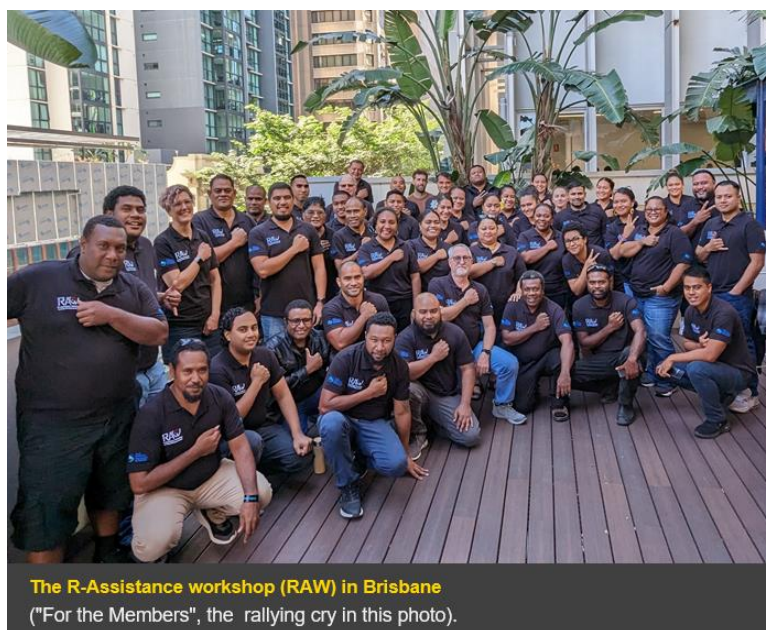


Final Report

2023 R-ASSESSMENT WORKSHOP (RAW)

Brisbane 22nd - 26th May 2023



Objective

The R-Assistance Workshop (RAW) was developed as a capacity building tool in response to requests arising from a series of informal “Friday afternoon chats” with personnel from member Pacific Island Country and Territory (PICT) fisheries departments. The most immediate perceived application was to use R in writing WCPFC reports, specifically the Part 1 reports, which are currently mainly developed using Excel spreadsheets and plots. Additionally, members wished to obtain, and be able to run, scripts developed by OFP staff when fulfilling analytical requests. It is hoped the RAW will join the Pre-Assessment workshop (PAW) and Stock Assessment Workshops (SAW) as annual capacity building events that participants can attend over multiple years to continually build their R programming skills.

Tasks

- Identify instructors and roles (February 2023)
- Develop and refine workshop content (March-May 2023)
- Facilitate nominations and arrangement of travel/accommodation (February-April 2019)
- Run workshop(s) for 40 participants in May 2023
- Assess participant results and facilitator performance at the workshop (May 2023)

Introduction

The genesis of the RAW dates to a series of meetings the National/Sub-regional team held with member fisheries departments during 2022. The meetings, dubbed “Friday afternoon chats”, were intended to explore what needs members had in regard to managing their offshore fisheries and personnel from all sections within OFP participated. One issue that popped up repeatedly was a desire that SPC provide training to help develop analytical skills, especially in R-programming, so their staff could move beyond Excel

spreadsheets and plots. A number of members also wished to replicate analyses that we prepare for them which are almost universally coded in R. Based on this demand, we sought funding for the course which was likely to dictate its size and scope. After some initial rebuffs, we eventually connected with Simon Nicol who agreed that monies from the New Zealand government MFAT's Climate Science to Support Pacific Tuna Access was appropriate, and would cover expenses for the entire course, which could be as large as we deemed necessary. Final funding approval was obtained early February and workshop preparations began in earnest shortly thereafter.

Process

Prior to seeking nominations or designing course, two informal surveys were sent to fisheries personnel around the region with whom the National Team often works. These surveys were designed to gauge interest and how to best structure the workshop(s). On the basis of these surveys, we initially decided to hold a 1st RAW in Brisbane in May with a possible second RAW in Noumea, preceding the SAWs. Nominations were invited from all SPC member countries and territories in February 2023. The initial announcement requested two nominations, with the nominees prioritized for attendance. It quickly became apparent that interest in attendance greatly exceeded expectations. Combined with initial discussion on how to structure the course, we decided to hold a single course and to expand eligibility. We eventually settled on a cap of 40 for the course, a limit reached quickly and which resulted in a waiting list (from which we never took any more students). For a course of that size, to both develop content and conduct the course, we involved the full National Subregional team. In addition, Simon Nicol requested that we involve a biometrician on his staff. The complete team of content creators and presenters, and list of participants, for RAW was as follows

Presenters

- Dr Steven Hare OFP Team Leader, National and Subregional Team
- Dr Joanne Potts OFP Biometrician, FEMA Section
- Dr Sam McKechnie OFP National Scientist
- Mr Marino Wichman OFP National Scientist
- Mr Moses Mataika OFP Pacific Island Fisheries Professional

Participants

American Samoa	Fuamai Tago & Tepora Lavatai
Cook Islands	Isabella Christian & Tiare Nicholas
Fiji	Leba Miller & Netani Tavaga & Shelvin Chand
Fed. States of Micronesia	Brad Phillip & Jamel James & Mavrick Adolf
Guam	Brent Tibbatts & William Paulino II
Kiribati	Kobure Norman & Tieei Eita
Nauru	Jonas Starr & Jonathan Temaki & Karlick Agir & Klaus Jacob
New Caledonia	Léa Carron
Palau	Keith Inawo & Zilah Oiterong-Chin
Papua New Guinea	Aisi Anas & Benthly Sabub & Sai Ugufa
Samoa	Fiona Sapatu & Jennifer Laulu & Serafina Ah Fook
Solomon Islands	Chrisanto Daokalia & Claudius Halumwane & Reuben Sulu
Tonga	Lavinia Vaipuna & Makeleta Malimali
Tuvalu	Niukita Taape & Rosalia Uoka
Vanuatu	Lucy Joy & Peter Tiamua
FFA	Lianos Triantafillos
SPC	Joanna Mesepitu & Lui Bell & Raijeli Natadra

We also note that Martin Finau, a recently hired Pacific Island Fisheries Professional also attended the course, in the role of student though he had worked during course content creation on test the material. Logistics for the course were considerable. We wish to acknowledge the yeoman work by OFP's admin staff:

Workshop Administration

- | | |
|-------------------|--------------------------------------|
| • Helene Ixeko | OFP Fisheries Administration Officer |
| • Natalie Lemesle | OFP Administrative Assistant |
| • Paul Judd | OFP's Programme Administrator |

Course Development and delivery

Preparation of workshop resource material took place over the four months prior to the workshop. While SPC had conducted R training workshops twice previously, we opted to start from scratch and develop all new material, using tools (shiny apps, base-R, tidyverse, ggplot) and datasets relevant to today's needs and the spectrum of abilities in the wide audience expected to attend. Weekly meetings among the instructors commenced in February to discuss and refine how the course should be developed. Joanne was willing to do the formal introduction to R and R-Studio, focusing on properly setting up the working environment. She developed Shiny apps that allowed participants to learn how to write base-R code without working in the R-Studio environment. We allotted two full days for her to cover the basics. Days 3 and 4 were developed around the building of scripts in R – a half day of base-R data manipulation and plotting in base-R by Steven, then a full day of tidyverse and ggplot by Sam and Moses and ending with a half day of mapping (in ggplot) with Marino. In the interest of continuity of content, the base-R plotting material was placed at the end of Day 2 and Jo's final content, where the notion of libraries is introduced, was moved to Day 3 AM.

As has been the case for the other workshops developed by the National Team in recent years, we used the Moodle platform to store and, eventually, distribute all materials for the course. The Pacific Community pays an annual fee for access to the Moodle website and programs, and, in our opinion, it is very well suited to both deliver and preserve for posterity, instructional workshop materials.

In preparation of presentations, we made use of an interactive bit of software known as Slido. This software integrates with Powerpoint and allows real time interaction with participants to allow surveys, pop quizzes, questions to presenters, etc. The use of Slido provided frequent breaks in the monologue of presentations and often injected needed humour into the proceedings – we also encourage continued use of this software.

On the day the course was to start, 37 of 40 participants were in place; a flight cancellation resulted in a 1.5 day late arrival of the three participants from FSM. The use of Moodle, as well as an impromptu use of Zoom to broadcast some of the presentations allowed these participants to follow at least some of the material prior to their arrival. Once they arrived, all 40 participants were fully engaged right to the end of the week.

The workshop sessions were arranged as follows:

2023 R-Assistance Workshop (RAW)					
Session times/dates	Day 1 22 May	Day 2 23 May	Day 3 24 May	Day 4 25 May	Day 5 26 May
Session 1 (09:00 - 12:00) Morning Tea: 10:00 - 10:30 (Brisbane time, GMT+10)	Welcome (SH)	Good R practice & data exploring (JP) [Session 4 cont]	Beyond base R (JP) [Session 6]	More in-depth look at ggplot [Session 8]	Final student assignment
	Getting familiar with R (JP) [Session 1- 2]				
LUNCH (12:00- 13:00)					
Session 2 (13:00 - 16:30) Afternoon Tea: 14:30 - 15:00 (Brisbane time, GMT+10)	Good R practice & data exploring (JP) [Session 3 - 4]	Base-R plotting (SH) [Session 5]	Data Manipulation with tidyverse (SM, MM,MF) [Session 7]	Mapping (MW) [Session 9]	Final student assignment

SH-Steven Hare, SM - Sam McKechnie, MW- Marino Wichman, JP - Joanne Potts, MM - Moses Mataika, MF - Martin Finau

The conduct of the course proceeded largely as intended. Our initial plan had been to project on two screens – one with the ongoing presentation and the other with a R-Studio coding window. However, the layout of the room horizontal with the two screens some 7-8 meters apart centered on different halves of the room, made that impractical. In the end, we projected the presentation and the other instructors continually walked around the room providing assistance as needed.

We won't go into detail here about the content of each section, but we will note that student attention and participation were quite intense right from the start of Day 1 until late on Day 5. We had zero issues with diverted attention (to mobile phones and social media, late returns from lunch, etc.). The summarized survey responses (in the Appendix) provide significant detail on student interest.

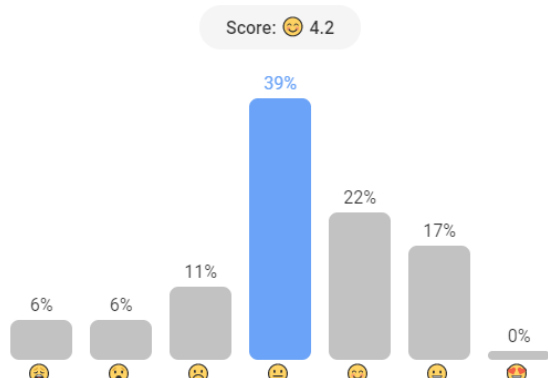
Outcomes

The participants were surveyed several times over the course of the week to assess their own capabilities in R. Overall, there was a steady improvement, evidenced by the increase in mean score from 4.2 on Day 1 to 5.4 on Day 5 (on a scale of 1-7).

How are you feeling about your capabilities with R?

😞 - What is R? 😟 - Im an R Expert!

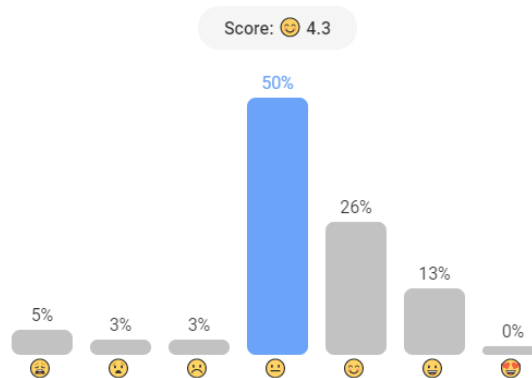
36 👤



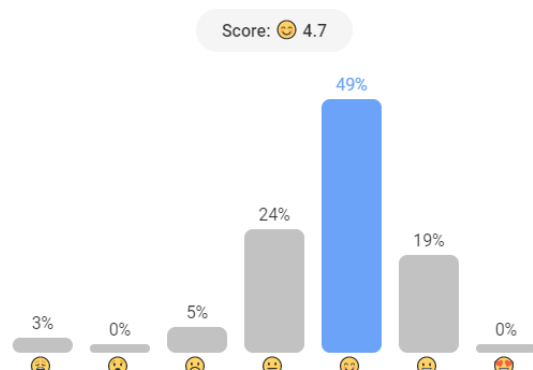
Welcome to Day 3. How are you feeling about your capabilities with R?

😞 - What is R? 😟 - Im an R Expert!

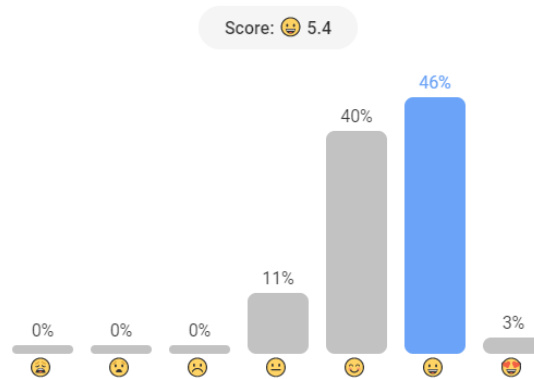
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Welcome to Day 4. How are you feeling about your capabilities with R? 37 8
 😊 - What is R? 😊 - Im an R Expert!

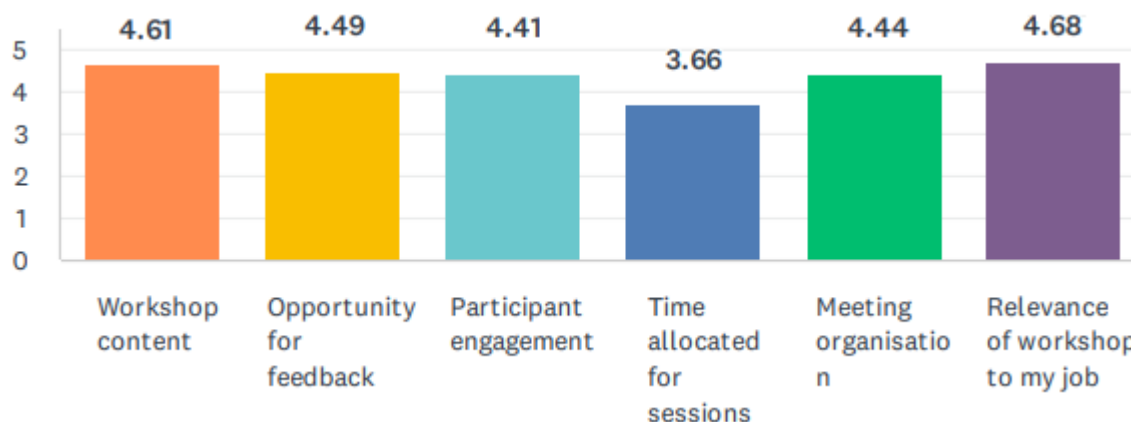


Welcome to Day 5. How are you feeling about your capabilities with R? 35 8
 😊 - What is R? 😊 - Im an R Expert!



It is difficult to directly assess outcomes from this kind of fundamental training, and the real assessment will emerge from the improved capabilities of participants in preparing their own analyses; in improving their Part 1 Reports or in requesting R code from SPC staff to rerun analyses.

At the end of the RAW, participants were asked to anonymously complete a SPC Monitoring, Evaluation and Learning (MEL) designed questionnaire about their experiences which, as with previous courses, will assist us to continually improve the training process. The full report, prepared by MEL from the questionnaire, is 26 pages long and attached to the end of this report. It is fair to say that students were quite positive about the workshop but had many requests to expand/improve the workshop as well to hold it more often. A couple of the more important responses are shown next (scores are from a response scale of 1-5).



	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
I gained new knowledge from the workshop	0% 0	0% 0	2% 1	20% 8	78% 32	41	4.76
I will be able to use what I learned in my job	0% 0	0% 0	7% 3	34% 14	59% 24	41	4.51
I would recommend similar training to other colleagues	0% 0	0% 0	2% 1	12% 5	85% 35	41	4.83
I was able to follow and understand the contents presented	0% 0	2% 1	10% 4	56% 23	32% 13	41	4.17

Lessons Learned

The lessons learned from this first attempt at teaching R/R-Studio to a large audience of folks with varied capabilities and expectations were many. Rather than attempt to summarize them, what follows is a bullet point list from the instructors resulting from a course-ending debriefing (while the course conduct was still fresh in memory).

- Drop base-R
- Probably should evolve two RAWs, one intro one “advanced”
- Simplify final exercise
- 2 screens is a must
- Keep shiny apps for intro
- Mapping needs more time or only for advanced course
- Record videos of presentations .. perhaps after the fact so they can be archived on Moodle
- Be more explicit about R/R-Studio distinction
- Installation of R and R studio was done for basically everyone before they arrived which worked well.
- Lots of people understandably didn’t know the difference between R and Rstudio – should be a session at the beginning pointing out the difference.
- All packages necessary for the course should be installed before coming as we had problems with internet being insufficient to install very large packages on the fly.
- The nature of where R is working / projects / folder structure etc. is a topic that could be tweaked / explained a bit more thoroughly and was one of the main sources of confusion during the week.
- The big question will be how to keep the momentum going virtually now – FSM have already been in contact to receive more exercises to practice on and PG have been in contact to work together on a mapping project that they could then run themselves. Would be good to do this / similar for the wider group.
- Slack appears to be the most popular medium to go further with this type of work.
- 1 week seems like a decent time period for this type of workshop – only by the last day, when they were working on their own data, did it seem that it was all coming together for some of them.
- We’d have to think harder about doing a workshop like this in hybrid mode, or in recording the content for those who could not attend in person. Our attempts to record using zoom and/or powerpoint failed, partly due to the microphone setup etc. Would require careful planning.
- Slido worked well and could even be used more – maybe even some more intense coding questions during presentations.
- Moodle also worked well – not sure if the quizzes done in there were any better than the ones prepared in a simple word document though, probably not.
- Mapping could probably take up a whole day in retrospect. Also, more data manipulation/plotting practice wouldn’t go amiss, but possibly hard to fit into the agenda.
- Maybe a one day virtual mapping session might be worth considering down the road.
- The final assignment took them all a lot longer than envisioned. But seemed to be a very good exercise for them to solidify the week’s content. Overall, it was definitely too hard for all but the best couple of people though. Would require a bit of a rethink and modification to more basic level.
- I wonder if some special quizzes could be put together to address some of the more common errors that people make == instead of %in% , %>% instead of %in% , forgetting the c() etc.?
- Look at ways to keep the momentum going, as participants are easily distracted by other day to day tasks. Consider regular catch ups (fortnightly) on working examples from members for example

Financial report

The MFAT's Climate Science to Support Pacific Tuna Access project funding covered the costs of attendance of a total 40 attendees from 15 PICTS and agencies (SPC and FFA). Breakdown of the direct RAW costs are as follows

Row Labels	Account name	Sum of Total Cost (EURO)
61040	POSTAGE & FREIGHT	EUR 188.15
62040	STATIONERY AND PRINTING	EUR 1,862.29
	OTHER SUPPLIES	
62065	CONSUMABLE	EUR 222.17
62130	BANK CHARGES & FEES	EUR 1,356.04
62560	CARBON NEUTRALITY LEVY	EUR 1,864.27
64010	AIR FARES - STAFF	EUR 11,132.88
64020	AIR FARES - PARTICIPANTS	EUR 82,659.47
64040	PERDIEMS - STAFF	EUR 11,263.82
64050	PERDIEMS - PARTICIPANTS	EUR 53,852.18
65040	WORKSHOP SUNDRY EXP.	EUR 13,649.61
Grand Total		EUR 178,050.88

In addition to the direct MFAT Project direct spending, the RAW leveraged several indirect funding sources. Assistance in preparing and delivering presentations came from several SPC scientists who are variously funded by New Zealand Aid, Australia Aid, and the European Union.

Conclusions

Again, we would like to thank the New Zealand MFAT project for making this workshop possible. Judging by the responses of the participants, both objectively and subjectively it was a resounding success. It helped to address a major practical need among SPC developing island member states, as well as being greatly appreciated. And the thoughtful comments about the kind of incremental improvements that might be made next year demonstrated the commitment, attention and intelligence of the participants. This workshop has encouraged us about the prospects for increasing member country fisheries science technical capacity in the near future.

Appendix

The full Results report from the feedback survey prepared by the Monitoring, Evaluation and Learning (MEL) unit within FAME is attached here. 41 students participated in the course and all 41 answered almost the entirety of the survey.

