Pacific Soils

Objective 4 Develop the Pacific Soil Portal to enable sustainable soil management in the farming systems of the region

Australian Government
Australian Centre for International Agricultural Research

CSIRO

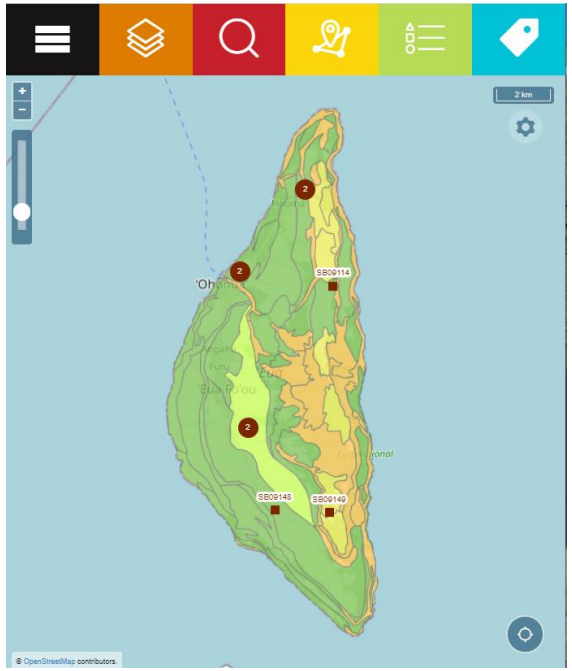
Manaaki Whenua
Landcare Research

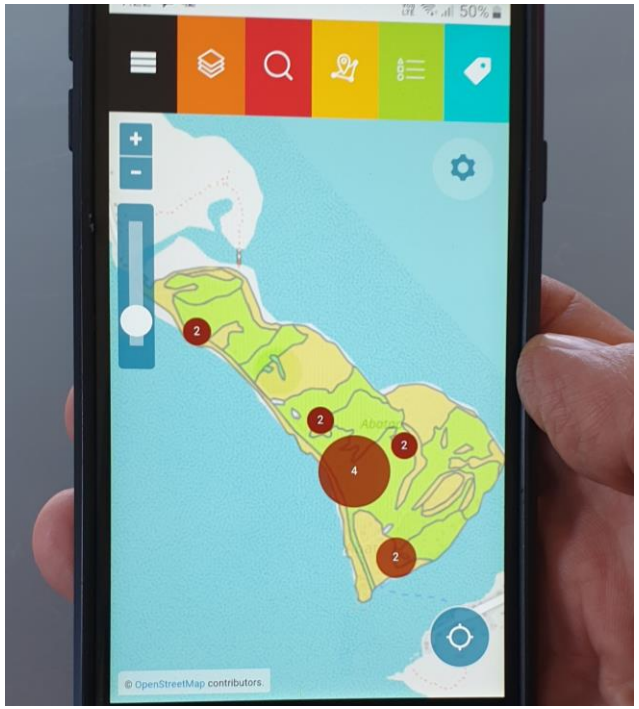
Background - timeline

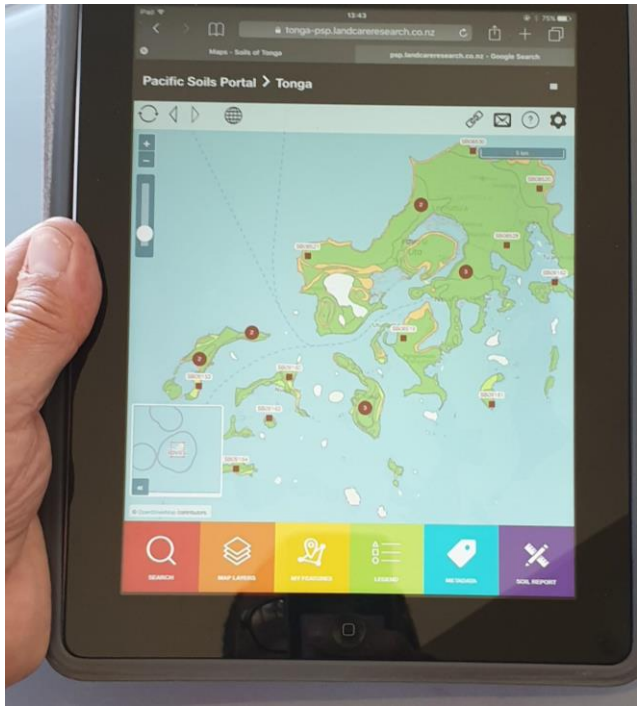
- NZ legacy soil survey work in Pacific 1950s – 1990s
- 1990s – Pacific soil/geospatial consultancies
- By 2000: good soils data – bit inaccessible; aging cohort of soil scientists
- MWLR working on NZ data portals
- Pacific Soils Portal receives HoAFs endorsements in 2005-2007
- Fonds Pacifique funded feasibility study 2006
- GFC funding Hiatus – 2007-2011
- By 2011 in NZ: S-map and Our Environment using Mapserver web services
- 2014: Pacific Soils Partnership (GSP – FAO) meetings
- This ACIAR project developed from those meetings and started 2017

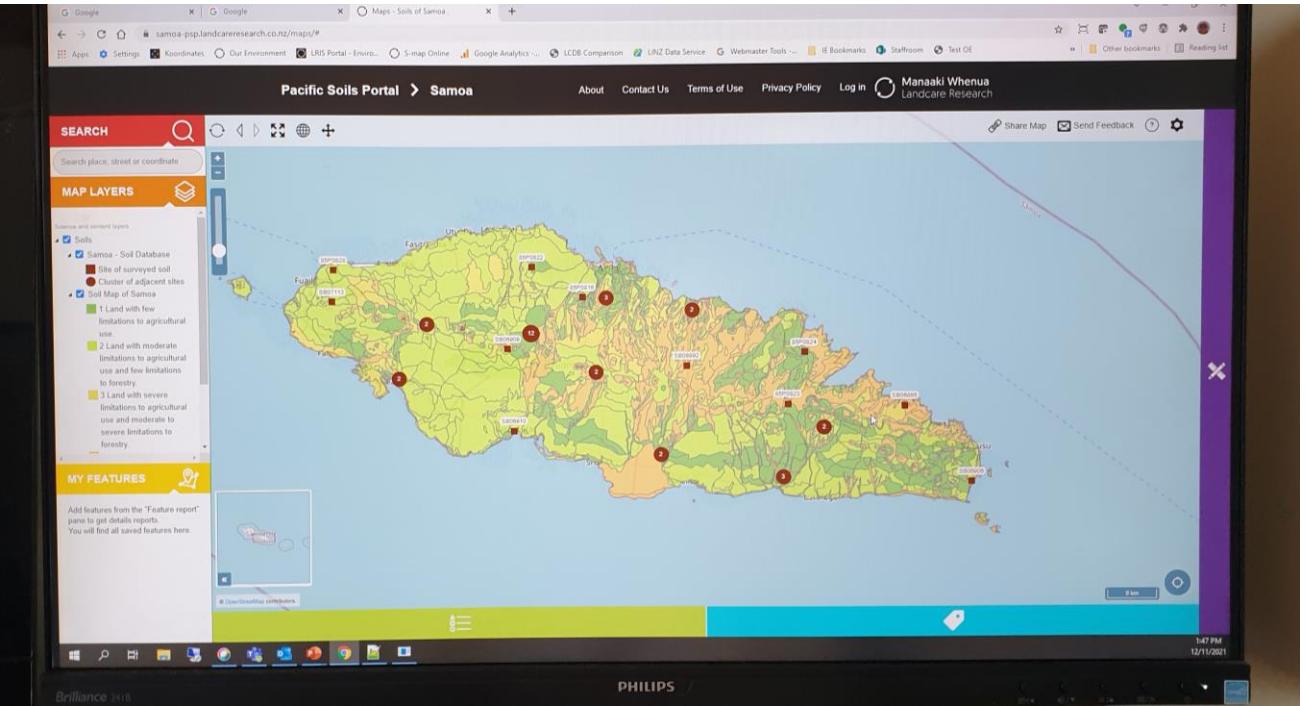
The progress on the development of the Pacific Soil Portal

- responsive browser-based; standards-based; Open Source; fast; Cloud-based
- Phase 1 geographic extent: Fiji, Kiribati, Samoa, Tonga, Tuvalu
- Best available soil maps linked to summarized soils information, targeting extension officers and farmers
- Legacy soil profiles: 464 of 664 have been uploaded
- Ancillary knowledge: links to original maps, reports, and explanatory information







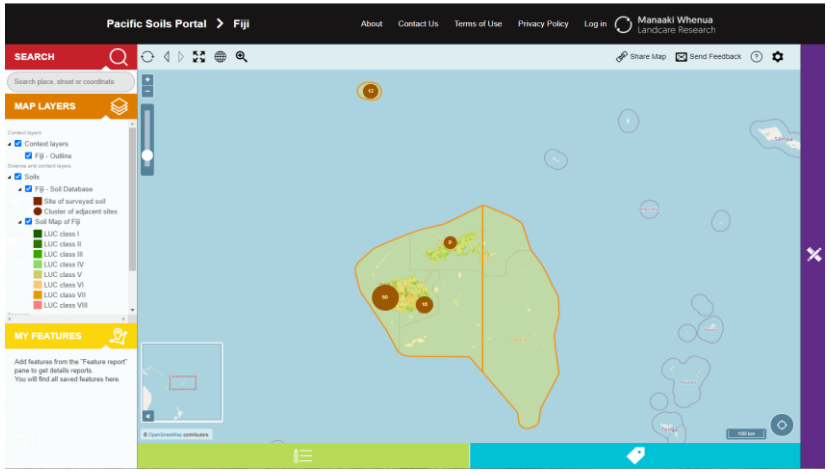


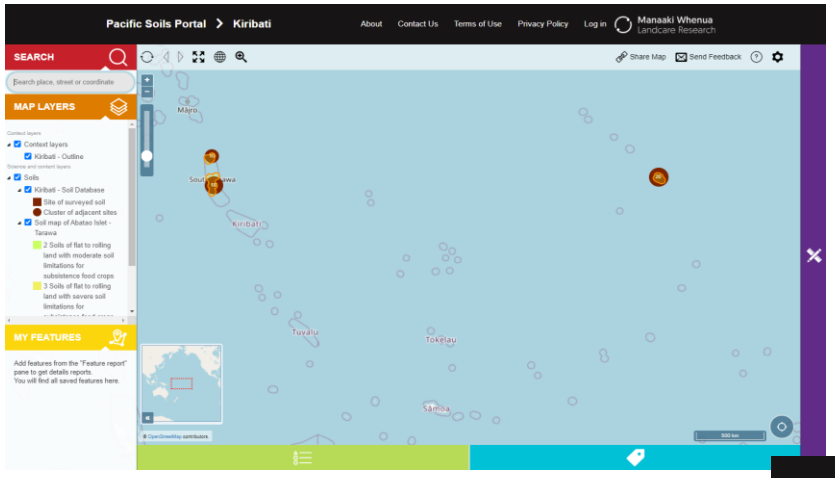
PSP is a responsive web application

One website services all types of devices

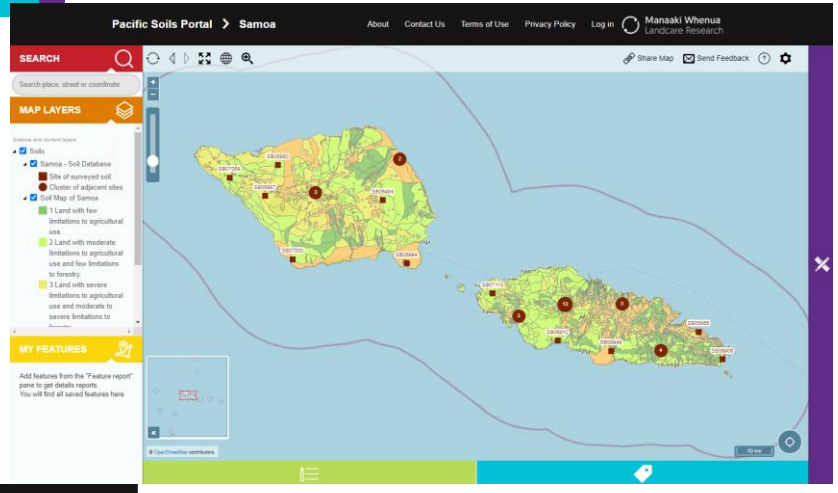
- https://psp.landcareresearch.co.nz

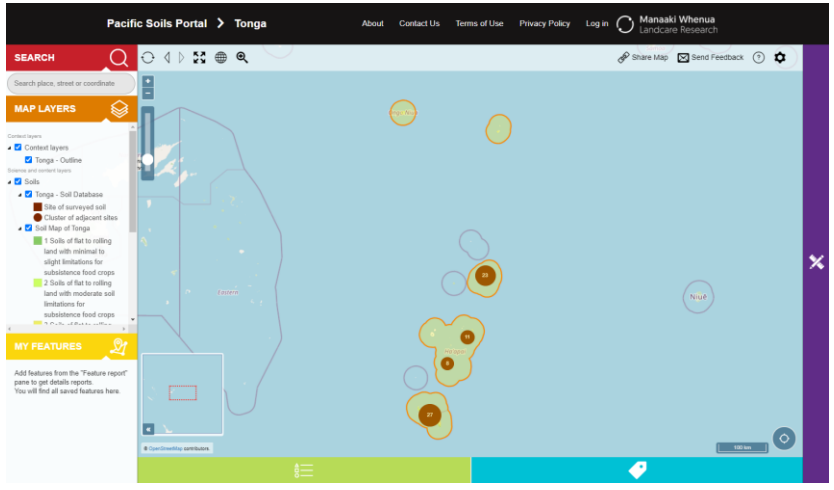
Portal Coverage

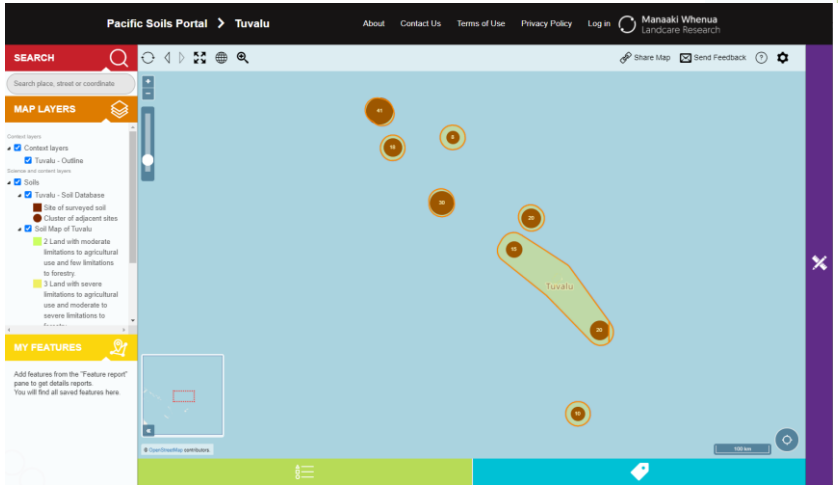




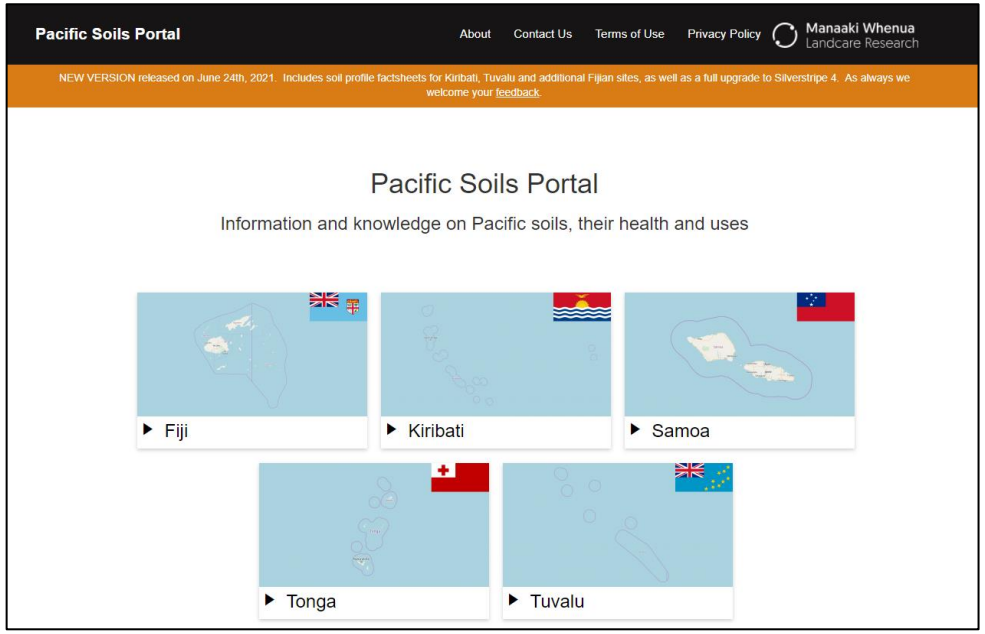
	Mapped Area	Profiles
Fiji	87%	133
Kiribati	<1%	48
Samoa	100%	52
Tonga	100%	69
Tuvalu	100%*	162*







Three biggest achievements



- Launch of Pacific Soils Portal
  Successfully achieved the major technical goals to collate, and make available, via an on-line web portal useable by any device (laptop, tablet or smartphone), the best available soils knowledge for 5 Pacific countries

- Establishment of Portal Governance Group
  Initially at HoAFS but later successfully agreed on Terms of Reference, data sharing agreements and hosting options via online voting. First steps in achieving true Pacific ownership of the Portal.

- Engagement with end users
  Analytics and help queries indicate slow but steady increases in user engagement. Lowering the accessibility barriers for people who had not previously been able to find or use this information.

The Pacific Soil Portal Governance Structure and the Guidelines for data sharing

- Country representatives from all 5 countries
- Observers MWLR, CSIRO, SPC, GSP/Pacific Soil Partnership
- Met at HoAFs 2019 in Apia – subsequently online voting
- Agreed to
  - Terms of Reference
  - Data sharing agreement
  - Hosting options paper

The COVID impact

- Engagement with country teams more difficult and curtailed plans for user engagement and training
- Made organising governance group more challenging – perhaps it was easier to ask for decisions via online poll, but much harder to ensure members were fully engaged and had fully understood briefing materials and implications of decisions.
- Less effect on in-house component of technical portal development, but COVID still delayed and impacted staff availability, hence timing.
- Harder to manage budget and spend in planned areas.

How we have progressed against our planned activities

Activity		Progress
4.1	Establish Governance	Established 2019 (ratified: ToR, code of ethics, open-data policy, Data use, Hosting)
4.2	Capture Requirements	Completed using personna analysis November 2019
4.3	Design infrastructure	Completed based on OGC standards and software
4.4	Implement Infrastructure	Operational: initially LRIS Portal/MapServer; GeoServer on AWS from 2020
4.5	Data Harmonize/Capture	Completed: harmonization and upload of profiles via GeoJSON
4.6	Soil Portal Development	Completed: Beta June 2019, soft launch October 2019, full launch June 2020
4.7	Host Setup	Implemented prior to HoAFS soft launch, transfer to Pacific host pending
4.8	User feedback/Testing	Partially Completed: November 2019 (Nuku'alofa) but will be ongoing
4.9	Technical report	TBC
4.10	Comms & Extension	Demonstration at HoAFS

Results and Key Findings

Report on past and outline current/future work to Sept 2021

- **Results**
  - https://psp.landcareresearch.co.nz
  - *Since launch the Pacific Soils Portal has had 1900 users of soils data; 4500 sessions; 25,000 pages views; average of 7-8 minutes; 2.3% bounce rate.*
  - *We conservatively estimate that 1900 users is about a 4 to 5-fold increase in people engaging with soils data in the region.*
- **Current/Future work to September 2021**
  - Hosting negotiations with SPC - particularly transfer of support role
  - On-going uploading of profile data (including trial sample data)
  - Investigate linking Smap Online and ASRIS?
  - Prepare technical report?

Team Capacity Impacts

- Personnel Development
  - This project has been the final part of 30-years' experience in land resource information and its application in the Pacific, and a 15-year effort to make the Pacific Soils Portal a reality.
  - I hope to continue contributing by expanding the portal "geographically" and particularly in terms of focusing on user information needs
- Team Development
  - MWLR team members have further developed technical programming skills, have also gained better understanding and appreciation of use of soils data
  - Gibson, Ellen and SPC Land Resources have developed a better appreciation of the technical challenges of on-line provision of mapped information
  - Vuni , Ami, Aleni, Kabuati exposed to personna analysis (user needs)
  - Vuni - experiment to create Tongan language homepage – language challenge
  - All – exposure to governance issues

Community Impacts

- How has the project improved community skills and mindset?
  - *The Pacific Soils Portal has made soils data more accessible to a range of users. Impact will be hard to define and may take some time to develop.*
  - *Google Analytics indicate 1900 users have accessed data with Fijian, Tongan and Samoan users amongst top 6 geographically (>30% total); sessions average 5-15 minutes; female users around 45%; 60% of users <34 years old.*
- How will the community apply these skills into the future?
  - *Raising awareness of the importance of soils and good soil management for agriculture, and using the portal as a tool to support farming practices.*
- How will the project outcomes impact on the community
  - *This will be hard to measure as the impact of the Portal is indirect*
- Example user community comment on the impact of the project

  "Bula from Fiji! This is a great initiative & we thank you for making it possible. We referred to the portal for a baseline, then as cross reference for actual soil tests done on a plot of land being utilised for a re-forestation program in Rakiraki, western Fiji."

Communication and dissemination activities

- HoAFS and PWA Apia September 2019

- Usability testing - MAFFF Nuku'alofa – November 2019

Key Lesson learned

Things to share with other country leads and project team

- Using and understanding maps for location shouldn't be assumed
- Difficulty of communicating soil concepts in indigenous languages
- Messaging inherent soil properties vs current soil condition
- Need to develop strategy and support to maintain Portal long-term, including developing skills within the region/countries.

Key challenges & how we have overcome them …

Partner engagement at all levels.

1. Setting up Governance group during Covid pandemic

   had some success using briefing notes and online voting rather than trying to organise virtual meetings but responsiveness can be an issue.

2. Country partner engagement in extension

   no good solution in phase 1, planning to develop training/extension using country partners in Phase 2

3. Technical engagement with SPC as a potential host

   developing a plan through a Phase 2 to transition some hosting roles, while acknowledging some technical/development support may need to continue for some time

   Capacity to support hosting roles is exacerbated by the rapidly changing technical setting, which requires ongoing investment in capacity.

What should we do in the future with the Pacific Soil Portal to help improve soil management and farming resilience?

- Maintain and enhance governance structure and develop hosting arrangements to ensure long-term viability
- Develop messaging that connects portal content to desired outcomes (better soil management and farm resilience)
- Develop portal content to message nutrient management research results
- Develop training/extension messages to "advertise" Portal to different user groups
- Survey users for feedback/future planning

Questions