



**FFA**  
PACIFIC ISLANDS  
FORUM FISHERIES  
AGENCY

# FFA Remote Sensing to combat Illegal Unregulated & Unreported (IUU) fishing in the Pacific.

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*Pacific Geospatial Conference 2022, Suva  
28 Nov - 2 Dec 2022*

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## Strategic Plan 2020-2025

**Our PEOPLE** enjoy the greatest possible social and economic benefits from the sustainable use of offshore fisheries resources



1. Background
  - a. FFA and RFSC
  - b. IUU Fishing in the Pacific
2. FFA MCS Framework
3. MCS Tools
  - a. RSP, VMS and AIS
  - b. Remote Sensing
4. Use of RS in FFA Operations
  - a. 3 Case Studies.
5. Challenges
6. Partners
7. Next Steps



# Background:

- The Pacific Islands Forum Fisheries Agency (FFA) traces its origins to meetings in Nauru in 1976 and Port Moresby in 1977
- Formally established in July 1979
- Based in Honiara, Solomon Islands
- 17 member countries
  - Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu & Vanuatu
- Regional Fisheries Surveillance Center - Honiara, Solomon Islands.
  - 9 staff serving 17 members operational need.



# Pacific Tuna Fisheries



**17**  
EEZs

Approximately  
**30,569,000 km<sup>2</sup>**

**55%**  
in 2020

of the world's tuna  
in 2020 originated from  
the WCPFO

**\$500**  
million

in access fees for  
FFA Members

**\$900**  
million

in export earning for  
FFA Members

# What is Illegal, Unreported and Unregulated (IUU) Fishing?

- **Illegal fishing:** Fishing activities in contravention of national laws, international obligations or adopted conservation and management measures.
- **Unreported fishing:** Fishing activities that have not been reported or have been misreported in contravention of national laws or adopted conservation and management measures.
- **Unregulated fishing:** Fishing activities by vessels without nationality or flagged to non-parties of an established RFMO in contravention of international obligations and/or adopted conservation and management measures.

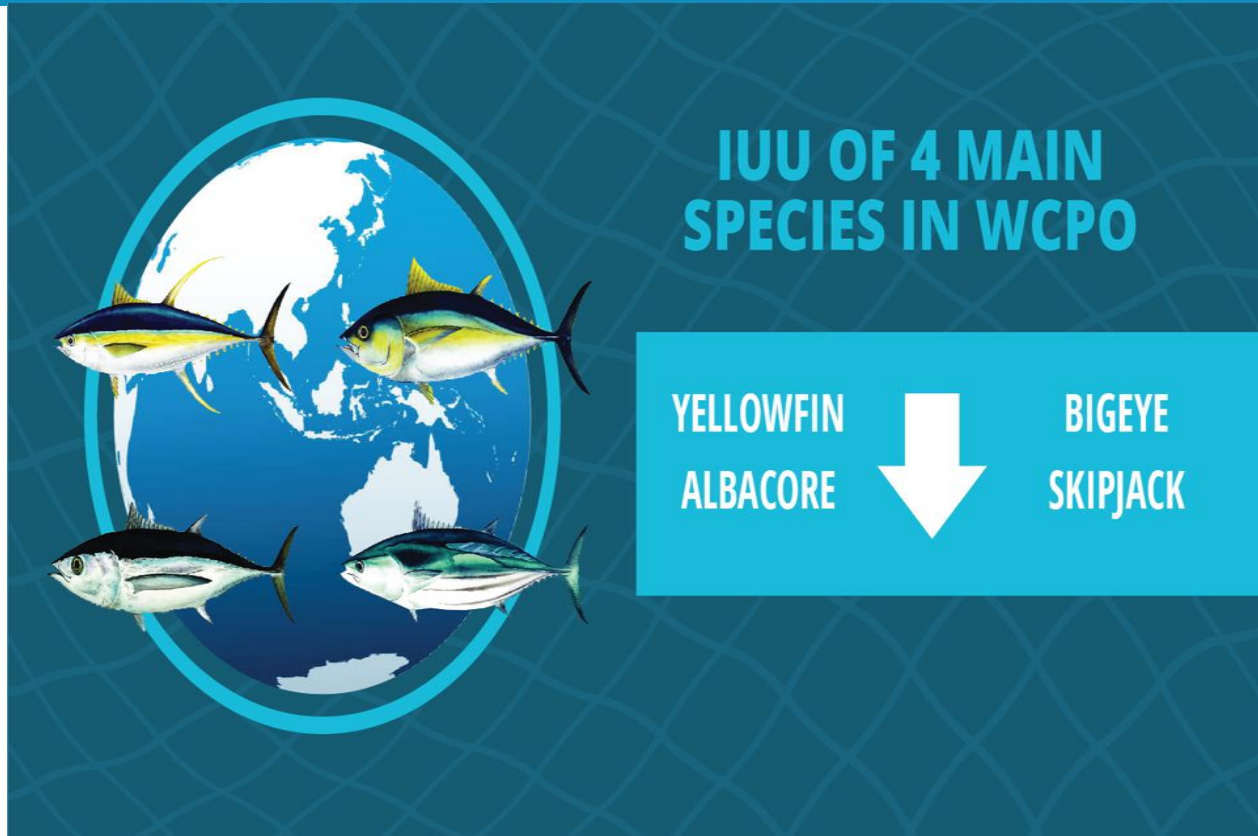


# IUU Fishing in the Pacific

## Pacific Islands Region IUU Quantification Study

(pub. 2016 upd. 2021)

- 2021 Study estimate:  
192,186 tonnes/yr (\$333m)
- Dominated by licensed  
fleet: misreporting 89%
- Cooperative MCS measures  
have impacted the nature  
and scale of IUU in the  
Pacific
- Need for the stronger MCS  
arrangements in FFA  
member zones to be  
mirrored on the high seas



*“To support and assist FFA members Monitoring, Control and Surveillance (MCS) activities to counter Illegal, Unreported and Unregulated (IUU) fishing in the region”.*





# RFSC Core Intentions:

## Service and Activities

### 1. IUU Risk Analysis and Identification;

Maintain and transmit an accurate Maritime Domain Awareness (MDA) picture displaying cumulative IUU risk assessment within the OP365 area of operation (AO) that assists FFA members to conduct effective MCS activities and deploy targeted responses.

### 2. Surveillance Planning and Coordination; and

Plan, coordinate and support targeted and integrated regional surveillance and MCS responses through Operations that make the most effective use of the FFA Aerial Surveillance program and other available assets.

### 3. Capability Development.

Support, coordinate and deliver advice, training and tools that enhance the national MCS capacity and capability of members.



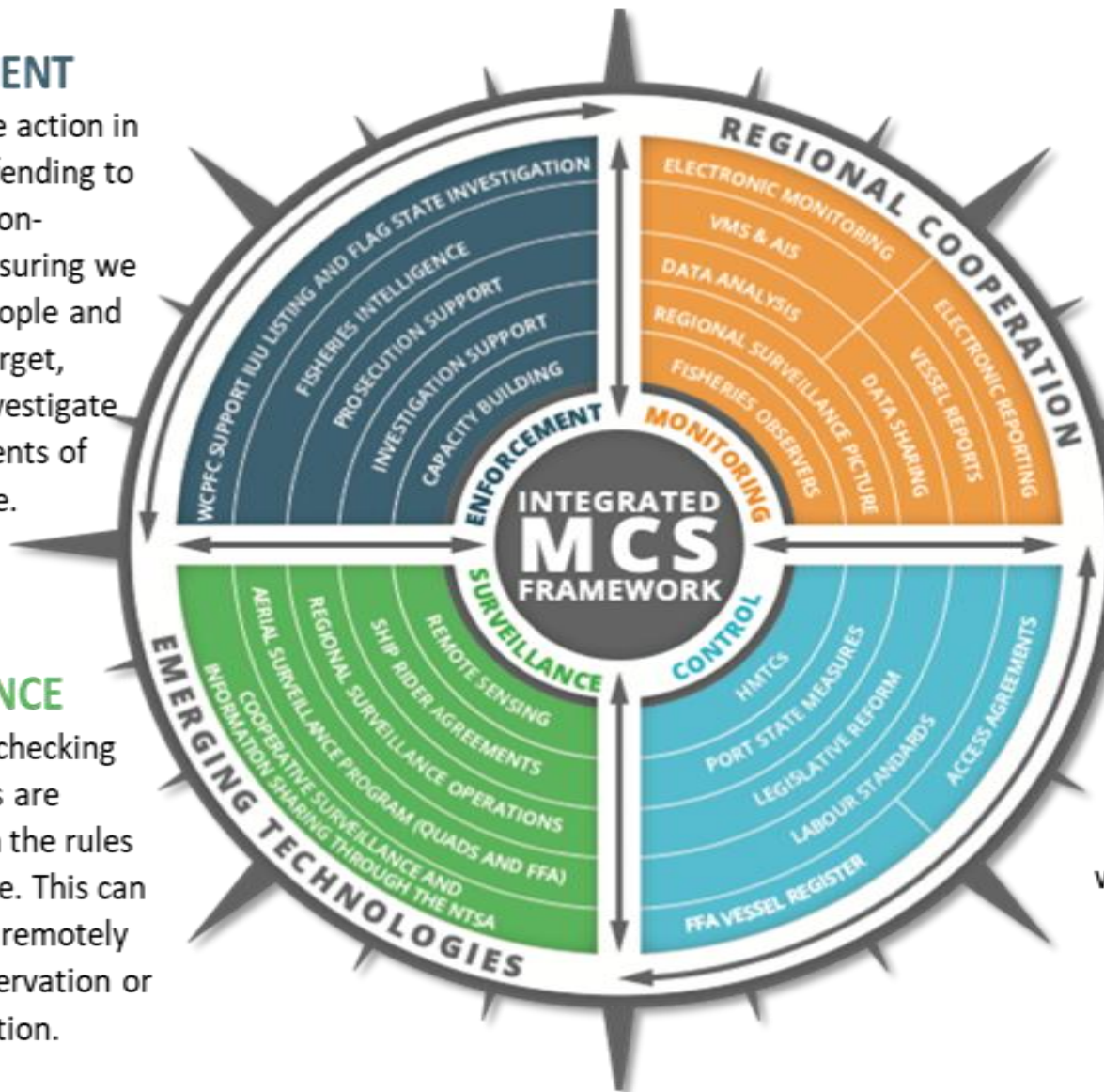
# Our Response? FFA MCS Framework:

## ENFORCEMENT

Taking effective action in response to offending to deter further non-compliance. Ensuring we develop our people and processes to target, identify and investigate potential incidents of non-compliance.

## SURVEILLANCE

Supervising or checking that the vessels are complying with the rules that are in place. This can be undertaken remotely or through observation or physical inspection.



## MONITORING

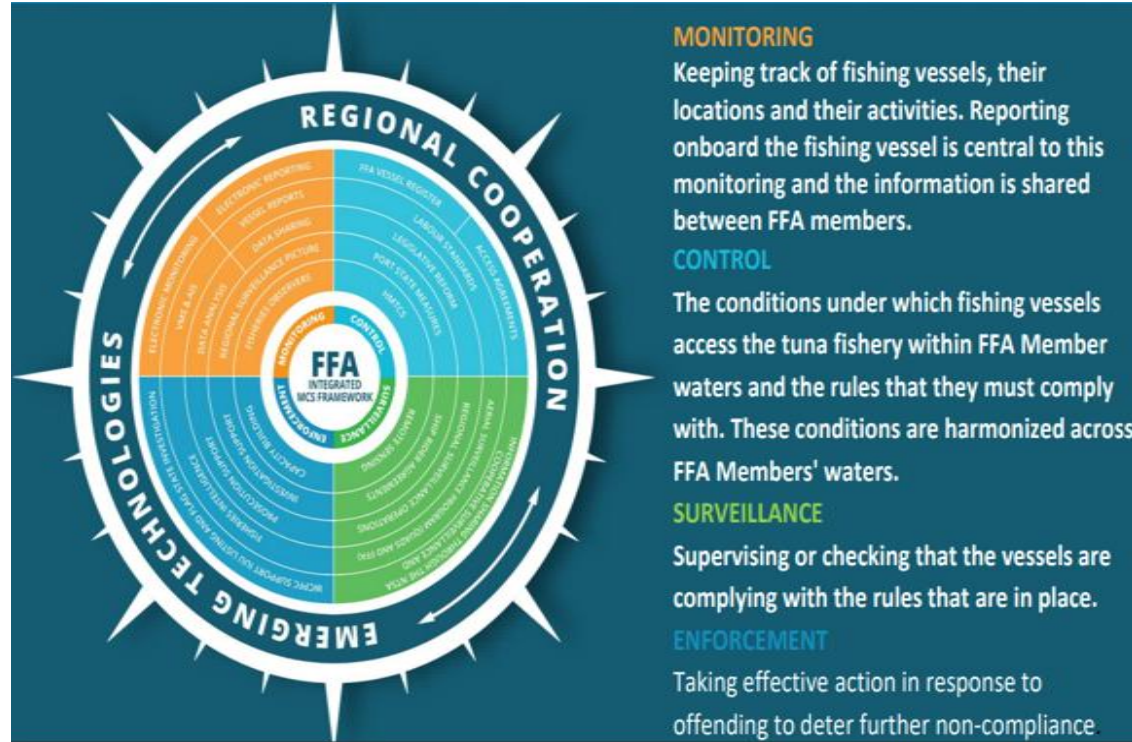
Keeping track of fishing vessels, their locations and their activities. Reporting from onboard vessel is central to this monitoring and the information is shared between FFA and Members.

## CONTROL

The conditions under which fishing vessels access the tuna fishery within FFA Member waters and the rules that they must comply with. These conditions are harmonised across FFA Members' waters.

# Our Response? FFA MCS Framework:

- ❑ **Regional Surveillance Picture**
- ❑ PMSP Surveillance assets
- ❑ QUAD Surveillance assets
- ❑ **Vessel Monitoring Systems**
- ❑ **Automatic Identification System (AIS)**
- ❑ Fisheries Observer Program
- ❑ National Surveillance assets
- ❑ **Remote sensing**
- ❑ External Surveillance service-  
Services from Emerging  
Technology Providers & NGO  
and other Govt agencies and  
MDA Partners
- ❑ Local information networks



## 1. REGIONAL SURVEILLANCE PICTURE (RSP):

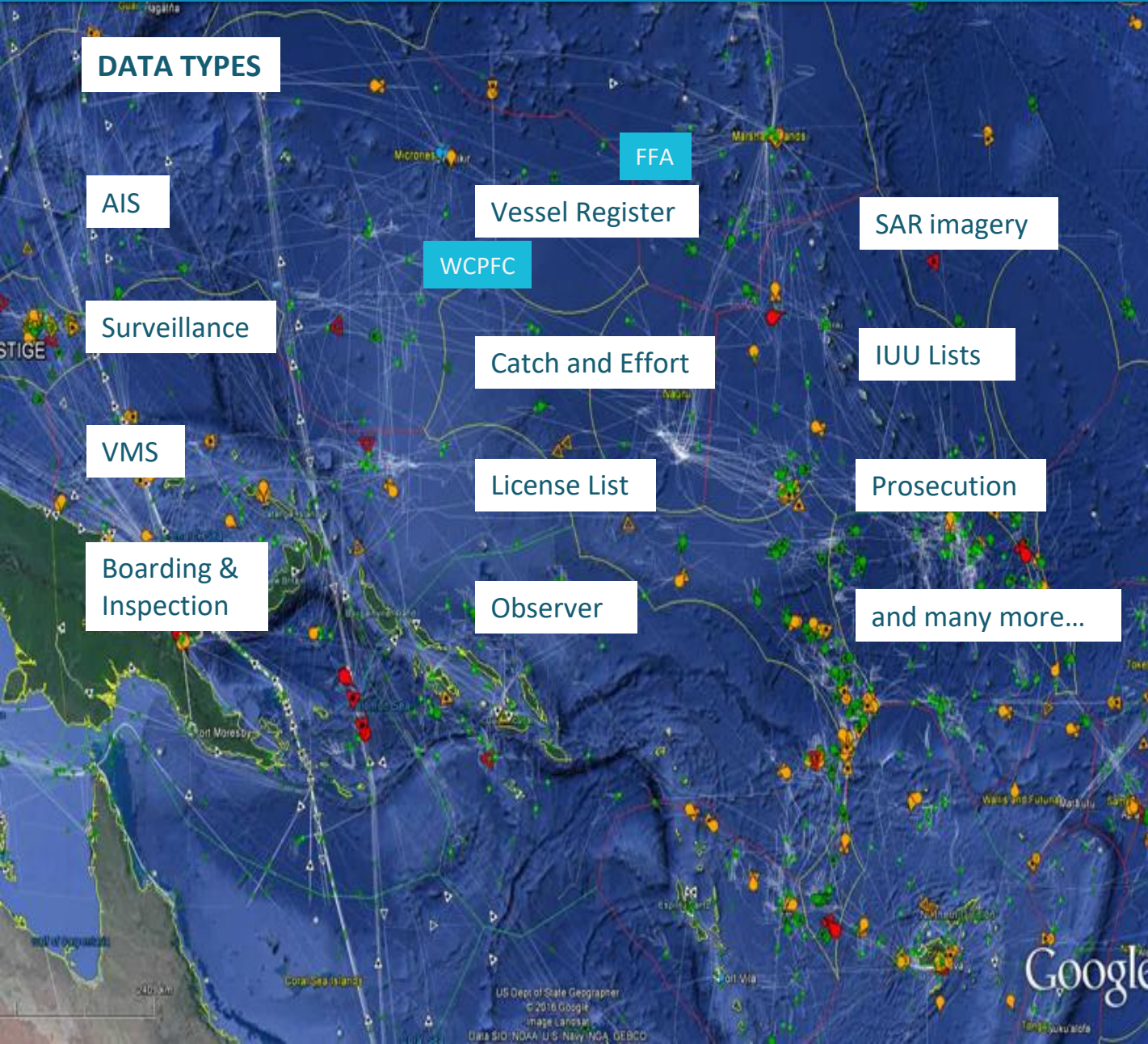
- The RSP displays three primary datasets – **FFA VMS, WCPFC VMS, AIS** on one common operating picture for 17 EEZs, 365 days, and WCPFC VMS high seas data during Regional Operation windows.
- All datasets including **licence and registration data** and available national data validated against each other for each vessel;
- The RSP uses a **Compliance Index (CI)** criteria;
- Traffic Lights
  - **GREEN** – low risk, (vessel is registered and licensed)
  - **AMBER** – medium risk, (vessel transiting) and
  - **RED** – high risk of conducting IUU fishing.

## 2. REGIONAL INFORMATION MANAGEMENT FACILITY (RIMF):

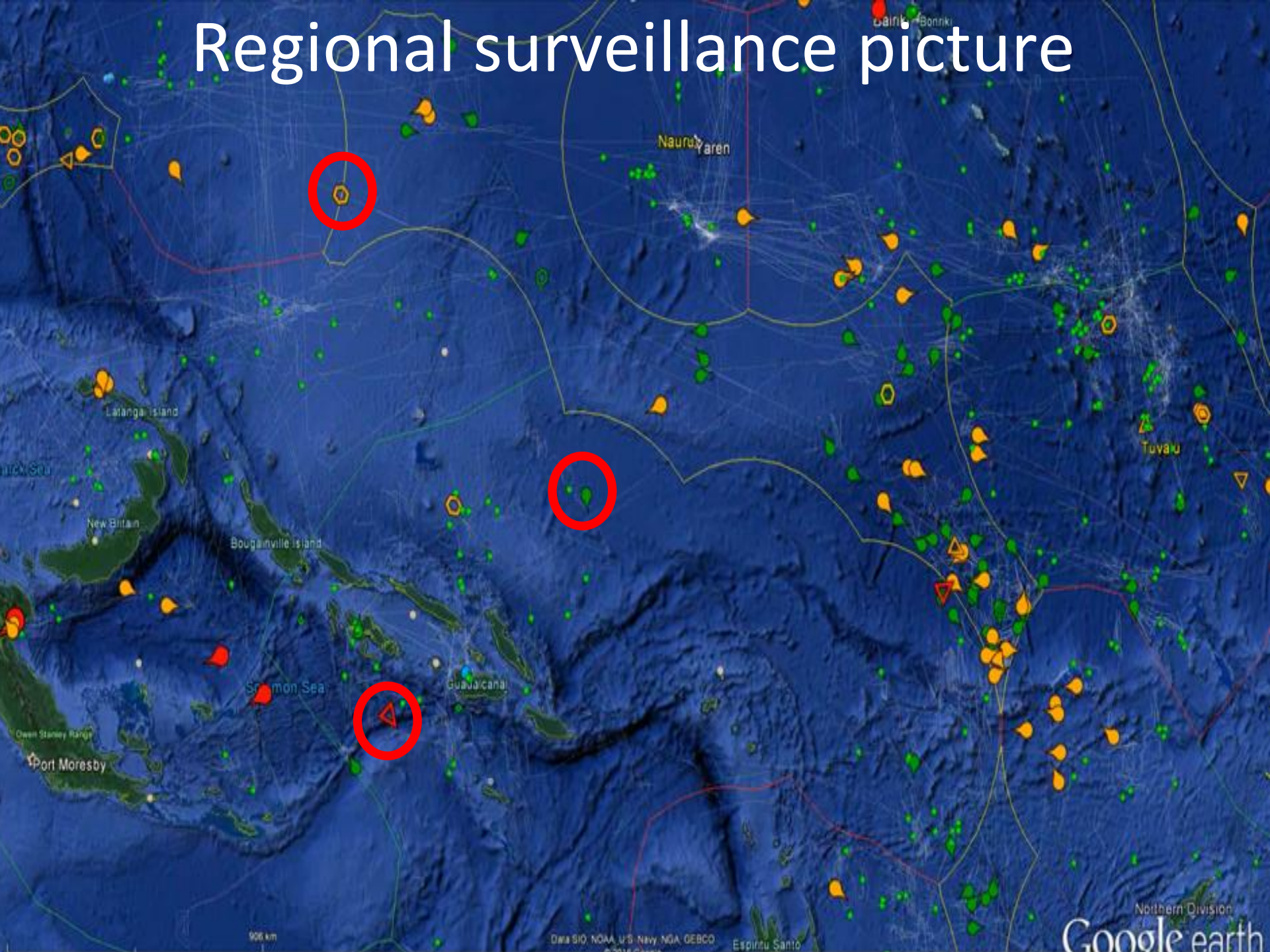
- **Operation Module** (<https://rimf.ffa.int/ops>) Coordinate Member/QUAD assets and communicate situational and intelligence updates in support of the FFA OP365 and four Regional Surveillance Operations.
- **Aerial Surveillance Program Module** (<https://rimf.ffa.int/mcs/airrequest>) Platform for Aerial Surveillance Planning, submission and review of Member Air Task Request (ATR).
- **VMS / COVID19 Module** (<https://rimf.ffa.int/vms>) Vessel interaction assisting Member risk assessment prior to port entry or at sea contact inspection and pre-checks
- **Niue Treaty Information System** (<https://rimf.ffa.int/ntis>) Fisheries Data and Intelligence and electronic notification process for requesting MCS assistance between Parties.

**Users: MCS Practitioners (Fisheries, Police, Navy, QUADs) as per FFA ISMS Policy process**

# FFA Regional Fisheries Surveillance Centre (RFSC)



# Regional surveillance picture



906 km

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Northern Division  
Google earth

# OTHER DATA

Remotely Sensed

EFA Internal Use Only

## Boarding SOLOMON SEA 301 (RSIPF)

Compliance Index: ★★★★★☆ 4

Remarks: Not reporting on TFA VMD

10° 26' 0" S, 160° 58' 0" E at 14 Apr 2016 11:58 UTC  
Contact not named for analysis.

Ignore

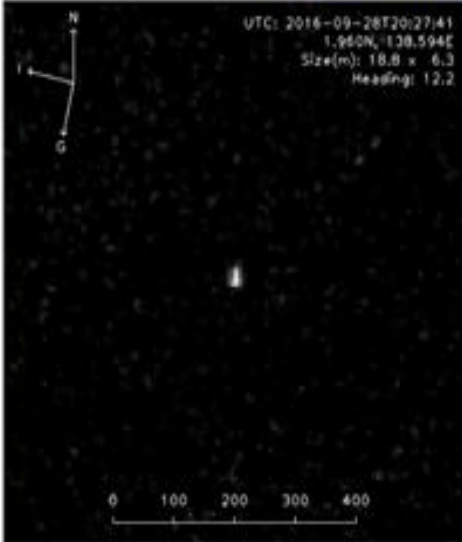
Details Vessel Photos

Source	Solomon Islands Maritime Police	Country	Solomon Islands
Asset	RSIP/AJ1	Patrol	
Vessel Name	SOLOMON SEA 301	Vessel Flag	Solomon Islands
Registration No.		Crew	
Type	PS	Radio Call Sign	WDR

Sighted

FFA Internal Use Only

UTC: 2016-09-28T20:27:41  
1.960N, 138.594E  
Size(m): 18.8 x 6.3  
Heading: 12.2



0 100 200 300 400

OTHER DATA- RADARSAT

Google Earth

226 km

© 2016 Google

Data © NOAA, © Nasa, © CIA, © EBC

Imagery Date: 12/04/2015 21°07'25.20"N 138°35'37.12"E elev: 4250 m eye alt: 925.65 km



## RIMF Operation Module:

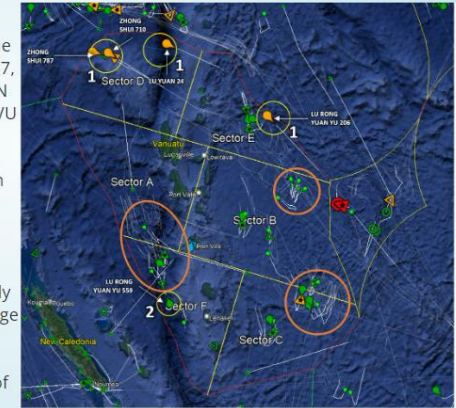
- ❑ Used by members to upload (Contacts / SITREPs / RFIs).
- ❑ Used by RFSC to consolidate asset employment and compile briefs.
- ❑ Intelligence-driven Ops
  - Good in-depth analysis.
  - RSP (IUU CI Risk Assessment).
  - EEZ and High Seas assessments (provided through daily brief).
- ❑ Remote Sensing & Intel Analysis



## VANUATU

### Comments:

1. Four CI-3 amber vessels (Chinese flagged longline FV) currently within the VU EEZ, ZHONG SHUI 787, ZHONG SHUI 710, LU YUAN 24 & LU RONG YUAN YU 206 . Four vessels are not licensed to fish in VU EEZ and based on vessels current course speed they are likely transiting NW of EEZ.
2. CN flag LL vessels, LU RONG YUAN YU 559 which was one of the FV on the COI report for alleged forced labour is still located within VU EEZ exhibiting normal fishing behaviour.
3. Currently 24 FV are actively fishing with VU EEZ with concentrations of high fishing activity mostly within the southern half of the VU EEZ (see orange circles).
4. The general trend over the past 2 weeks is that fishing activity has moved from northern parts of the VU EEZ down to southern parts of the EEZ.



## HIGH SEA AREAS

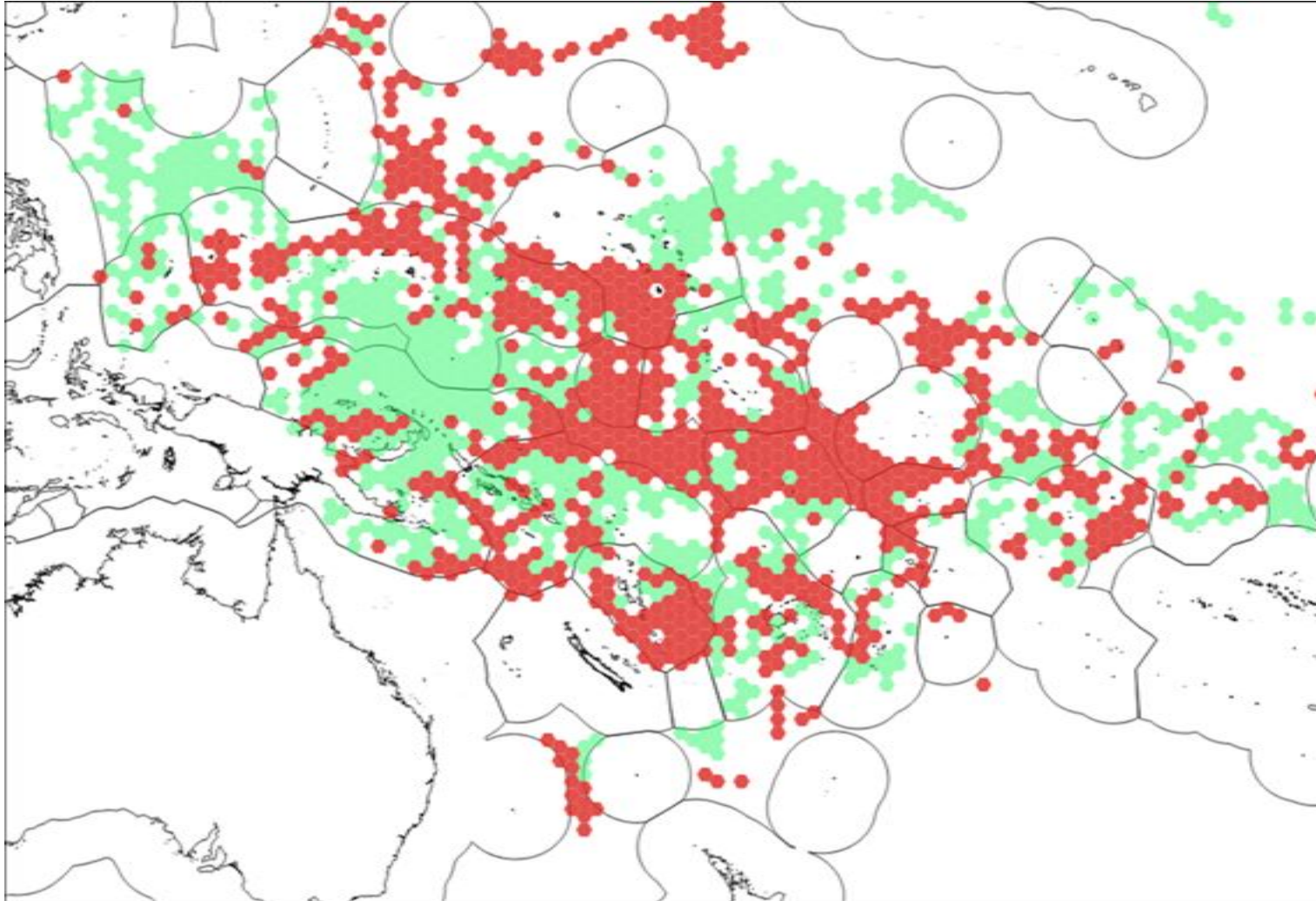
### Comments:

1. HSP1- PH Flag vessels fishing on HSP1 within close proximity of PW and FSM EEZs are likely to incur into their EEZs. Request aerial coverage of the HSP 1 area adjacent to PW and FSM EEZ.
2. HSP 2- YONG FA YUN 10 (BLBM9) loitering in north western HSP2. Only began reporting on FFA VMS on 11 March 04:03 UTC. Assessed as a risk vessel and will be monitored. BU Vessels Prosperity 12, New Harmony, and Angel No.1 operating in SE HSP2.
3. HSP 4 NSTR low activity.

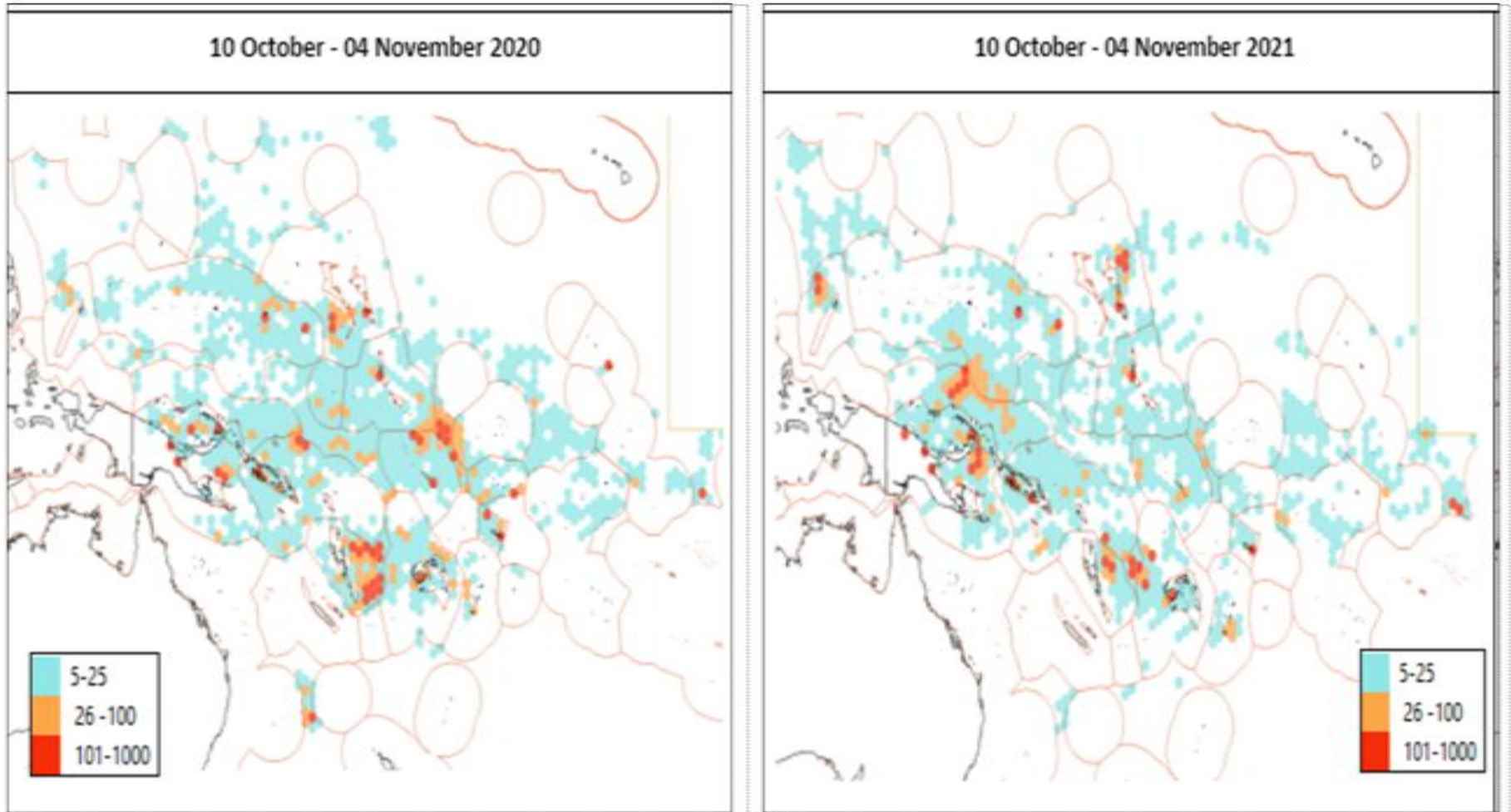


# RFSC Intelligence Assessments:

Regional Intelligence Products - prior to 4 Regional Operations. Eg. OPKK22 Report.  
National Intelligence Products - on RSP and RIMF.



## Regional Intelligence Products - shift in vessel movement 2020-2021

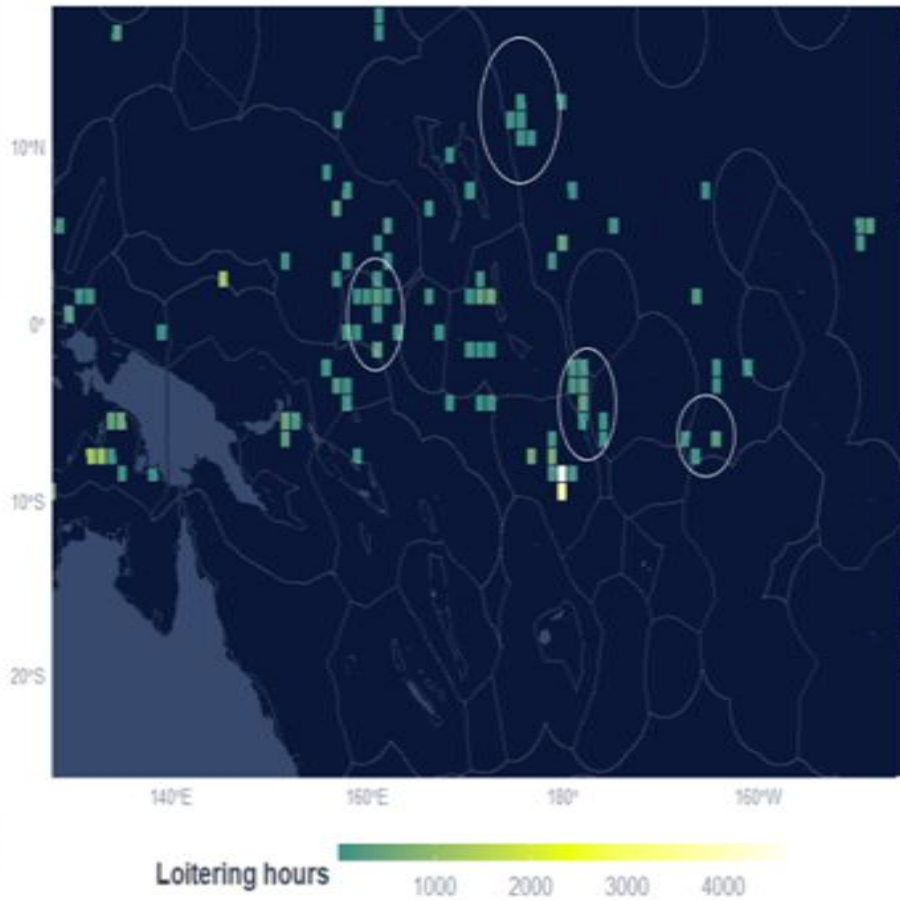


## Regional Intelligence Products - Carrier Vessels Loitering and Encounters with

CV

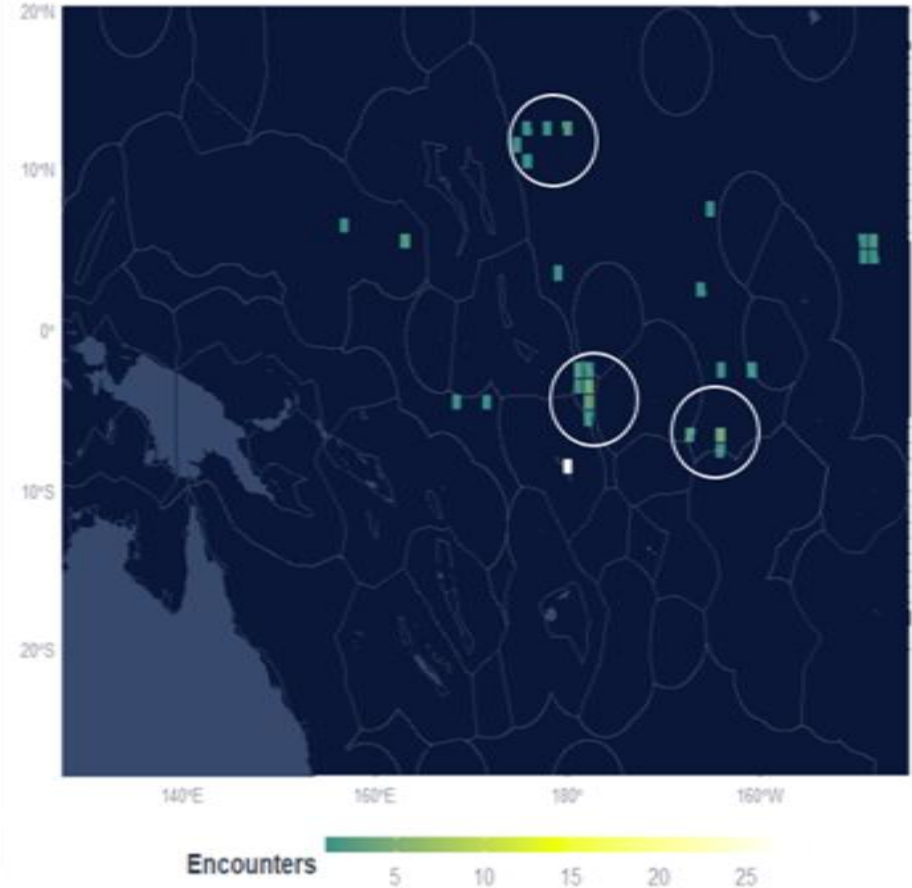
### Loitering by carrier vessels

Oct. 15-26, 2019-2021



### Encounters between fishing vessels and carrier vessels

Oct. 15-26, 2019-2021



# FFA Use of Remote Sensing (SAR) - Case Study 1

During 08 – 20 March 2021 the Forum Fisheries Agency (FFA) conducted OP RAI BALANG 21 (RB21) to detect and deter Illegal Unreported and Unregulated fishing activity within a 13,000,000km<sup>2</sup> Area of Operations.

RB21 was used to trial the emerging Dark Vessel Detection capability; employing commercial satellites to identify "dark vessels" for further surveillance.



On 04 Mar 21, Synthetic Aperture Radar (SAR) satellites detected a suspected Dark Vessel; a vessel not monitored by the FFA. The region is known to be popular for IUU fishing of sea cucumber and reef fish.

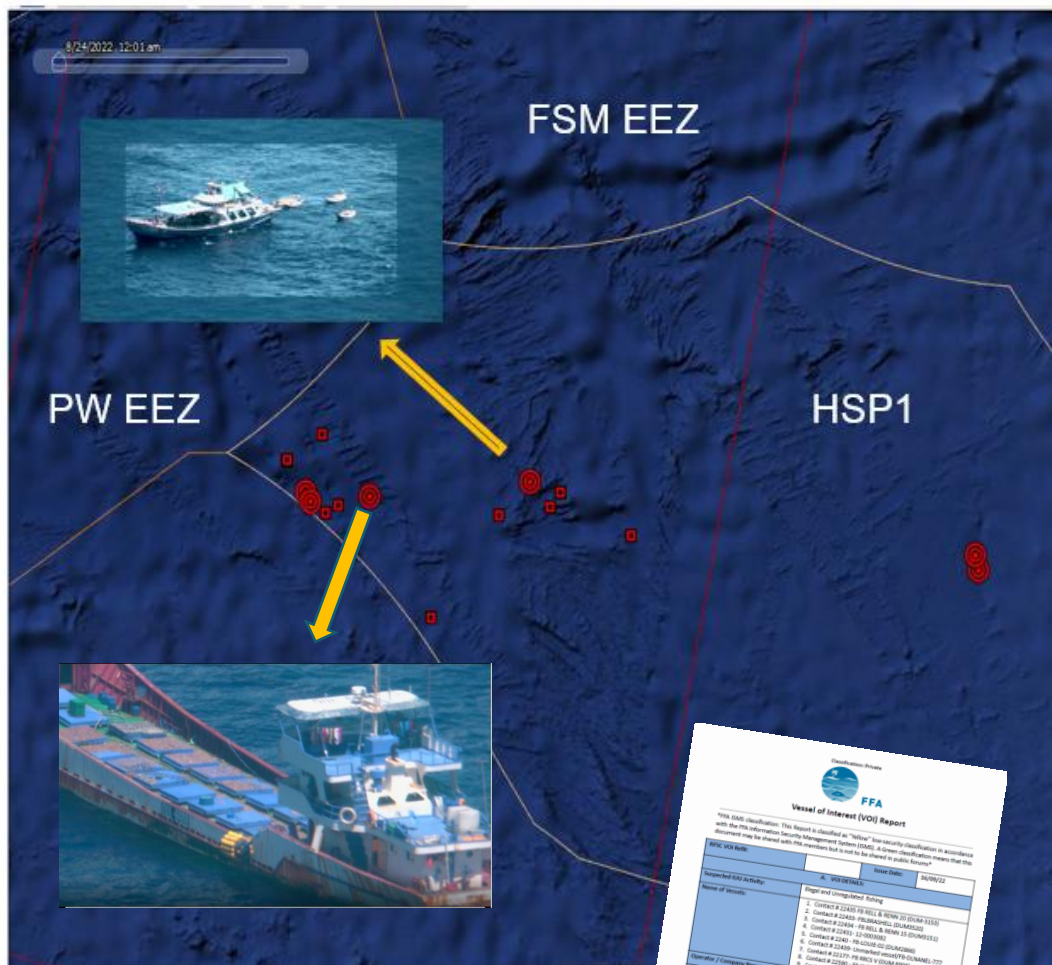


On 05 and 06 Mar 21, Royal Australian Air Force and Australian Defence Pacific Maritime Security Program aircraft flew two surveillance missions, cued by the SAR detection. Both assets located and identified two Vessels of Interest, assessed to be conducting illegal sea cucumber fishing within an Economic Exclusion Zone.



The information was conveyed to national regulators, resulting in RSIPV GIZO, provided through the Australian Defence Pacific Maritime Security Program, responding to investigate. This was supported by B&I training provided by FFA. The Forum Fisheries Agency operation prompted a statement by the Minister of Fisheries and Marine Resources reiterating the ban on harvesting sea cucumber, and garnered national media attention for the issue of illegal fishing.


# FFA Use of Remote Sensing (SAR) - Case Study 2



**Legend:**  
**Red squares - Uncorrelated detections**  
**Red circles – Aerial asset sightings.**  
**Image – dark vessel sighting by Aerial Asset.**

## Synthetic Aperture Radar (SAR)

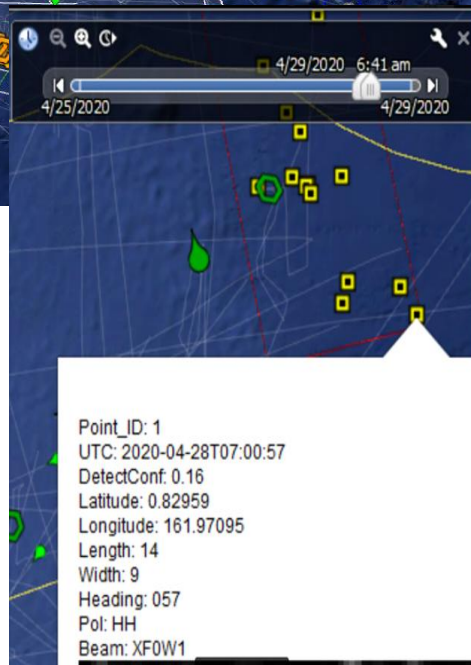
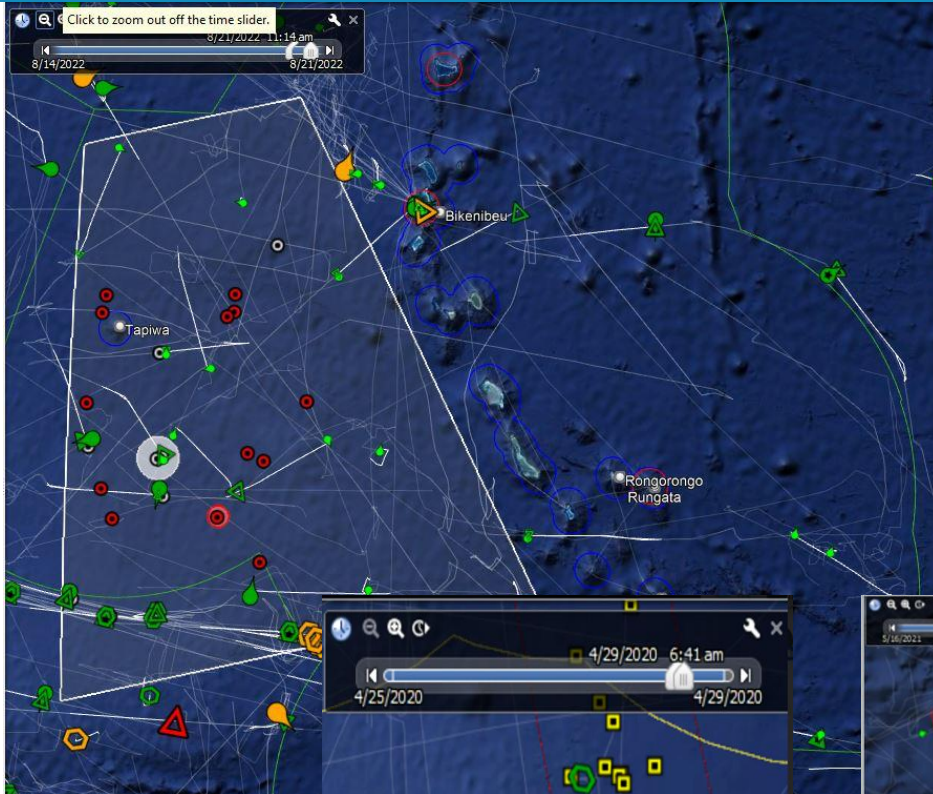
- ❑ OPIC22 Regional Intelligence of **high-risk IUU fishing on WCPFC HSP1.**
- ❑ Canada DVD provided **SAR** scan on HSP1 on 22 Aug 2022 to support OPIC22.
- ❑ RFSC received DVD scan results of **9 detections** from Scan were **uncorrelated to VMS and AIS.**
- ❑ RFSC tasked **Aerial surveillance** for AOI the uncorrelated detection area.
- ❑ **7 dark fishing vessels** sighted by aerial asset USCG130 within HSP1.
- ❑ Contact Images & Videos on vessel identity and activity were analysed by RFSC, US, FSM and Palau.
- ❑ **7 VOI reports** to flag state and WCPFC for investigation on IUU violation of
- ❑ Integration of Remote Sensing to Surveillance taskings and Intelligence gathering.

  
**Vessel of Interest (VOI) Report**

VOI EIMS Classification: This Report is classified as "Public" unless otherwise classified in accordance with the PIR Information Security Management System (ISMS). A General Classification means that this document may be shared with PIR members but not to be shared in public forums.

VOI Name	VOI Date	VOI Date
<b>Recorded VOI Activity</b> Name of vessel: <b>High Sea Patrol 130</b> 1. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 2. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 3. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 4. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 5. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 6. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 7. Contact # 22434 - FS HELL & BORN (21 JUL 2022) 8. Contact # 22434 - FS HELL & BORN (21 JUL 2022)		24/08/22
<b>Operator / Company Name</b> Location of Office VOI Status Type of VOI Status Date Source Contact Classification PIR/VOI/VOI Number VOI Name VOI Name	MICROC High Sea Patrol (HSP1) Radio Array 1 VOI Class MICROC PIR PIR/VOI/VOI Number VOI Name VOI Name	
<b>Informational/Status:</b> 1. PIR/VOI/VOI MICROC HSP1 in an area of interest in Surveillance and SAR/ASAT. Radio provided further during PIR/VOI/VOI MICROC collaboration with USCG 130 aerial surveillance and adjacent US Maritime (USCG) and PIR/VOI/VOI.		

# FFA Use of Remote Sensing (RF) - Case Study 3



## Radio Frequency:

- ❑ OPIC22 70% correlation rate.
- ❑ Challenges in understanding the RF data uncertainty.
- ❑ Delays in Orders, processing and dissemination of intelligence to Assets.
- ❑ No detections if vessel RADAR not operational.

# Challenges:

1. Large swath of areas to surveil.
2. Latency/delay in receiving and analysing the data.
3. Challenges in verifying potential detections. eg Manual correlation.
4. Impact of weather on detections.
5. Known targets in scan areas not detected.
6. High cost to acquire near real time service.
7. Good number of false detections.
8. Communication to assets, enhance Intelligence to support targeted Inspection.
9. MCS data sharing.





## Technology Partners:

- ❑ Analytical capacity building and Machine Learning
  - UNODC and AI2 Skylight
- ❑ Canada Dark Vessel Detection (DVD)
  - Remote Sensing
- ❑ Transhipment Analysis
  - Global Fishing Watch.
- ❑ Satellite Aperture Radar (SAR)
  - KIOST Korea
- ❑ Starboard Vessel Track Analysis
  - Xerra (New Zealand)
- ❑ IUU Data analysis WCPO
  - CSIRO Australia.

## Focus:

- Interagency and regional cooperation to ensure Pacific maritime security.
- Trials of enhance MCS Tools and emerging technology (RF and SAR Scans)
- Working with WCPFC, GFW, Canada DVD, and PTCCC engaged in FFA operation



**Member Priorities** - Trial emerging technologies including E-reporting & E-Monitoring, Data analysis, Catch verification and Boarding Inspection Apps.

## Key elements of our success in combating IUU fishing in the Pacific:



Strong **collaboration** and **cooperation**



Develop **capacity** amongst our people



Focus on **continual improvement**



Supporting **regional and national** implementation



**Integrated MCS** using a broad suite of compatible tools



**Data, information sharing and availability** across membership



**Clear strategy** for regional MCS priorities

# Thank you



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