

# Electronic Monitoring implementation

Tuna Data Workshop 2024





Pacific  
Community  
Communauté  
du Pacifique

# EM data stds development background

|               |  |
|---------------|--|
|               |  |
| June 2016     | Electronic Monitoring Longline <b>Process Standards workshop</b> . This was the first attempt to consider specific data fields for LL EM.  |
| November 2017 | Second Regional Electronic Monitoring <b>Process Standards Workshop</b> . Aimed at enhancing the draft LL EM process standards (2016) and also considered Purse Seine and Transshipment EM data fields.                        |
| 2019 – 2020   | <b>FFA EM LL Policy</b> was developed and adopted by FFC   |
| November 2020 | DCC, agreed to <b>Draft LL EM Minimum Data Fields</b> standards covering both science and compliance   |
| May 2022      | <b>Standards, Specifications, and Procedures (SSPs)</b> to support the FFA EM LL Policy were adopted as interim guidelines by FFC. Programmatic guidelines provide a description of the different components of an EM program. |
| December 2022 | <b>proposed JSON format for the draft EM longline data fields</b> , including adding fields to improve the Data Quality Control processes  |

# Proposed JSON formatted LL EM Std

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- Follows the Draft DCC Longline EM minimum data fields
- For EM technical providers to ensure the minimum data fields specified can be generated from EM systems as required by national EM programmes
- Enables EM data communication between national and regional database systems
- Housed in GitHub with version tracking
- Two components:
  1. Data fields description and format(Json)
  2. Data transmission procedure (Via APIs)

# Json standard and example

Table 2: Data fields for Set level information

| Field Name              | Type   | Description   | TBD |
|-------------------------|--------|---|-----|
| em_set_id               | String | Set identifier. This value must be a unique identifier for the whole set. It should be generated by the source system and formatted as follow: VESSEL NAME + TRIP DEPARTURE DATE + START OF SET DATE AND TIME       | —   |
| set_number              | Number | Sequential set number analysed in this trip   | —   |
| set_not_analysed_reason | String | Reason code why analysis of this set was not possible .Refer to Reason for not analysing code table   | —   |
| set_analysis_method     | Number | Human Analysis only = 1, Computer Analysis only = 2, Human Analysis AND Computer Analysis = 3. At this stage the selected analysis method means that all fields for set level data are populated using that method. | —   |
|                         |        | Code for the FM analyst who   |     |

## Trip header example

```
{
  "em_trip_id": "YAHATAMARU20220503",
  "trip_analysis_method": "1",
  "uvi": "8756086",
  "wcpfc_vid": 11775,
  "depart_port": "PFPPT",
  "return_port": "PFPPT",
  "depart_datetime": "2022-05-03T19:30Z",
  "return_datetime": "2022-05-18T09:15Z",
  "em_program_code": "PFEM",
  "em_drc_code": "DOSDRC",
  "em_trip_analyst_code_1": "NNT",
  "em_trip_analyst_code_2": null,
  "em_trip_reviewer_code_1": "RAO",
  "em_trip_reviewer_code_2": null,
  "has_trip_emdata_dqc": true,
  "drc_em_prov_code": "SATLINK",
  "drc_em_software_code": "SVMv3",
  "science_analysis_percentage": "10",
  "compliance_analysis_percentage": "10",
  "trip_analysis_start_datetime": "2022-05-23T08:10Z",
  "trip_analysis_end_datetime": "2022-05-28T15:34Z",
  "total_number_sets": 10,
  "set_numbers_planned_for_analysis": [4,7],
  "has_calibration_on_deck": true,
  "image_calibration_tool" : true,
  "output_digital_calibration" : "value demonstrating that calibration has been done",
  "digital_calibration": true,
  "comments": "cameras where a bit dirty for the sets analysed",
  "em_sets": [],
  "compliance_events": []
}
```

# Data & EM database developments

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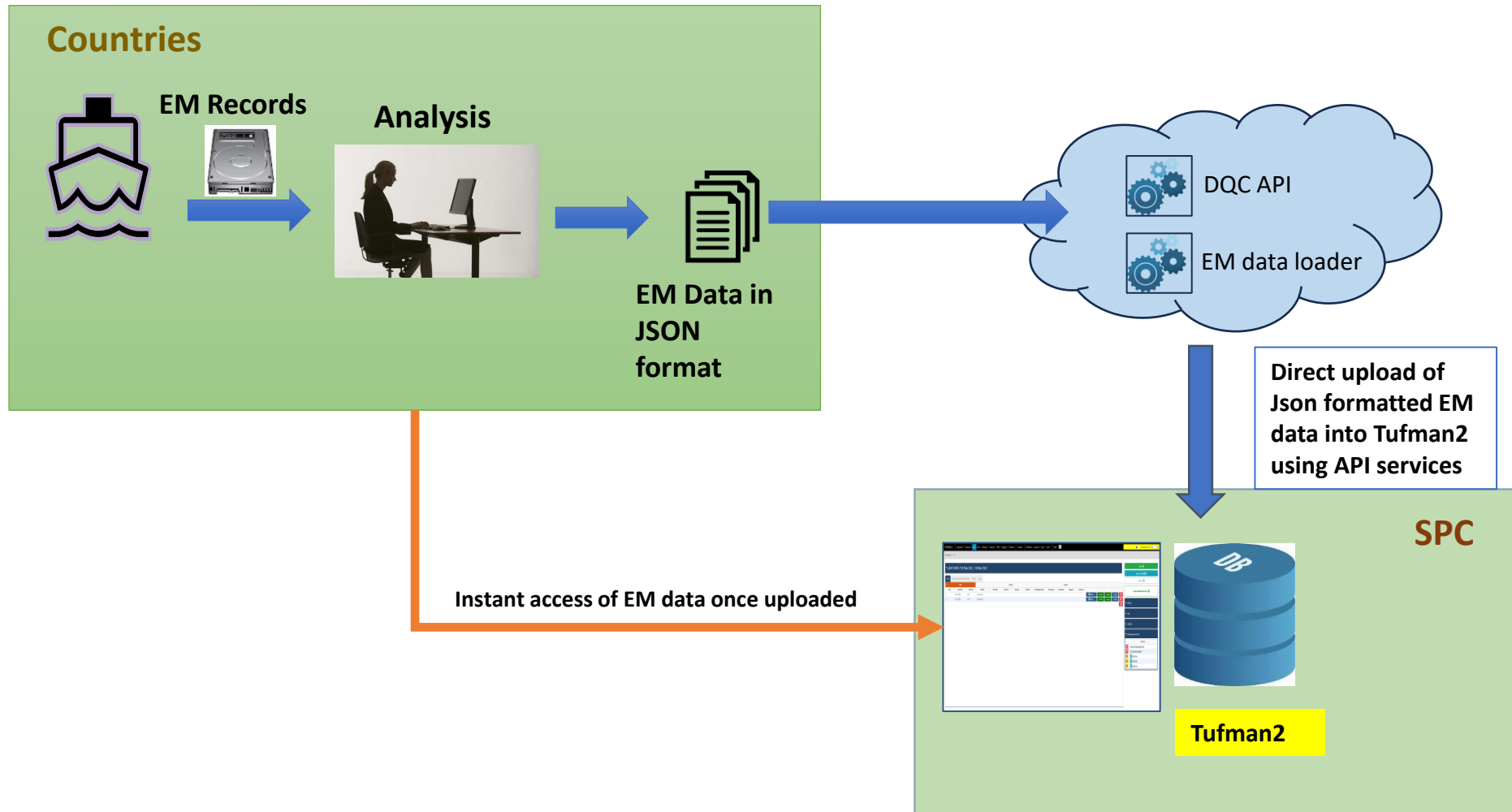
- EM data was received by SPC from a **second** EM service provider using the proposed JSON formatted LL EM standard
- An EM module in Tufman2 is operational.
  - user-friendly interface
  - links EM data to other data sources (logsheets, port sampling, unloading)
- Efforts have been made to demonstrate to members – feedback needed

# Development in EM Technology

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- Wireless transmission of EM records
- Near real time monitoring– 4G network (NZ) - Starlink (Chili and US)
- Edge computing where some analysis is done in the systems on board
- SPC can support members wishing to trial such systems
  
- Considerations for a regional database of annotated images for Members decision making
  - Project at early phase and result to be presented at a designated meeting

# EM data flow using this JSON standard





# EM data submissions

| Sum of trips_n |            |           |          |            |          |           |           |          |          |            |
|----------------|------------|-----------|----------|------------|----------|-----------|-----------|----------|----------|------------|
|                | FJEM       | FMEM      | LCEM     | MHEM       | NCEM     | PFEM      | PWEM      | SBEM     | VUEM     | Total      |
| 2015           | 12         |           |          |            | 2        |           |           |          |          | 14         |
| 2016           | 45         | 5         |          |            |          |           | 15        |          |          | 65         |
| 2017           | 179        | 9         |          | 80         |          |           | 22        | 5        | 1        | 296        |
| 2018           | 93         | 1         |          | 58         |          |           | 6         | 2        | 1        | 161        |
| 2019           | 32         | 2         |          | 29         |          |           |           |          | 1        | 64         |
| 2020           |            | 11        |          |            |          |           |           |          |          | 11         |
| 2021           | 3          | 1         |          |            |          |           |           |          |          | 4          |
| 2022           | 7          |           |          |            |          | 53        |           |          |          | 60         |
| 2023           |            |           | 1        |            |          | 1         |           |          |          | 2          |
| <b>Total</b>   | <b>371</b> | <b>29</b> | <b>1</b> | <b>167</b> | <b>2</b> | <b>54</b> | <b>43</b> | <b>7</b> | <b>3</b> | <b>677</b> |

# Demo- EM module in Tufman2

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# Key takeaways

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- Json Standard and EM module in Tufman2
  - QA process using APIs ensuring EM data is corrected at the source
  - Entity links with other fisheries monitoring data
  - Instant access to EM data once uploaded
- Countries encouraged to engage in EM standards and technology development and also EM data governance
- Industry interest in EM is growing
- EM not a replacement for observer programmes

# Implemented by people!

