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# **Session 8: Services and Information for Maritime Awareness**

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**GEO Blue Planet Symposium  
Maryland**



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***Reinforcing and moving  
beyond Pacific SIDS  
monitoring of illegal,  
unreported and unregulated  
fisheries activities.***

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**James T. Movick  
Director-General  
Pacific Islands Forum Fisheries Agency**

**GEO Blue Planet Symposium  
College Park, Maryland  
May 31- June 2, 2017**



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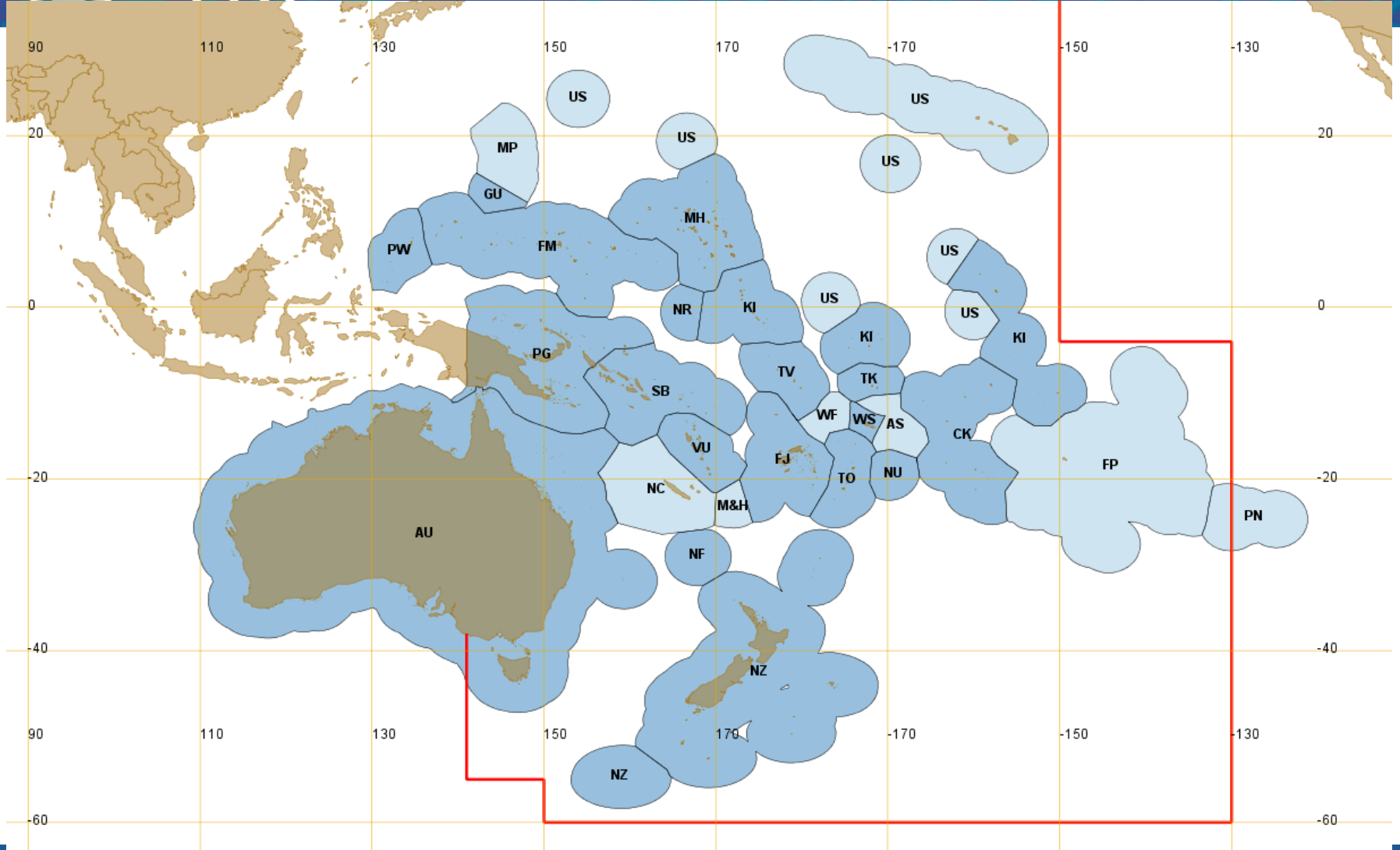
# Outline

1. Defining the problem: Current nature of IUU in the Western Central Pacific Ocean
2. The current FFA regional MCS framework
3. Emerging threats and opportunities



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# WCPO and FFA waters





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- 1. Defining the problem: Current nature of IUU in the Western Central Pacific Ocean**



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# Getting a better understanding of IUU in the PIC region

Last formal quantification in 2008 –  
as part of a global study:

“one in every 5 fish is IUU”

“\$23.5 billion”

“If 5 of you go to a restaurant and order  
tuna, one of you is eating illegal fish”

“PICs losing USD\$3 - 5 billion in tuna each  
year – being stolen from them”

**Quantification of IUU Fishing**  
Report launched 15<sup>th</sup> March 2016

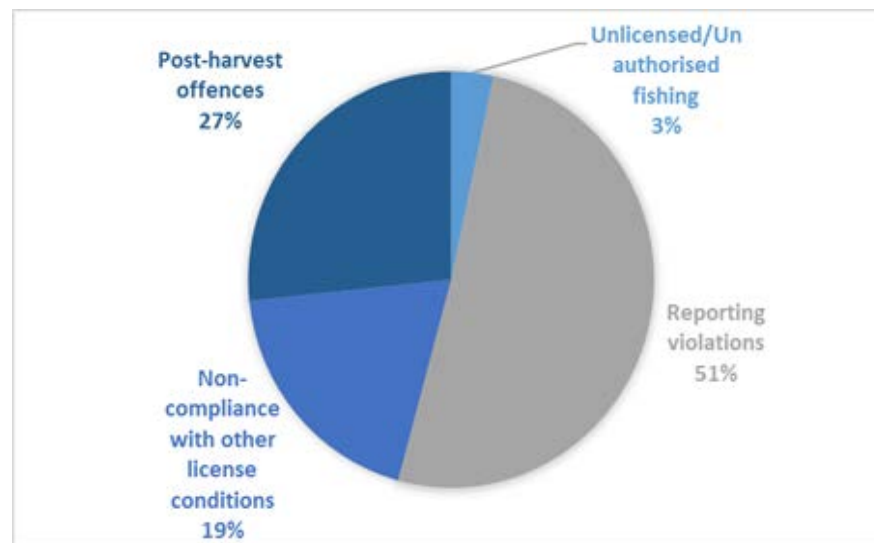
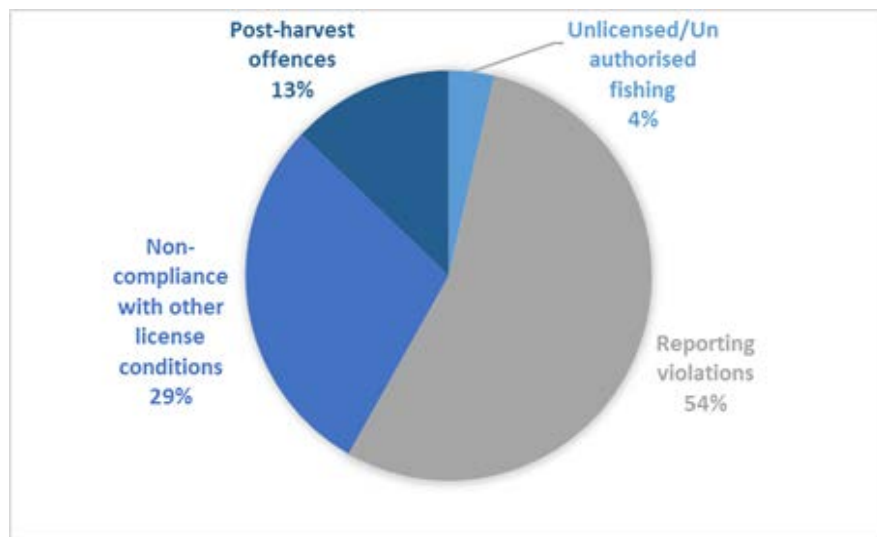




EFA

# By risk type

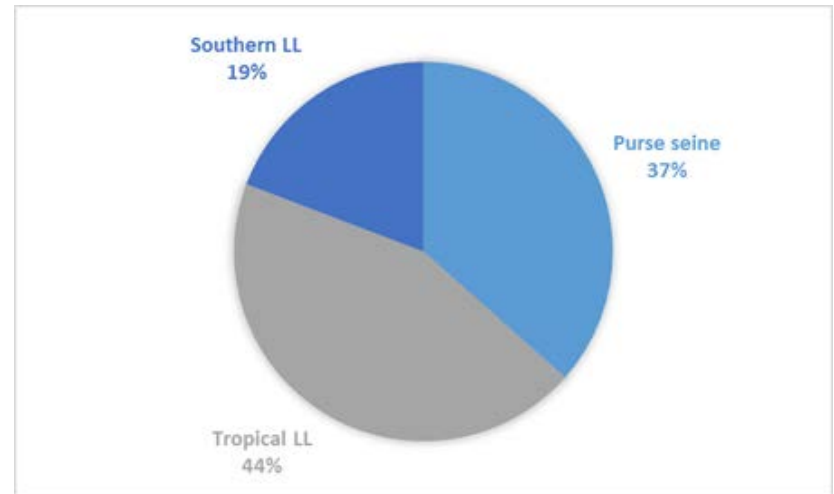
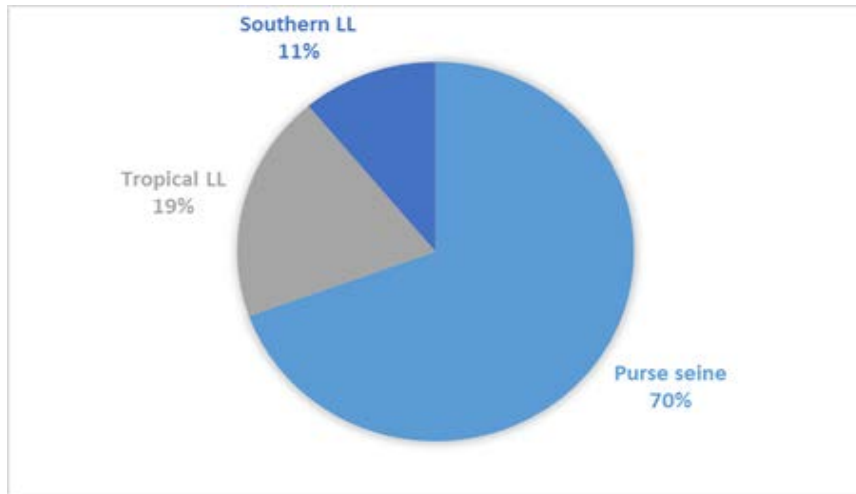
| Risk                     | BE (t)  | 90% range (t)     | BE (\$)   | 90% range (\$)        |
|--------------------------|---------|-------------------|-----------|-----------------------|
| Unlicensed fishing       | 11,078  | 7,351 – 14,945    | \$20.65m  | \$15.28m – \$26.22m   |
| Reporting violations     | 167,341 | 157,387 – 179,848 | \$313.42m | \$270.60m – \$377.01m |
| Other license conditions | 88,440  | 66,957 – 109,557  | \$117.93m | \$92.06m – \$143.49m  |
| Post-harvest risks       | 39,580  | 21,429 – 61,151   | \$164.12m | \$81.69m – \$266.49m  |





# By sector

| Sector      | BE (t)  | 90% range (t)     | BE (\$)   | 90% range (\$)        |
|-------------|---------|-------------------|-----------|-----------------------|
| Purse seine | 212,895 | 190,853 – 235,115 | \$225.20m | \$200.35m – \$251.56m |
| TLL         | 59,637  | 42,435 – 82,308   | \$272.55m | \$184.90m - \$385.62m |
| SLL         | 33,907  | 25,108 – 45,177   | \$118.36m | \$87.67m - \$158.54m  |







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## Key messages – better defining the current IUU problem in the WCPO

### ***It's the licensed fleet !!***

- Vessels licensed in FFA EEZs or authorised to fish on high seas responsible for 95% of estimated IUU activity
- Implications for MCS planning and investment

### ***Stronger catch monitoring arrangements are required in the Longline sector***

- Very limited independent data to verify LL catch – critical uncertainty in IUU estimates, weakness in MCS regime



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# Key IUU messages

## ***Considerable uncertainty exists on the extent of illegal transshipment***

- Information base weak
- Key uncertainty in overall estimates, particularly for LL

## ***Illegal, unlicensed, fishing appears to be an issue at the margins***

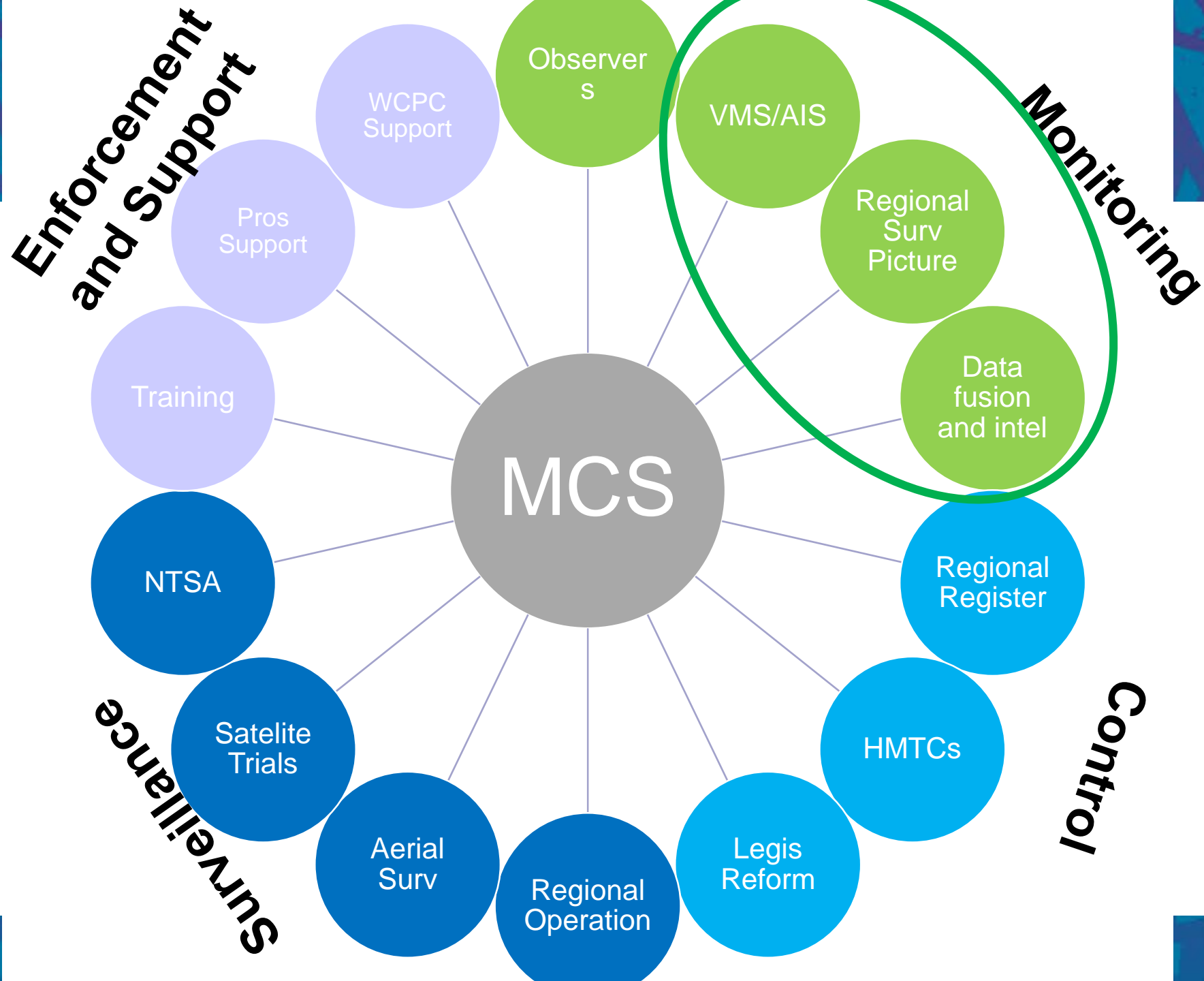
- Both on the fringes of FFA area (e.g. Palau, western PNG, east), and amongst risks – overall, “I” Illegal fishing is only 3.4% of estimated IUU value and less than 4% of total IUU volume



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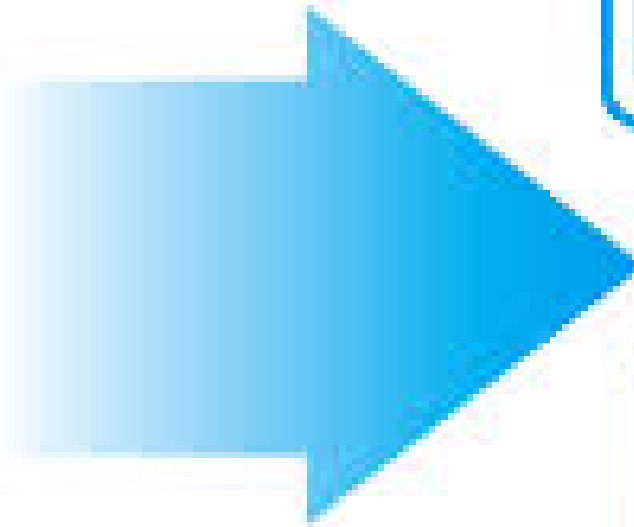
## **2. The current FFA regional MCS framework**





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# Information is key





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# Evolution of information management

**2010**

Boarding/  
Inspection

CDR REG

Licensing

CDR FAL

TUFMAN1

CDR OBS

CES

CDR POD

CDR VAP

FFA VMS

WCPFC  
RFV

*Disparate national systems, less accessible, harder and costlier to maintain*

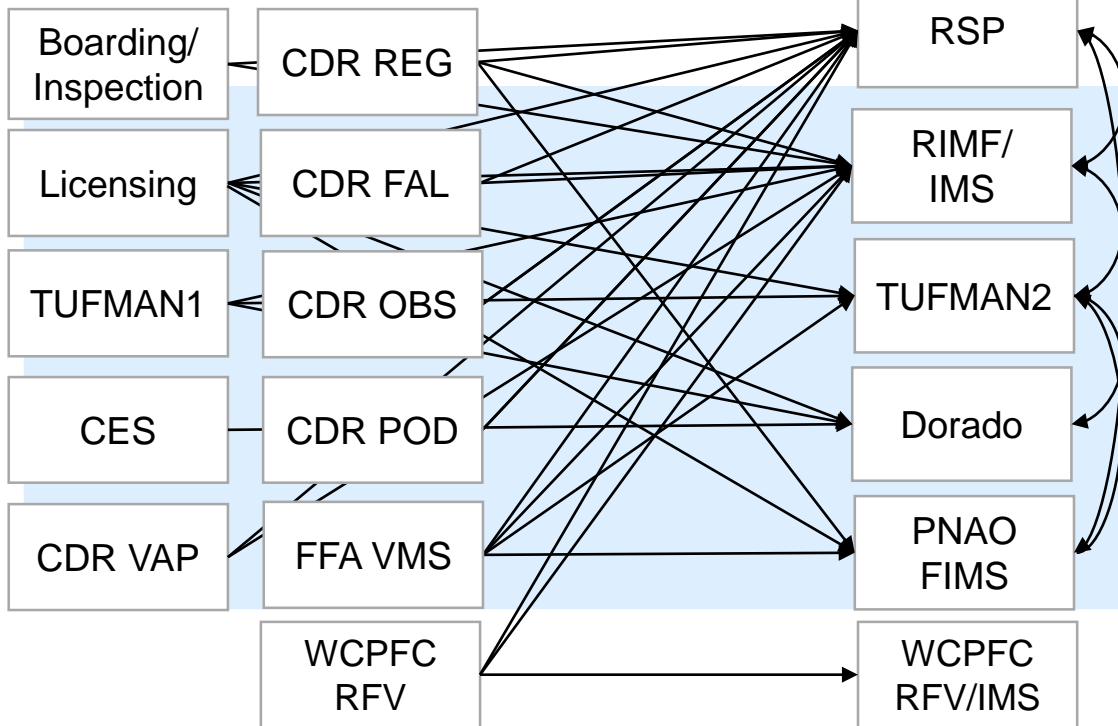


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# Evolution of information management

**2010**

**Today**



*Disparate national systems, less accessible, harder and costlier to maintain*

*More connected systems, more accessible, easier to maintain, easier to integrate data*



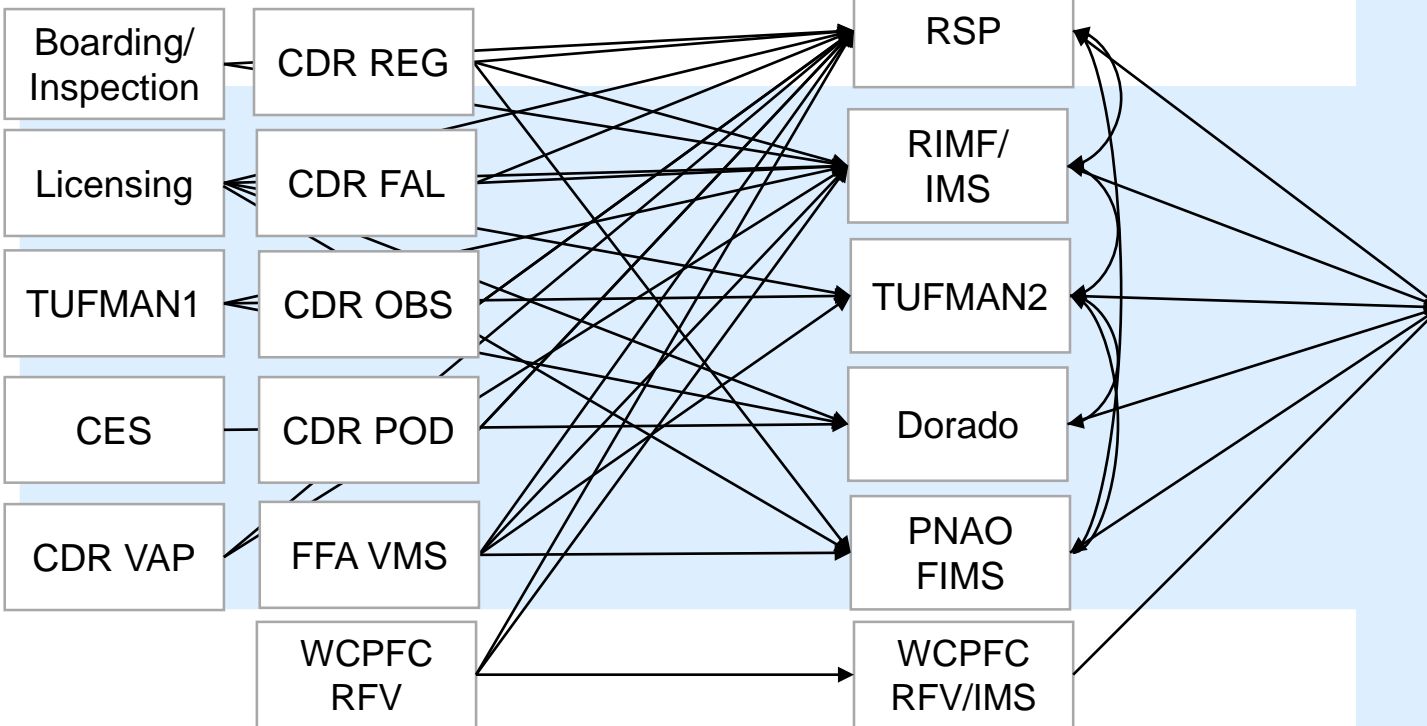
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# Evolution of information management

2010

Today

Tomorrow?



Single user interface seamlessly accessing, integrating and analysing all cloud-based fisheries databases throughout the region

*Disparate national systems, less accessible, harder and costlier to maintain*

*More connected systems, more accessible, easier to maintain, easier to integrate data*





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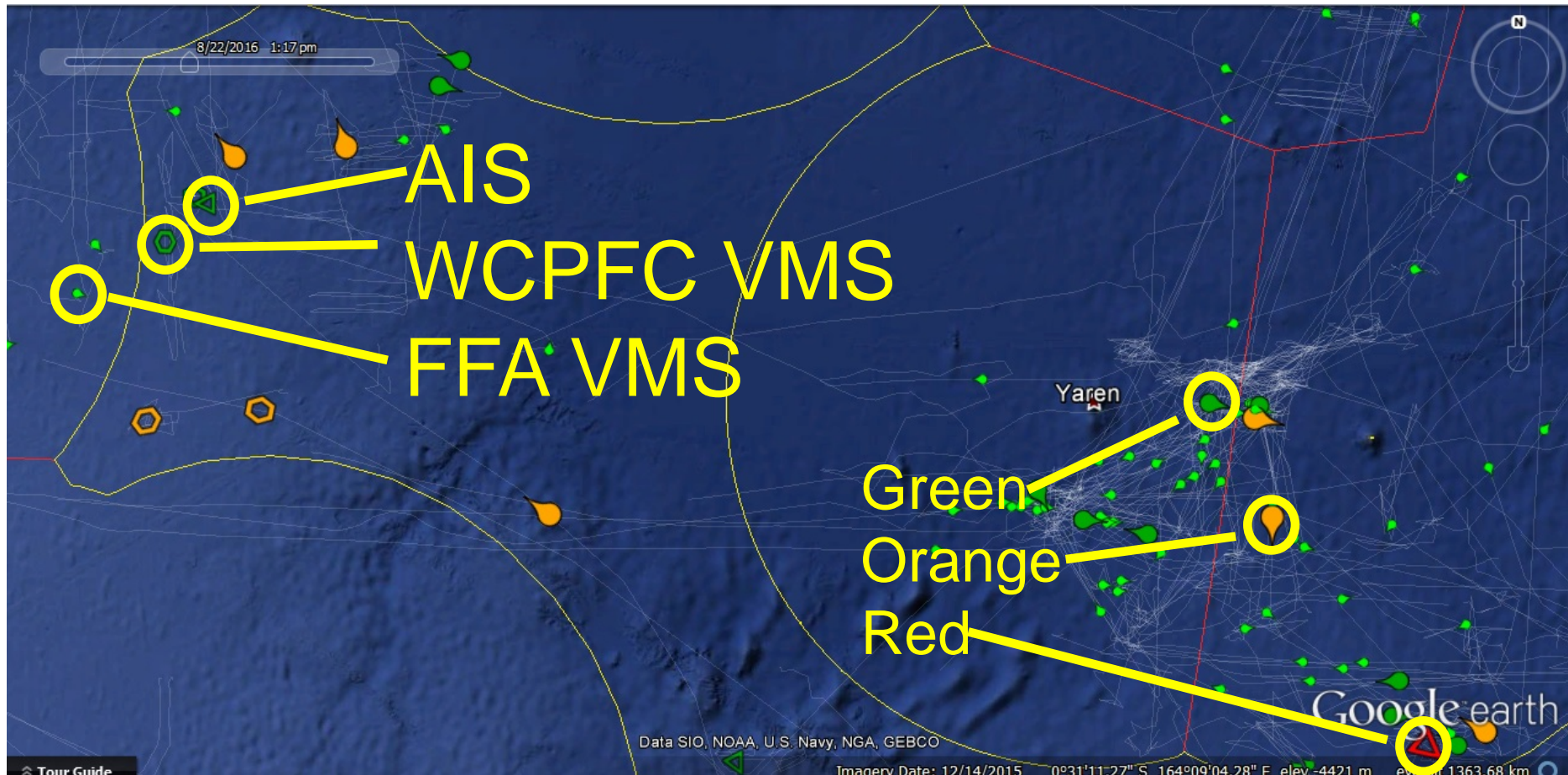
# “Sharing is Caring”

|     | AUS | CI  | FSM | FIJ | KIR | RMI | NAU | NZ  | NIU | PAL | PNG | SAM | SI  | TOK | TON | TUV | VAN | AUS | NZ  | FRA | US  | Status | LICENSE | SURVEIL       | VMS | OBS | VESSEL LOG | VESSEL VIOLATION | ACCESS AGREEMENTS |   |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|---------|---------------|-----|-----|------------|------------------|-------------------|---|---|
| AUS |     | 365 | 365 |     |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     |     | 365 | 365 | 365    | 365     | Reciprocal    |     |     |            |                  |                   |   |   |
| CI  | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ |   |
| FSM | 365 | 365 |     |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ |   |
| FIJ |     |     |     |     |     |     |     |     |     |     |     |     | 365 |     |     | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional |     |     | ✓          |                  |                   |   |   |
| KIR |     | 365 |     |     |     | 365 | 365 |     |     |     |     |     |     | 365 |     | 365 |     | 365 | 365 | 365 | 365 | 365    | 365     | Reciprocal    |     |     | ✓          |                  |                   |   |   |
| RMI | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |
| NAU | 365 | 365 | 365 |     | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Reciprocal    | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |
| NZ  | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          |                  |                   |   |   |
| NIU | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ |   |
| PAL | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   |            |                  |                   |   |   |
| PNG | 365 | 365 | 365 |     |     | 365 | 365 | 365 | 365 |     |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Reciprocal    | ✓   | ✓   | ✓          |                  |                   |   |   |
| SAM | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |
| SI  | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |
| TOK | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          |                  |                   |   |   |
| TON | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |
| TUV | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |
| VAN | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |     | 365 | 365 | 365 | 365 | 365    | 365     | Unconditional | ✓   | ✓   | ✓          | ✓                | ✓                 | ✓ | ✓ |



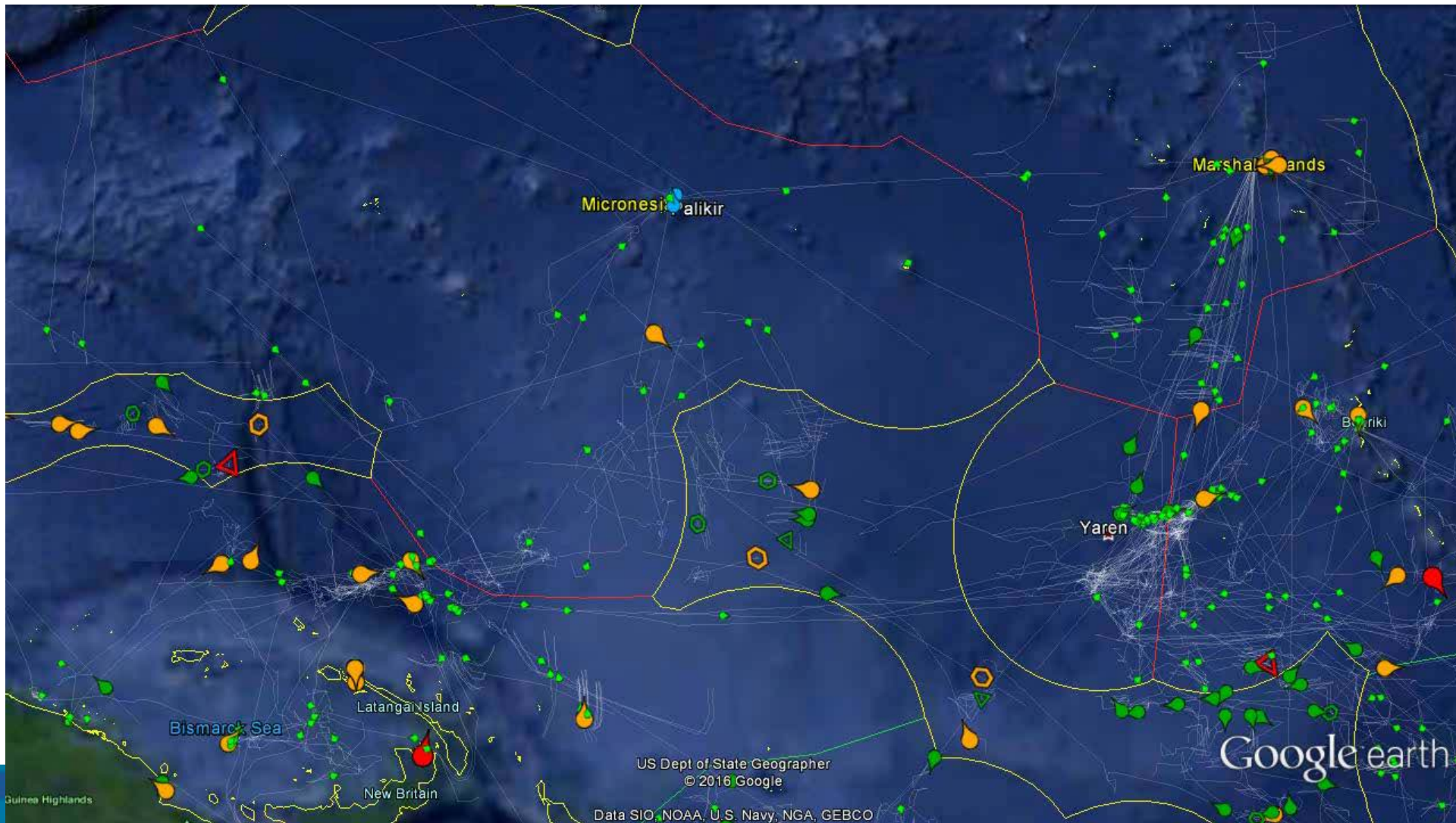
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# FFA Regional Surveillance Picture (RSP) Data fusion and analysis





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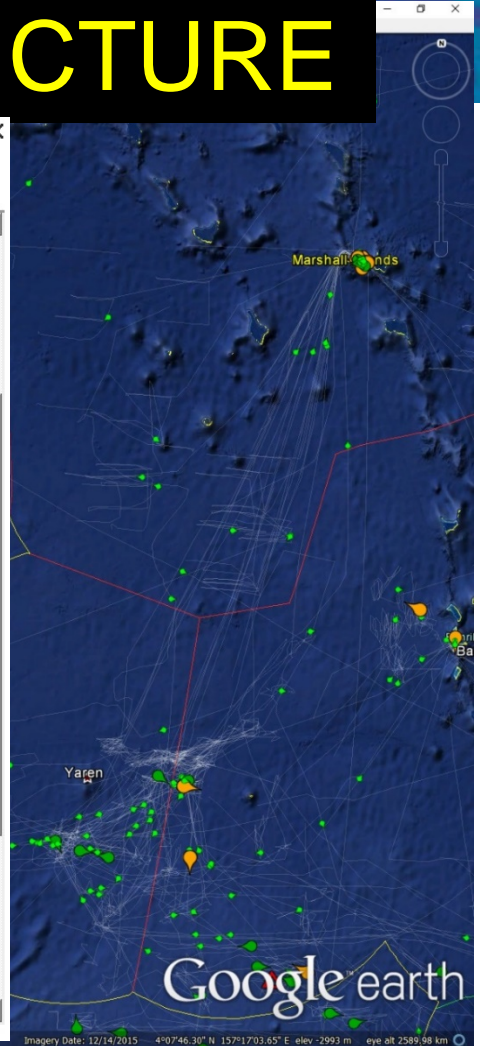
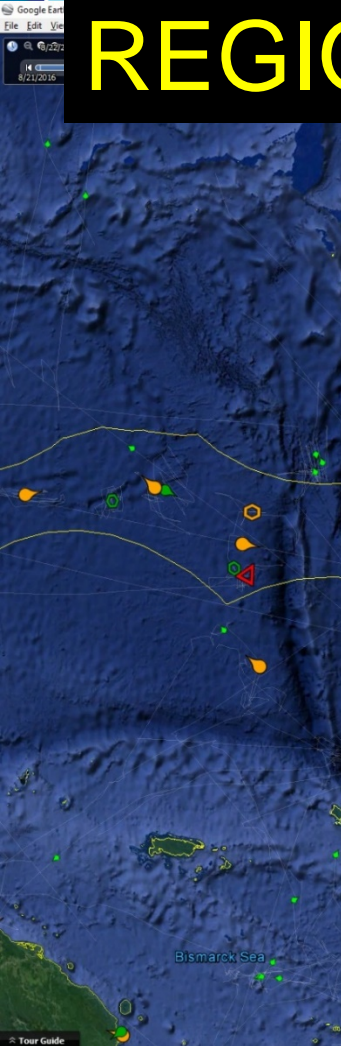
# REGIONAL SURVEILLANCE PICTURE

FFA Internal Use Only

[Update](#)

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| Reported By               | CI | Type            | Date        | Notes                                                                                                                      |
|---------------------------|----|-----------------|-------------|----------------------------------------------------------------------------------------------------------------------------|
| US Coast Guard            | 0  | Sighting        | 03 Aug 2015 | null Surveillance Remarks : Gear on deck. Dinky onboard. Not actively fishing. Helo tied down. Speed : V6PTP Course : 15.0 |
| FSM Maritime Police       | 0  | Boarding        | 20 Jun 2015 |                                                                                                                            |
| FSM Maritime Police       | 0  | Boarding        | 31 May 2015 |                                                                                                                            |
| FSM Maritime Police       | 0  | Boarding        | 04 Jan 2015 |                                                                                                                            |
| FSM Maritime Police       | 0  | Boarding        | 30 Nov 2014 |                                                                                                                            |
| FSM Maritime Police       | 0  | Boarding        | 21 Nov 2014 |                                                                                                                            |
| Royal Australian Airforce | 0  | Remotely Sensed | 22 Oct 2014 | DESTINATION: UNDEFINED ETA: UNDEFINED MMSI: 510054000 IMO: UNDEFINED NAV STATUS: UNDER WAY USING ENGINE                    |



Google earth

Imagery Date: 12/14/2015 4°07'46.30" N 157°17'03.65" E elev -2993 m eye alt 25397.98 km



# REGIONAL SURVEILLANCE PICTURE

**FFA Internal Use Only**

## TAIYO POHNPEI (FFA VMS)

Compliance Index ★★★★★★ **0**

Remarks

06° 59.0' N, 158° 10.1' E (FM) at 25th August 2016, 00:36:00 UTC

[Update](#)

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| Name                         | Type           | End Date   | Details |
|------------------------------|----------------|------------|---------|
| Taiyo Micronesia Corporation | Vessel Owner   | 2017-06-11 |         |
| Ikuo Kimura                  | Fish Master    | 2015-04-30 |         |
| Kazunori Oyama               | Vessel Captain | 2015-04-30 |         |

3 related vessels located

Google earth

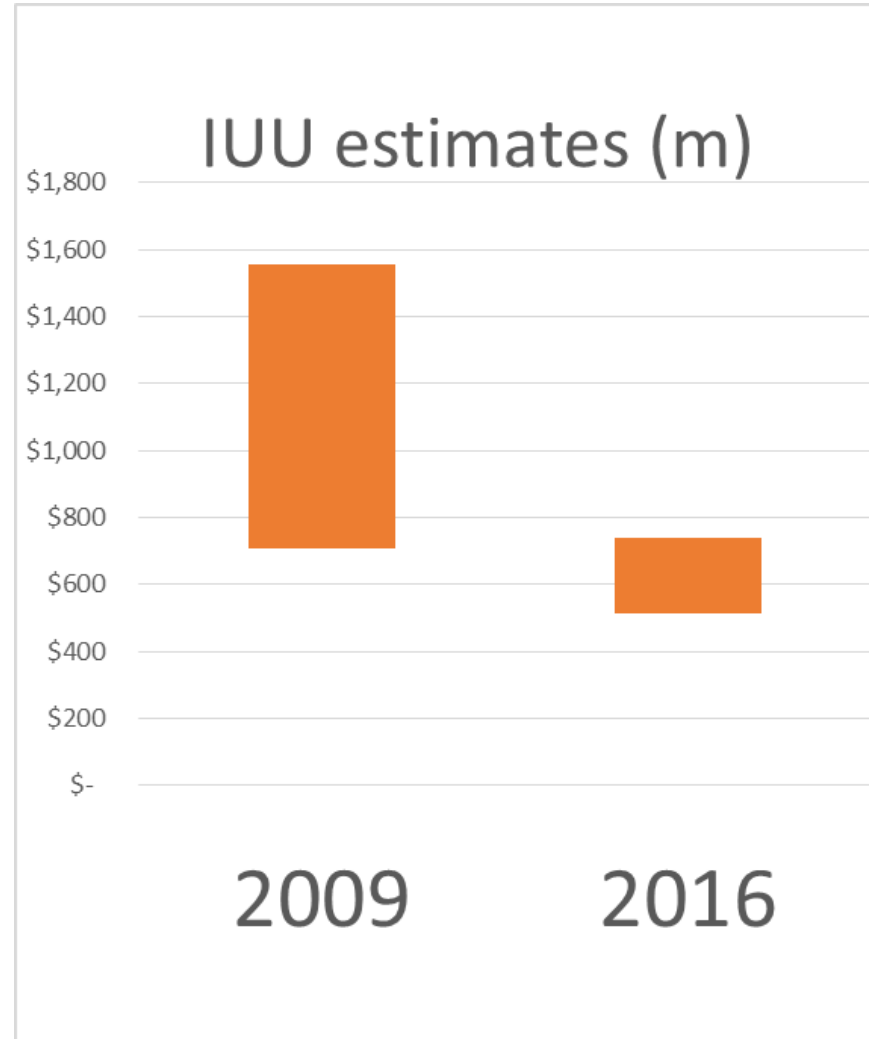
Imagery Date: 12/14/2015 4°07'46.30" N 157°17'03.65" E elev -2993 m eye alt 25397.98 km



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# How successful is it? World leading....

- Bulk information collected
- Sharing exceeds anywhere in the world
- Systems convert data to intelligence
- It works...





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### **3. Emerging threats and opportunities**



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BUT...

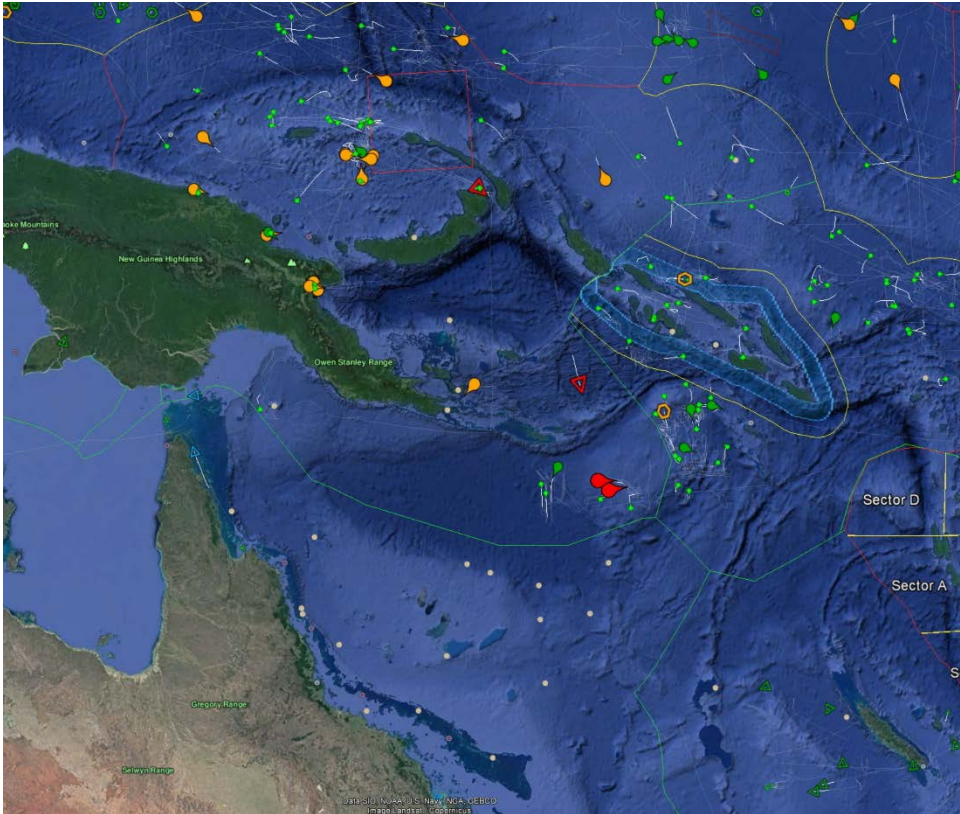
Currently FFA RSP and MCD framework looks primarily at tuna IUU fishing – NOT:

- ❑ “Blue boats” – adaption underway
- ❑ Coastal fisheries MCS small boats <10 metres
- ❑ Fisheries related crime (tax)
- ❑ Other transnational risks: (Immigration and people smuggling; Drugs and other “civil” contraband; Weapons movement and proliferation)

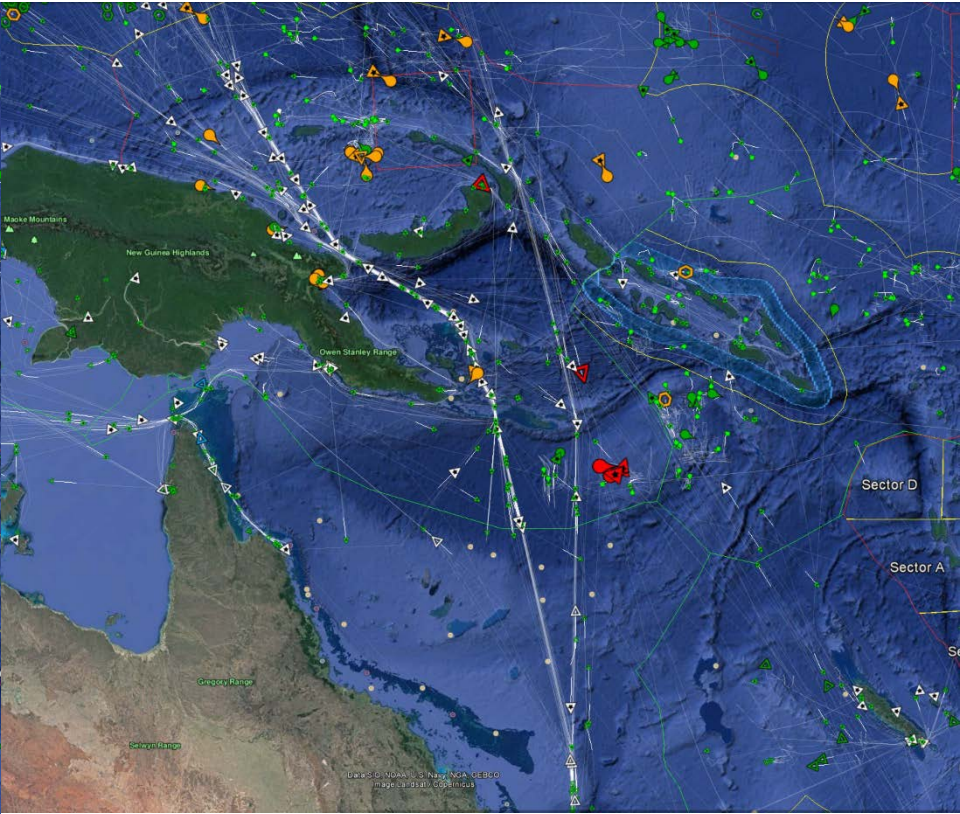




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“Tuna vessels”



All vessels



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# New challenges – Blue Boats

- ❑ Vietnamese wooden vessels fishing for beche de mer (sea cucumber)
- ❑ Investigations suggest vessels are being displaced from fishing illegally in Indonesia by stringent enforcement action



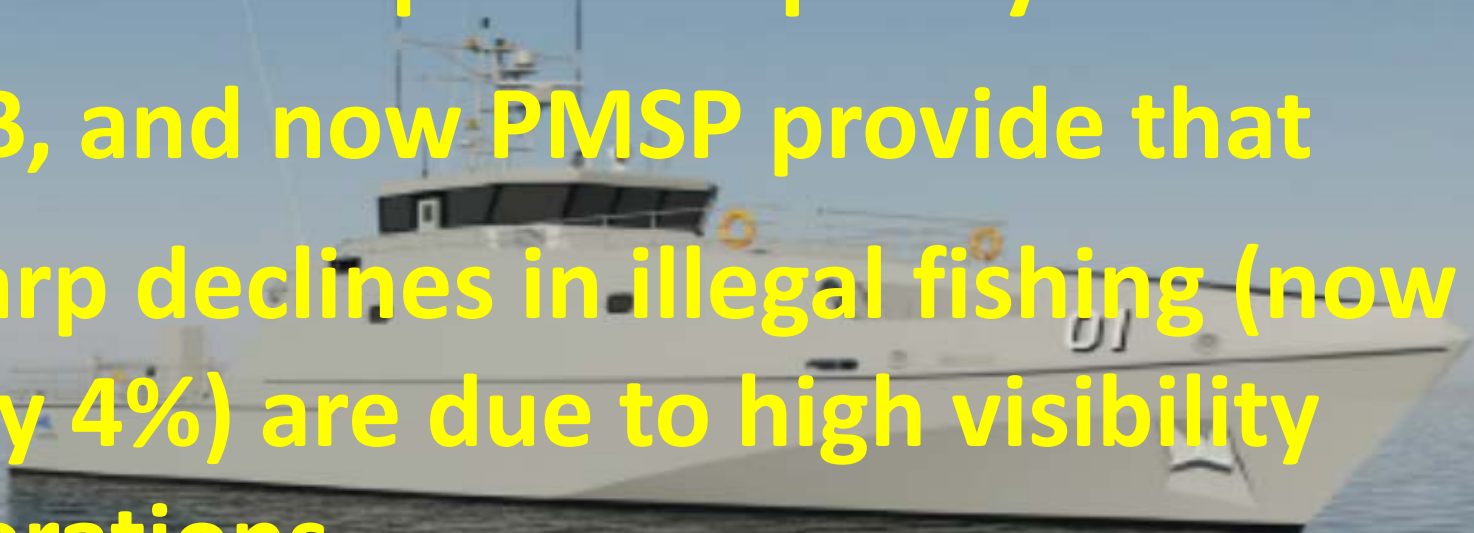
- ❑ Caught/Detected in Palau, FSM, RMI, PNG, New Caledonia, Australia, Solomons Islands and Vanuatu



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# New tools - the PMSP

- Information and Intel are only useful if there's a response capacity
- PPB, and now PMSP provide that
- Sharp declines in illegal fishing (now only 4%) are due to high visibility operations
- Guardian Class vessels will be another boost





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# Taskable Aerial Surveillance

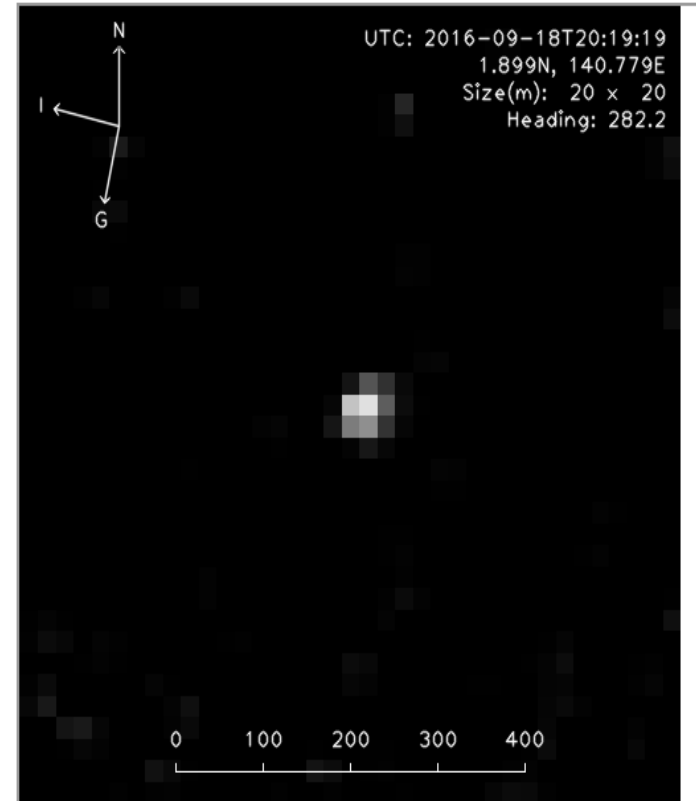




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# New opportunities – Satellite Imagery

- ❑ FFA commenced trials of satellite imagery to complement RSP-Sentinal1
- ❑ About 50 images at various resolutions obtained to date (Expensive!)
- ❑ Secured ability to integrate into RSP
- ❑ Trials revealed potentially large numbers of “uncorrelated targets” – but unable to verify through visual identification
- ❑ Trials also had false negatives – imagery missed known contacts
- ❑ Keen to develop open access detection algorithms





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# Other surveillance technology - drones and shore radar

## UAV's

Requires further trials to ascertain viability given regional scenarios, including: type of platforms, remoteness of target areas, size of coverage areas, costs, technical capacity, maintenance, suitable technology etc.

## Shore based RADAR

Blue boats are detectable by RADAR at short range but comes with a number of expected issues including theft of key components, manning and communication requirements and the difficulty in distinguishing between blue boats and other small coastal vessels.



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# Emerging areas for earth observation

- **Potential to sensitively expand the scope of operation to areas of:**
  - High seas fishing and transshipment in particular
  - Regional security
  - Regional pollution control
  - Coastal fisheries MCS
  - FAD monitoring
  - Coral bleaching
  - Sea-level rise and maritime boundaries
  - Search and Rescue
  - Improved coordination and understanding of available and new Ocean observation and analysis tools – Marine Sector Working Group



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# Summary of Key Messages

- ❑ Pacific Tuna MCS Framework is well developed – integrated multinational surveillance and enforcement – a pretty picture with a bite!
- ❑ Potential to further enhance the regional MCS framework through earth observation cooperation using existing regional cooperative mechanisms
- ❑ Further potential to expand into broader security and law enforcement