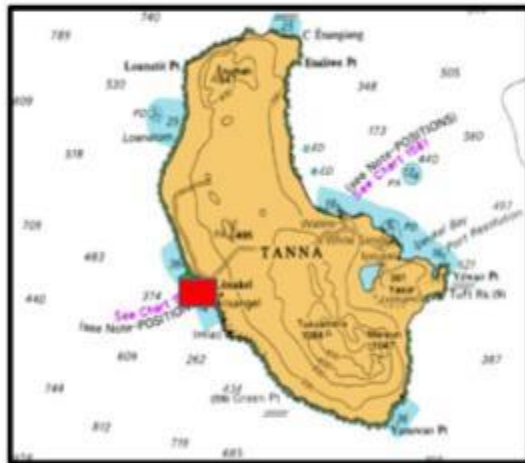


Current state



15th South West Pacific Hydrographic Commission Conference

TC PAM – Hazard mapping, SBES Survey Tanna, Vanuatu 25th Nov – 12th Dec 2017



21-22 February 2018
Nadi



15th South West Pacific Hydrographic Commission Conference

TC PAM – Hazard mapping, UAV and RTK GNSS Survey Tanna, Vanuatu 25th Nov – 12th Dec 2016

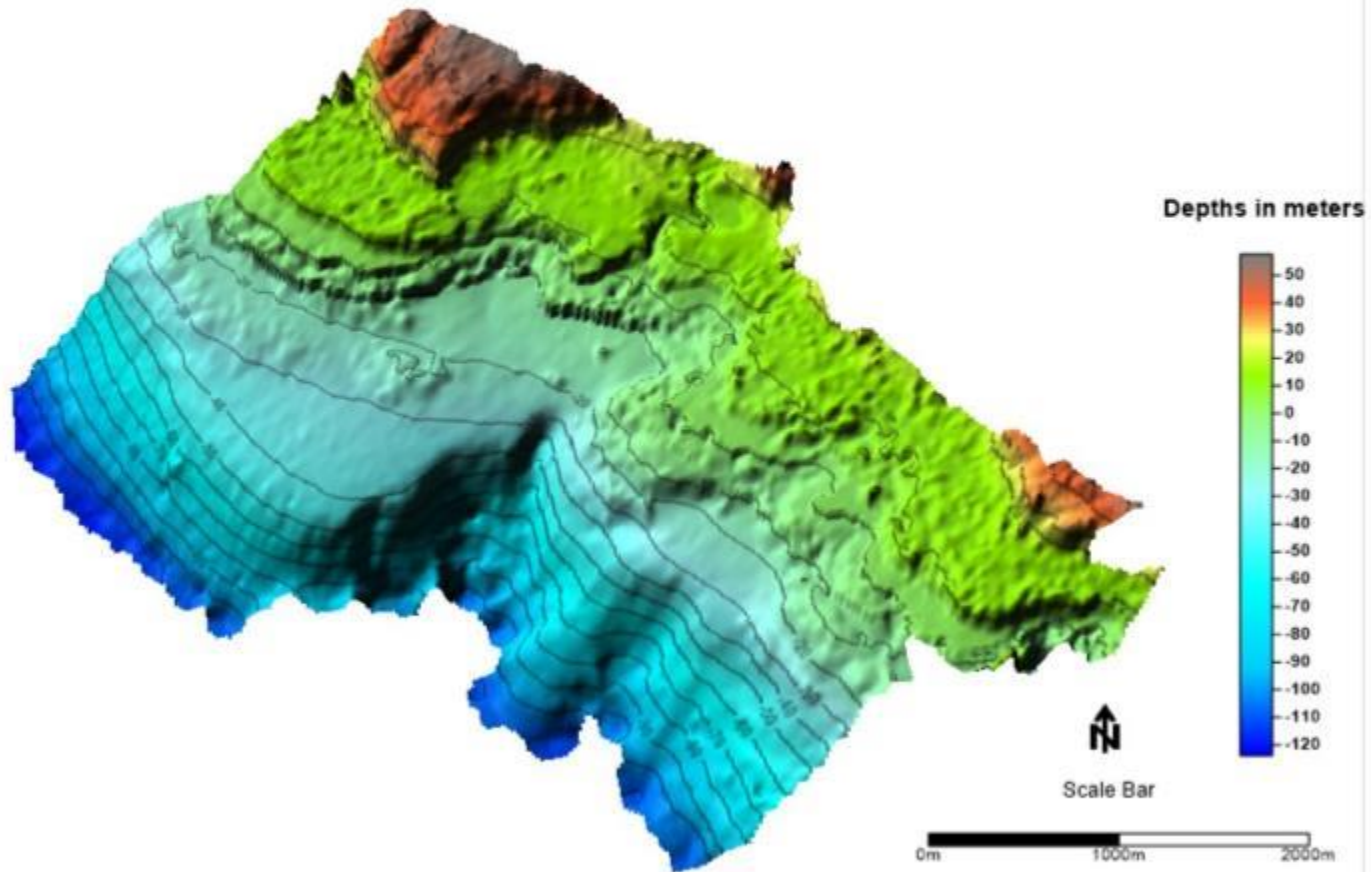


21-22 February 2018
Nadi



15th South West Pacific Hydrographic Commission Conference

LENAKEL Coastal Terrain Model



21-22 February 2018
Nadi



■ Hydrography Unit – PRNI Project

- The Pacific Regional Navigation Initiative (PRNI) is a project funded by the New Zealand Ministry of Foreign Affairs and Trade (MFAT) that focuses on navigation related aspects of maritime safety, in particular those necessary to support Pacific Island Countries fulfil their obligations relating to hydrography and nautical charting under UN Safety of Life at Sea (SOLAS). The Pacific Community (SPC) has been engaged by NZ MFAT to work with targeted countries to, amongst other objectives, support hydrographic capability building initiatives in conjunction with work being doing by international bodies and development partners

SPC target countries:

Tuvalu

Kiribati

Vanuatu



Output 1 – Data Discovery

- Examination of SPC data holdings and subsequent analysis for suitability for charting
- Provision of means of regular promulgation of updated list and associated access to PCA's
- Obtaining release agreements with PICTs for release of data held by SPC to PCA's

Activities completed include:

- Review of all SPC data holdings
- Secured 8 out of 17 PIC's data release agreement
- PRNI data portal 90 % complete
- Data release matrix (excel spreadsheet MEDIN Format) complete
- Data for 4 countries released to PCA (LINZ)
- Cook Islands - 7 data set and associated reports
- Niue – 2 data sets and associated reports
- Tonga - 4 data sets and associated files
- Samoa – 7 data files and associated



■ PRNI-SPC Portal

○ Adopt fit for purpose metadata

■ Migrate existing ISO1939 to MEDIN

- Enable capture of key metadata that can be used by PCA to make informed decision on data usefulness – for example:
 - Position fix method
 - Data processing details (eg SW version)
 - Processing details (eg sounding selection method)
 - Acquired data types
 - Coverage statement (Full, corridor, mixed)
 - Grid type and interpolation



15th South West Pacific Hydrographic Commission Conference



Pacific
Community
Communauté
du Pacifique



Land Information
New Zealand
Iaitia te Whenua



NEW ZEALAND
FOREIGN AFFAIRS & TRADE

Pacific Regional Navigation Initiative

The Pacific Regional Navigation Initiative (PRNI) is a project funded by the New Zealand Ministry of Foreign Affairs and Trade (MFAT) that focuses on navigation related aspects of maritime safety, in particular those necessary to support Pacific Island Countries fulfil their obligations relating to hydrography and nautical charting under UN Safety of Life at Sea (SOLAS). The Pacific Community (SPC) has been engaged by NZ MFAT to work with targeted countries to, amongst other objectives, support hydrographic capability building initiatives in conjunction with work being doing by international bodies and development partners.

[Browse All Metadata](#)

[Browse Datasets](#)

[Browse Reports](#)

[Browse Charts](#)



Cook Islands (47)



Fiji Islands (99)



Guam (13)



Kiribati (50)



Marshall Islands (84)



Micronesia Fed. St. (96)



Nauru (29)



New Caledonia (5)



Niue (13)



Other (43)



Palau (5)



Papua New Guinea (40)



Samoa (40)



Solomon Islands (124)



Tonga (19)



Tuvalu (66)



Vanuatu (48)

<http://www.pacgeo.org/prni/>



PRNI capacity building /MSI workshop for 2018

- 1st Phase of the PRNI project which ends in June 2018
- Kiribati April 2018
- Vanuatu May 2018

Resource Pack

- Standard laptop
- Handheld GPS
- Software such as CARIS Easy view
- Nautical charts

Outcomes from the MSI workshops

Vanuatu: 16 H - Note submitted to UKHO

Kiribati: 24 H – Notes identified to be sent to UKHO

Tuvalu: 17 H-Notes identified to be sent to UKHO

2nd phase of the project (June 2018 – June 2020)

There are 2 visits per country per year planned



15th South West Pacific Hydrographic Commission Conference

- Inundation Assessment for Kiritimati Atoll, Kiribati
- Wave and current meter deployment
- UAV survey



21-22 February 2018
Nadi



15th South West Pacific Hydrographic Commission Conference

■ Inundation Assessment for Kiritimati Atoll, Kiribati

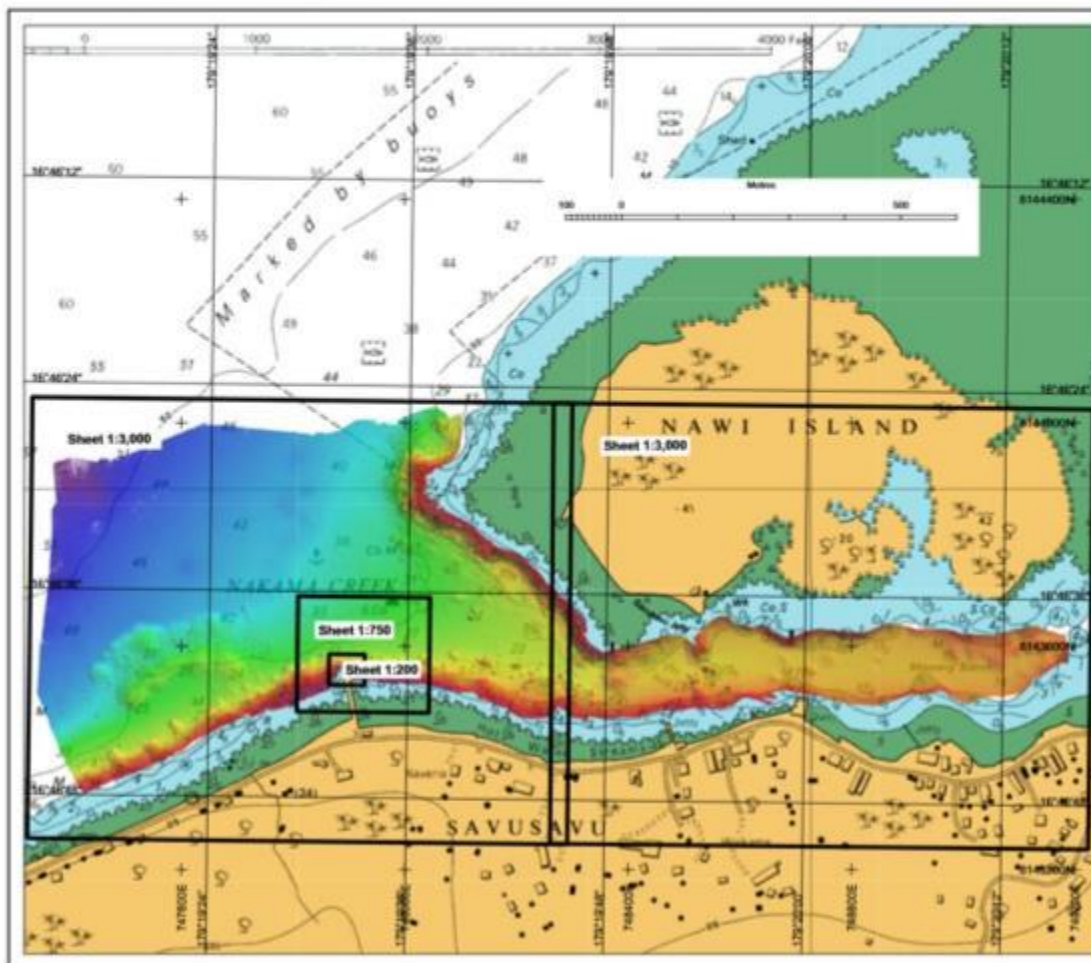
- Tide Gauge installation
- GNSS RTK Survey



15th South West Pacific Hydrographic Commission Conference

Commercial Hydrographic Survey Services

Hydrographic Survey of Savusavu Jetty and Approaches (March 2017)



SAVUSAVU JETTY and APPROACHES
Hydrographic Survey

Prepared for:
 Fiji Roads Authority

Prepared by:
 Pacific Community
Commission de l'Énergie

AREA: SAVUSAVU JETTY
LOCATION: SAVUSAVU

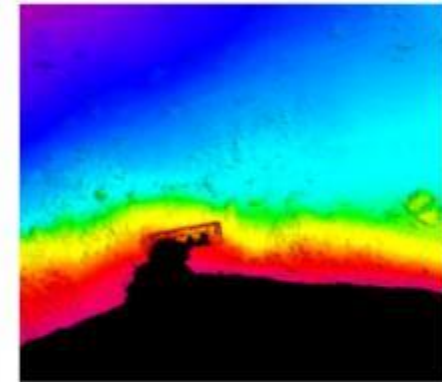
PRODUCT: Bathymetry
Depth Encoded Surface

SCALE: 1:500

Date / Preparation: 10/03/2017
Depth in: Meters (Chart Datum)

Survey Date: 11 - 16/03/2017
SFC Project No: 14/001/2017

Survey Vessel: M/V HONEY WIND
Equipment: Coda Octopus SVP, Garmin CHIRP, Garmin CHIRP, Garmin CHIRP, Garmin CHIRP



21-22 February 2018
Nadi



15th South West Pacific Hydrographic Commission Conference

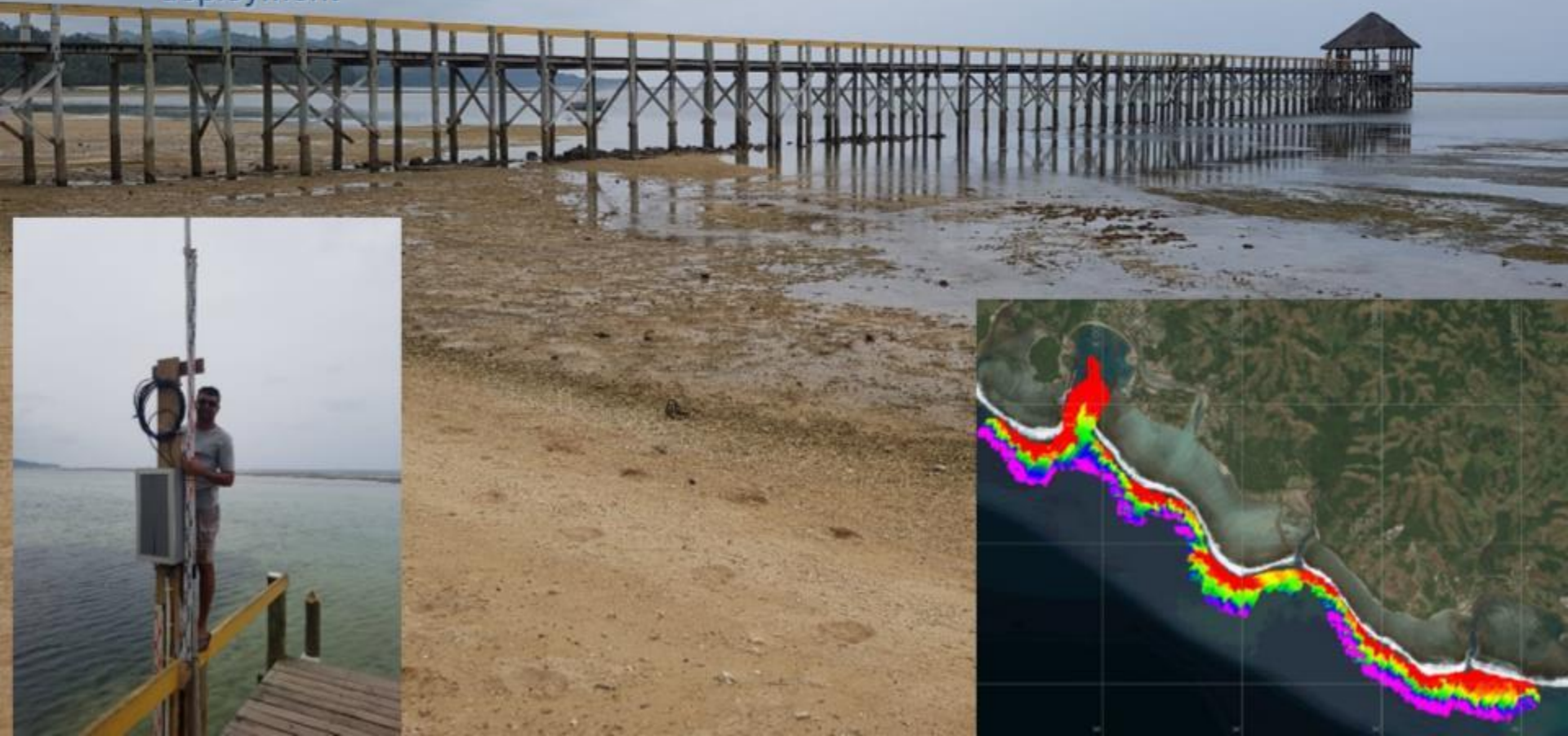
Commercial Hydrographic Survey Services

- Hydrographic Survey in support of salvage of MV KEA TRADER (September 2017)
- French Hydrographic Service (SHOM)
- Durand Reef, located 125 nautical miles east from Noumea, NC.



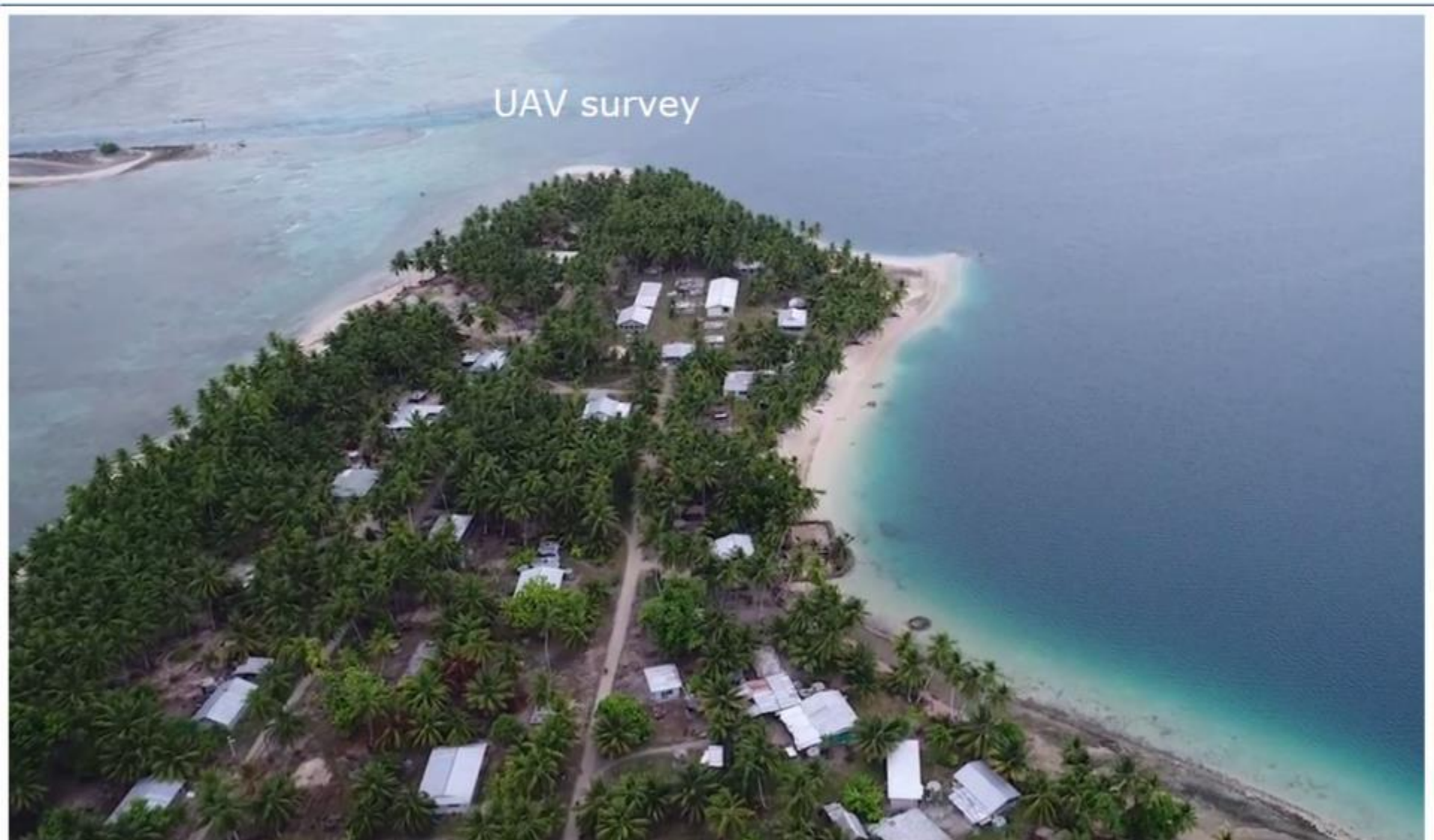
15th South West Pacific Hydrographic Commission Conference

- **Hydrographic Support to SPC Projects:**
- Coastal Inundation Forecasting Demonstration Project (CIFDP) in Fiji,
- SBES survey
- Tide Gauge installation
- RTK Survey
- Oceanographic instrument deployment



15th South West Pacific Hydrographic Commission Conference

UAV survey

An aerial photograph of a tropical island, likely in Fiji, showing a village with several white-roofed buildings and a dense forest of palm trees. The island is surrounded by clear, shallow turquoise water that transitions into deeper blue ocean water. A path or survey line is visible, extending from the land into the water, labeled "UAV survey".

21-22 February 2018
Nadi, Fiji



15th South West Pacific Hydrographic Commission Conference

Maritime Boundaries

The Regional Maritime Boundaries Sector (RMB) has been implemented by SPC since 2001 and is currently fully funded by Australian Aid. This sector undertakes all work in accordance with the provisions of the UN Convention on the Law of Sea (UNCLOS) and aims to assist Pacific Island countries to develop, promulgate and declare their respective maritime boundaries and likewise develop technical solutions towards ratified treaties between

1. Current status of negotiations for the 14 Project Countries

There are approximately 13 remaining maritime boundaries yet to be negotiated and settled in the Pacific regionneighbours with overlapping marine zones.



2. FFA SPC S121 Data Standards for Maritime Data Exchange for Vessel Monitoring System (August, 2017)

- Updated the maritime boundaries page on PacGeo for S121 project delivery to FFA
- S-121 metadata standards disclaimer and links have been made to the metadata on the page
- Project made a full delivery to FFA at their workshop in Tanoa Plaza where Akuila Acting Director of GSD delivered to Ramesh of FFA. Adjustments to style and colour coding of points, lines and polygons was done using the international cartographic standards

Member Countries Consent Letters for Release of MB Data to FFA



Have	Have Not
Nauru - (12, 24, 200) and Treaties	Palau - (Provisional EEZ and Treaties)
Kiribati - (PHX-200,24,12) (GIL-200,24,12) (LIN-12,24,200) and Treaties	Solomon Islands – (Treaties)
Tuvalu - (12, 24, 200) and Treaties	Tonga - (Restricted)
FSM - (Treaties)	Fiji (Archipelagic baseline and Treaties)
Vanuatu - (Archipelagic baseline)	
Cook Islands - (EEZ- 200, Treaties)	
Samoa - (Restricted)	
Tokelau - (Not a Project Member Country) - Treaties	
PNG - (Treaties)	SPC's Maritime Boundary Unit will not release any data to be used in the Vessel Monitoring System (VMS) unless permission is given to SPC to release the data in a legally signed document.
Niue - (12, 24, 200) and Treaties	
Marshall Islands –(12, 24, 200) and Treaties	



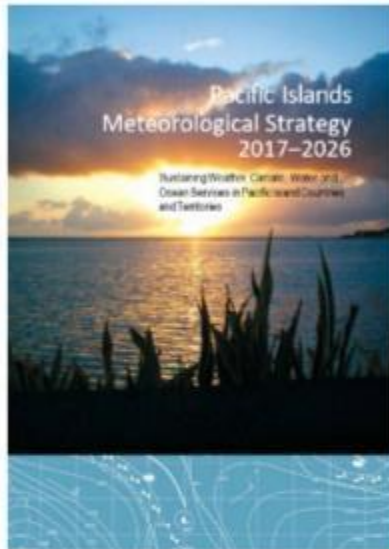
15th South West Pacific Hydrographic Commission Conference

Ocean and Tides Knowledge Unit

Contributions toward Technical Capacity and Ocean Literacy



Why? The Regional Picture

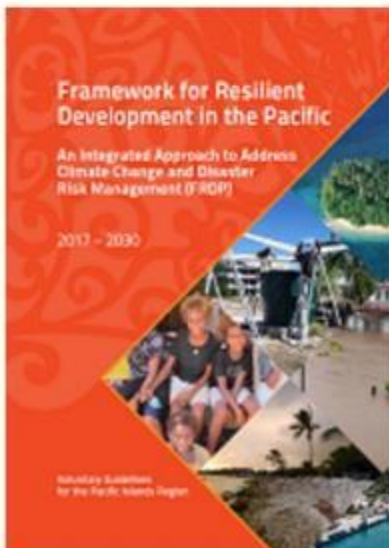


Pacific Islands Meteorological Strategy

- PKO 2: Improved marine weather services and establishment of ocean services
- PKO 4: Strengthened capacity to implement Multi-Hazard Early Warning Systems for tropical cyclones, coastal inundation and tsunamis

Framework for Resilient Development

- Goal 1. Strengthened integrated adaptation and risk reduction to enhances resilience to climate change and disasters
- Goal 3. Strengthened disaster preparedness, response and recovery



SPC Strategic Plan

- Goal 1.1. Strengthen sustainable management of natural resources
- Goal 1.3 Strengthen sustainable transport and energy security
- Goal 2.5. Improve multi-sectoral responses to climate change and disasters

What do we do?

- Transforming ocean data into products and applications for Pacific users
- Building regional capacity in ocean science
- Advocating for improved oceans data, services and cross-sectoral collaboration

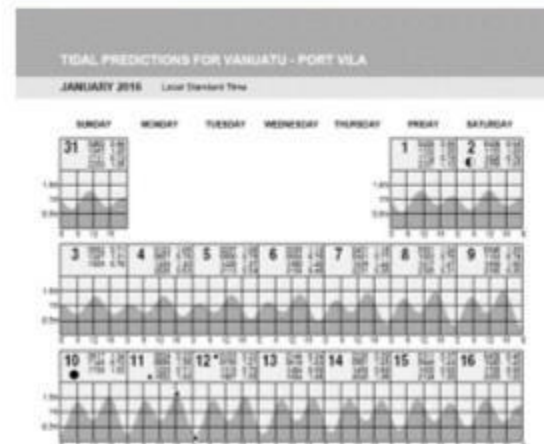


Projects:

- Pacific Sea Level Monitoring Project (PSLM) (1991-present)
- Climate and Oceans Support Program in the Pacific (COSPPac) (2012-2018)
- Australia Pacific Climate Change Action Program (APCCAP) (upcoming)

How do we do it?

- **Transforming ocean data into products and applications for Pacific users**
 - Pacific Ocean Portal
 - Annual Tide Prediction Calendars
 - Factsheets, videos and information products
- **Building regional capacity in ocean science**
 - Sub-regional and in-country trainings
 - Attachments and internships
- **Advocating for improved oceans data, services and cross-sectoral collaboration**
 - Ocean capacity mapping and stakeholder engagement
 - Pacific Islands Marine and Ocean Services (PIMOS) Panel support



Recent Achievements

Ocean Monitoring and Observations



New Tide Gauge in Niue
(Aug 2015)



Upgraded Tide Gauge in
Tuvalu (May 2017)



COMING Upgraded Tide
Gauge in Tonga (Mar 2018)



Online Real-Time Display of Tide Gauge Data

Recent Achievements

Ocean Data Analysis Training and Stakeholder Workshops

- Solomon Islands (Nov 2015)
- Nadi (Sept 2016)
- Cook Islands (Nov 2016)
- Marshall Islands (Mar 2017)
- Tuvalu (Oct 2017)
- Tonga (Nov 2017)
- Niue (Mar 2018)

Total Trained:

70 Pacific Met Service Staff

90 In-Country Ocean Stakeholders

Including 28 Women



Recent Achievements

Ocean Data Analysis Products



TIDE PREDICTIONS FOR TONGA - LAUTOKA
JANUARY 2017 - Local Standard Time

Tides and extreme tide events

MOON	WIND	WAVE	SEASWIND	WINDSPEED	WAVE	WINDSPEED
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

What causes tides?

What are spring tides?

What are neap tides?

What are extreme tide events?




METEOROLOGY & COASTAL RADIO SERVICES


Tonga Ocean Outlook

Week 01 Summary January 2018


- Sea surface temperature is expected to be higher than normal for the month of February 2018.
- Sea level forecasts for April 2018 show normal conditions.
- The tropical convergence zone is predicted to extend north of Tonga in the next few months.
- The sea level rise is predicted to arrive at of February, which is the second highest rise of 2018.



Sea Surface Temperature Forecast **Sea Level Forecast** **Hurricane Zone Forecast**



Monthly Chlorophyll **Monthly Wave Direction** **Highest and Lowest Tides of the Year**

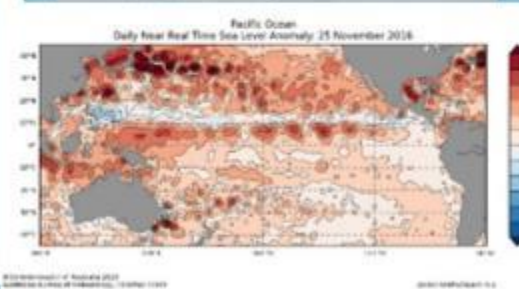
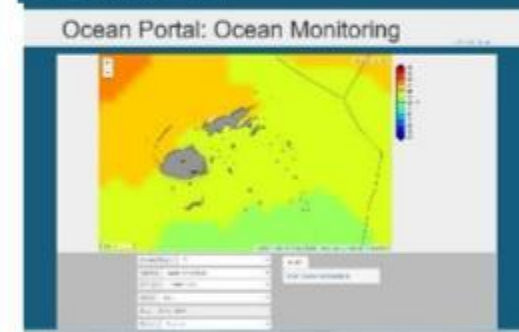


Sea level rise forecast for the next few months

Sea level rise forecast for the next few months

Sea level rise forecast for the next few months

Pacific Ocean Portal

1800 Tide Calendars for 20 Pacific Locations

Ocean Outlooks produced in Kiribati, Tuvalu and Tonga

The Pacific Ocean Portal
oceanportal.spc.int

Tuvalu aims to improve ocean forecasting and maritime safety

27 Oct 2017 | Funafuti



Tuvalu Meteorological Service staff along with stakeholders from across the national maritime industry gathered in Tuvalu this week for a workshop on ocean forecasting and maritime safety. Participants of the workshop highlighted the need for improved interagency coordination and communication and committed to developing and producing a regular Ocean Outlook bulletin to share information with key national stakeholders. The workshop was hosted by the Tuvalu Met Service and the Pacific Community (SPC) through the Australian-funded Climate and Ocean Support Program in the Pacific (COSPPAC).



SI MET HOST OCEAN SCIENCE REGIONAL TRAINING

SI Meteorology, Solomon Islands, Topical Stories November 8, 2015

PRINT EMAIL A



Solomon Islands Meteorological Service Director David Hinasia. Photo credit: Courtesy of David Hinasia's Facebook account.

The Solomon Islands Meteorological Service will be the host of the Ocean science, coastal inundation regional training starting tomorrow in Honiara.

Director of Solomon Islands Meteorological Service Mr David Hinasia says, tides and sea level will be key topics of discussion during the training.

Mr Hinasia says, this initiative is the next step towards developing and delivering oceans and marine weather services to stakeholders.

He adds the Meteorological Service is looking to develop better marine weather services for stakeholders to ensure the safety of boats and

ships, provide useful information to fisheries, health and the tourism sectors and assist communities in preparing and planning.

"The ocean is very important for us Pacific island countries and we use it for a lot of things, like transport, source of food, a source of revenue for the country, but because our lives have basically brought up around the ocean a lot of times we ignore it and one issue like marine warnings normally issued by the Met Service, and one of our main disasters is missing people at sea."



Geodetic unit

1. The geodetic unit at SPC together with Bathymetry and Geodesy unit of UKHO and the department of Lands and Survey in Tuvalu continued their 2nd phase of the geodetic survey work for the redefinition of Tuvalu's Geodetic Reference System. The phase 2 of the project focussed on: the four atolls of Tuvalu, Nui, Niutao, Nanumanga and Nanumea. The activities carried out were;
 - Reconnaissance survey
 - Recovery of old survey marks
 - Establishment of new survey marks
 - Static geodetic control surveys
 - Installation of tide gauges
 - Cadastral boundary surveys
 - RTK GNSS topography survey
 - UAV survey
 - Coastal inundation community survey

15th South West Pacific Hydrographic Commission Conference

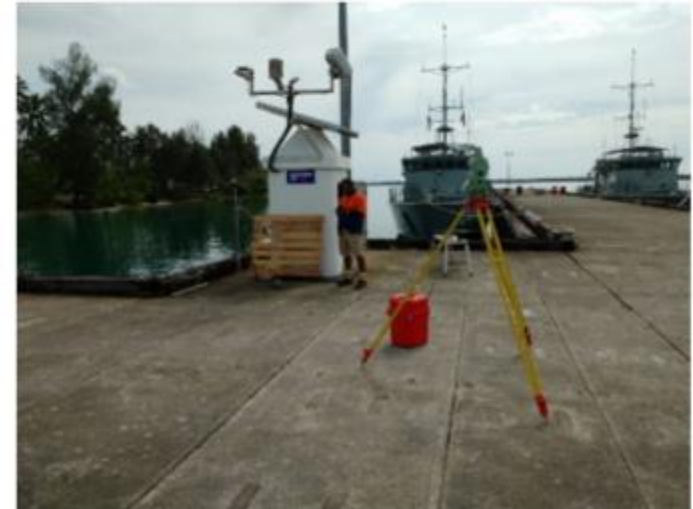
Geodetic unit



21-23 February 2018
Nadi



1. The Pacific Sea Level monitoring (PSLMP), operates under the Climate and Oceans Support Program in the Pacific (COSPac). It is a continuation of the 20-year South Pacific Sea Level and Climate Monitoring Project (SPSCLMP).
 - Under agreement with the Australian Bureau of Meteorology (BoM), Geoscience Australia (GA) maintains the operation of the Global Navigation Satellite Systems (GNSS) Continuous Operating Reference Stations (CORS) for the Australian AID funded Pacific Sea Level Monitoring Project (PSLMP).
 - Australian Bureau of Meteorology manages permanent and temporary tide gauges in each location, and GA's responsibility together with SPC to the PSLMP is to undertake regular levelling surveys between the tide gauge and GNSS CORS. The purpose of the levelling survey is to identify any relative vertical movement between the GNSS and the tide gauge equipment thus providing a mechanism to validate the tide gauge measurements against any land movement detected by the GNSS CORS over a long time series.
 - The long-term goal of the project is to provide an accurate long-term record of sea levels in the South Pacific for partner countries and the international scientific community that enables them to respond to and manage related impacts.
 - The following country surveys was carried out last year:
 - Majuro, Marshall Islands
 - Manus Island, Papua New Guinea
 - Lautoka, Fiji
 - Niue
 - Rarotonga, Cook Islands
 - Apia, Samoa



Pacific Safety of Navigation Project

- Project purpose
 - Identify the current and future needs for safety of navigation systems including AtoN procedure for governance and funding, and support the enhancement of the capacity to establish, operate and maintain AtoN
- Donor
 - International Foundation for Aids to Navigation (IFAN)
- Implementation (5years)
 - Preparation Phase – 2016
 - Phase I – 2016-2018, Phase II – 2018-2021
- Target countries
 - Cook Islands, Kiribati, FSM, RMI, Nauru, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu



Pacific Safety of Navigation Project

2016 visits

2016	
Cook Islands (July)	Joint visit with IALA, legal assessment
Kiribati (November)	Joint visit with IALA, legal assessment



October 2017: changes in internal structure

- New project manager
- External consultant to carry out technical assessments

Pacific Safety of Navigation Project

2018 country visits

2018	
FSM (Jan)	Technical, legal and economic assessment <i>(report under drafting)</i>
Tonga (March)	legal and economic assessment <i>(Review progress IALA mission)</i>
Tuvalu (Feb)	legal and economic assessment (Technical assessment by IALA)
Samoa (March)	Technical, legal and economic assessment
Tokelau (March)	Technical, legal and economic assessment
Nauru (April)	Technical, legal and economic assessment



Regional Workshop on Pacific SoN project Phase 1 (*June 2018 tbc*)

- opportunity to gather the Aids to Navigation Managers of the 13 targeted PICTS of the Pacific Safety of Navigation Project to discuss the final report of the project's Phase 1 and prepare for the Phase 2