

TRAVEL REPORT FORM

출장보고서

결 재	선임연구 원	팀장	부서장	원장
	06/14	06/14	06/15	06/15
협 조	정유란	김옥연	김형진	정홍상

I. Reporter 보고자

Department 소속	Position 직위(직급)	Name 성명	Travel Date 날짜	Note 비고
Climate Research Team	Research Fellow	Chung, Uran	2016/6/3-11	

II. Major Activities 주요업무 수행내용

1. Main Contents and Activities 주요내용 및 활동

○ Attend APSIM-Taro crop modeling training workshop and discuss APSIM crop modelling - *summary*:

1. obtained materials for APSIM-Taro simulation: climate (met file), soil and management information of Taro (xml file)

2. discussed about CSIRO APSIM cluster (Condor), APSIM-Cassava, other modeling activities (refer 'detailed activities in Tonga')

- *detailed activities in Tonga*:

(1) *Day 1 Eves (6-7 June)*:

(a) discussed APSIM and DSSAT crop modeling and other modeling activities (e.g., AgMIP)

(b) visited Nishi Trading Foundation field: Ella (technician) explained and showed some results of Taro harvested (photos and excel files)

(c) checked simple weather station in the field

(d) assisted installation of APSIM software in USP computer lab with Steve's team (Dr. Jone Hargreaves, Dr. Shaun Lisson, and Dr. Steven Crimp)

(2) *Day 1-3 (8-10 June)*:

(a) had presentation time of introduction of APCC and AgroMet project in the morning session on 8 June

(b) attended APSIM-Taro training workshop

(c) discussed about research ideas for future work, namely, make groups by institutions of participants, assign research topics to each group, and bring results of different Taro simulations in Tonga, for example, different soil types and different climate scenarios including seasonal forecast data, different managements-irrigation or rainfed, fertilize schedules-manure or urea, or NPK* etc) and discuss them in coming workshop in

October

(d) discussed CSIRO APSIM cluster access authority and using ASPIM-Cassava, and decided to have an additional discussion via skype or email since we need to talk about the access authority of APSIM cluster and Cassava simulation with the representative CSIRO APSIM team

NPK*: Nitrogen (N), Phosphorus (P), Potassium (K)

– *follow-up*:

- arrange an additional discussion

2. Relevance to APEC Climate Center's Activities 결론 및 소감

- participants got training well for APSIM-Taro simulation, and they would simulate APSIM-Taro by themselves and bring the results to the next workshop
- a good chance to make broadly knowledge of Tonga Taro and APSIM-Taro through the in-depth discussion with CSIRO ASPIM-Taro team, participants, and Tonga MAFFF
- figured out some questions of APSIM such as uploading soil properties to APSIM toolbox and simulating APSIM in cluster through the discussion with Dr. Jone Hargreaves who is one of developers of APSIM
- hope various research cooperations with CSIRO and Tonga research groups

※ attached presentation file (ppt)

※ shared all materials of ASPIM-Taro simulation with Dr. Kim and EPINET

III. References 참고사항

(with attachment of any information or report in case of attendance of conferences, workshops and meetings) 학술대회, 워크숍, 회의 등 참석 시 관련 정보 및 문서 첨부

1. Presented and Collected Materials 주요 수집자료

2. Suggestions and Remarks 건의사항

APEC Climate Center

INTRODUCTION TO APCC
& THE TONGA AGROMET PROJECT

Uran Chung
Research Fellow
8 June 2016
APSIM Training Course
Nuku'alofa





Overview

1. Introduction to APCC
2. APCC in Tonga
3. AgroMet project:
 - Improving Agricultural Productivity in Tonga through Ensuring Data Availability and Enhancing Agro-meteorological Services
 - Tonga Climate Services for Agriculture (ToCSA)
4. Handover details: FACTSHEET



APEC Climate Center

- Established in 2005 as a climate prediction center during the 13th APEC Leaders' Meeting in Busan, South Korea
- Aim: enhance socio-economic wellbeing of APEC countries using climate information





APEC Climate Center

MISSION

Use climate science and its applications to contribute to safer, more prosperous, and more resilient communities of APEC countries through four interrelated themes:



Climate Prediction



Climate Information Services



Interdisciplinary Research



International Cooperation



APEC Climate Center

ACTIVITIES

Climate Prediction



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CLIMATE INFORMATION SERVICES



FORECASTS



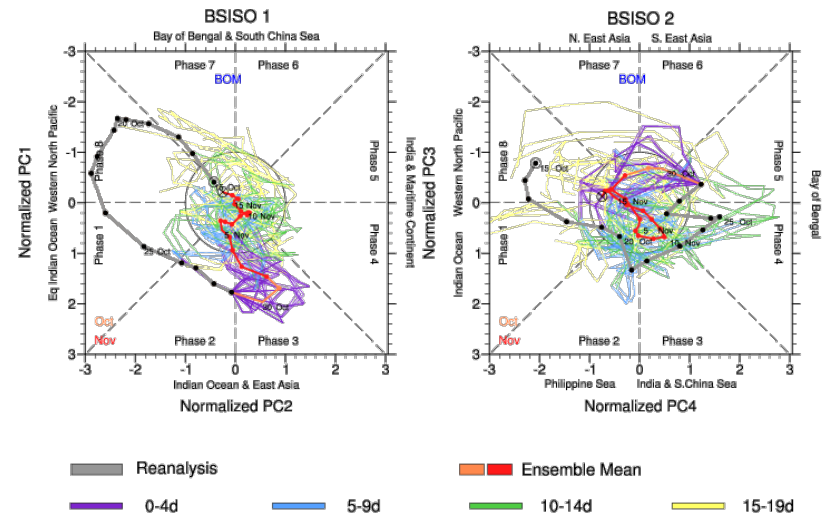
NOTICE



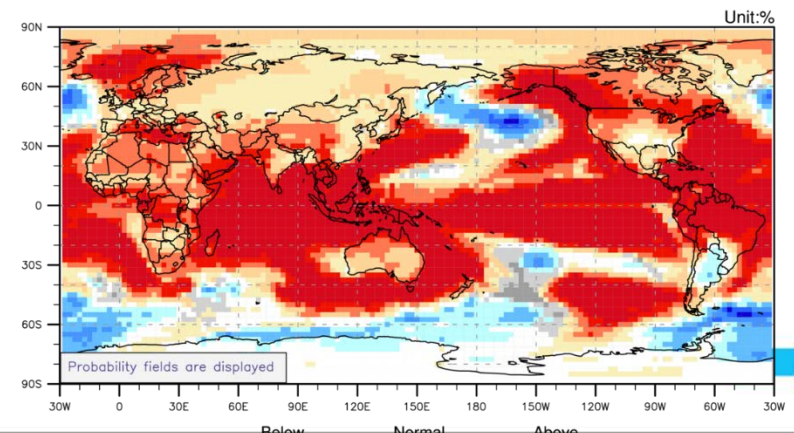
P.R.



www.apcc21.org



Temperature at 2m for April-June 2016





APCC in Tonga: Matching TASP

- Began discussions at the Global Framework for Climate Services (GFCS) Regional Consultations in the Cook Islands March 2014
- AgroMet project started August 2014
- 2016:
 - Groundwater resources project for agriculture irrigation (Predict groundwater use and availability)
 - Seasonal climate forecast capacity building project to increase predictability





AgroMet Project Overview

Improving Agricultural Productivity in Tonga through Ensuring Data Availability and Enhancing Agro-meteorological Services

- Climate change and variability threaten agricultural productivity
 - Addresses Tonga's extreme climate conditions
- Bridges gaps in climate science and agriculture
 - Builds capacity
 - Enhances regional cooperation



AgroMet Project

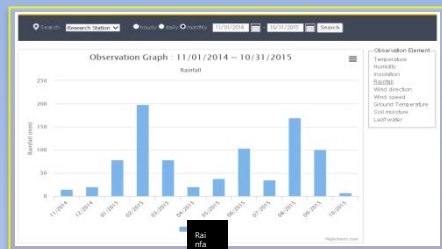
1. Needs assessment & stakeholder engagement
2. Development of agricultural database
3. Research & model development for key crops
4. Main output: Agro-climate service



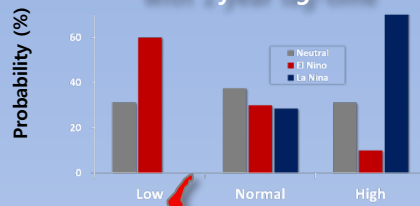
Vaini research station for model development



Database equipment



Swamp taro market supply estimation with 1 year lag-time



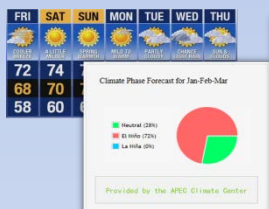
El Nino-high(97%)

cropping stage	decision	recommendations
Before Planting	Select variety	- If irrigated, do as the normal years - If not irrigated, no planting. Go for other crops like cassava and sweet potato
	Acreage allocation	- Be cautious in investment and try to minimize acreage that can be drought-managed like irrigation - Remove taro from that rotation and try replace with other drought-tolerant crops like sweet potato and cassava - Protect your planting materials
	Irrigation	- Install bucket irrigation (USD195/acre): equal to labor cost for hand irrigation
	Planting material	- Plant corms for the next cycle - Prepare bigger size of planting material (corm, tuber, petiole) (ex. 400-500g)
At Planting	Land management	- Planting density 20% lower - Mulching (organic or plastic)
Before/At Planting	Apply fertilizer	- Apply less to match planting density
During Cultivation	Agrochemicals for pest	- Prepare more insecticide for caterpillar and root aphid infestation - Plant trees which caterpillars dislike
	Agrochemicals for disease	- Very less sprays needed
	Weed control	- 20-50% less weed sprays

Supply estimation based on ENSO forecasts & recommendations for agricultural decision-makings

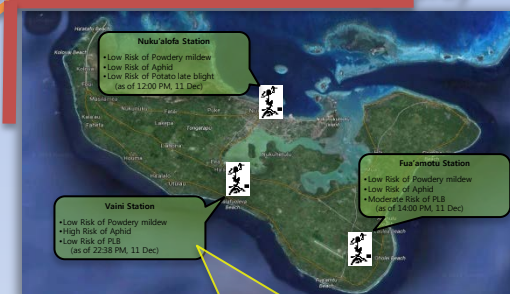
Real-time weather, historic climate, agricultural indices information

Weather & climate forecasts

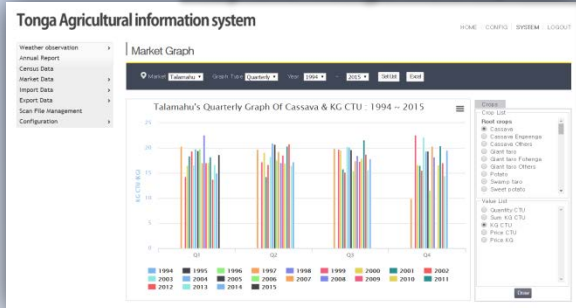


Tonga Climate Services for Agriculture

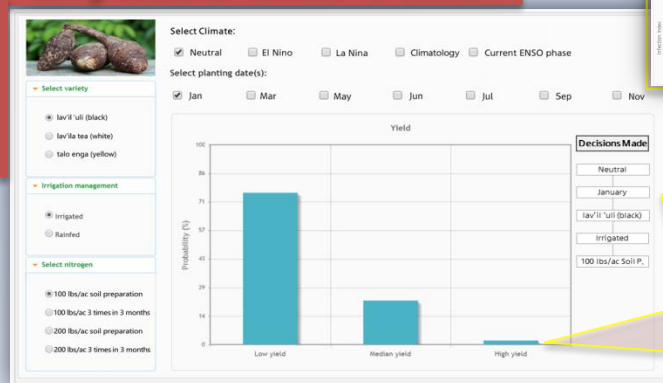
Disease/pest risk information for timely spray



Tonga Agricultural Information System for agricultural DB management by the Tonga MAFF

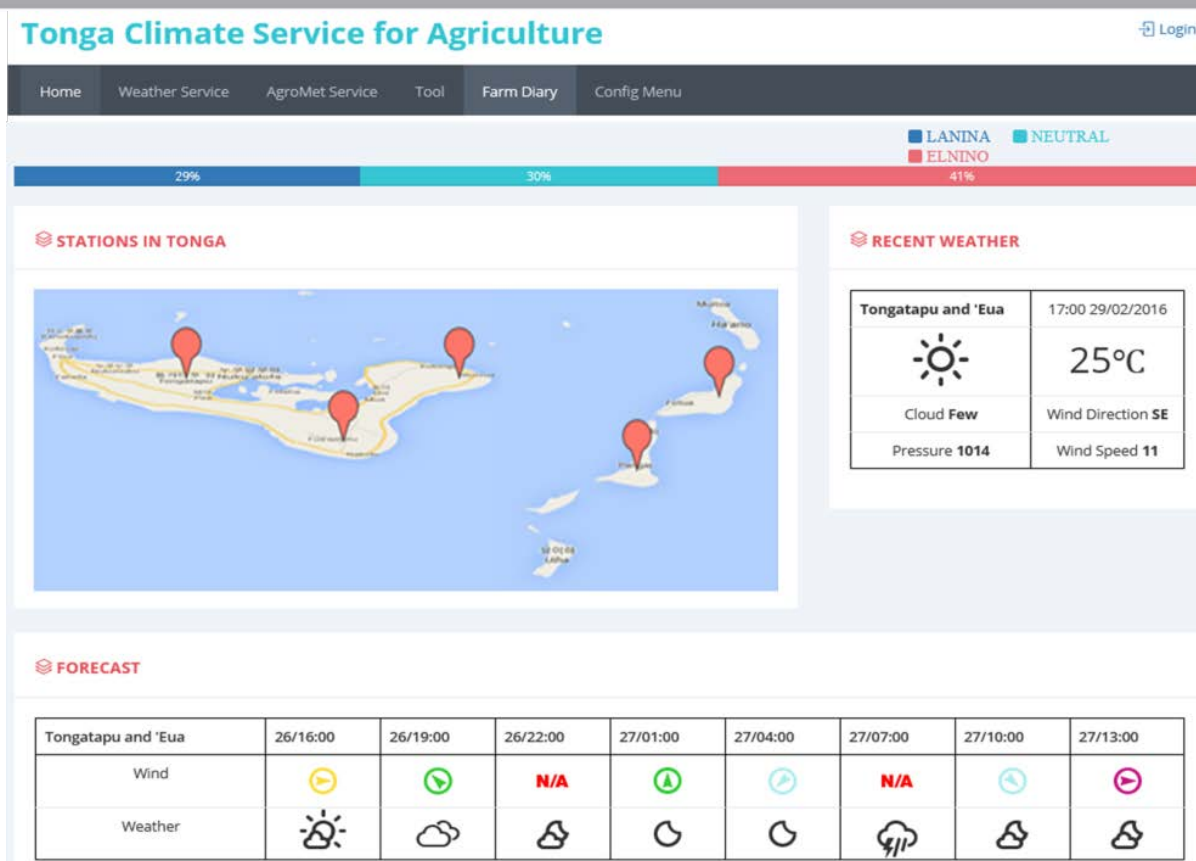


Crop management options with a yield probability information using seasonal climate forecasts





ToCSA



Comprehensive climate-based tool for agriculture: Relies on MAFFF and TMS

<http://tocsa.epinet.kr>



THANK YOU

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