



STANDARD OPERATING PROCEDURES

CLIKP DYNAMICAL CLIMATE PREDICTION TOOL

Abstract

The SOPs are provided to govern the process for generating dynamical climate forecasts using the CLIKP Online Tool for Seasonal Climate Prediction, provided by the Republic of Korea-Pacific Islands Climate Prediction Services project

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Introduction

Climate variability represents a major risk for most Pacific Islands. Capacity to manage the risks associated with seasonal and inter-annual fluctuations as well as the increasing impacts of climate variability and change is vital to Pacific communities. In particular, within the context of a changing climate, Pacific Island Countries (PICs) need to be able to generate and apply seasonal predictions to ameliorate the social and economic difficulties associated with seasonal climate anomalies such as rainfall extremes. Pacific island countries need to be aware of changes in sea level and how they might affect low-lying communities. Pacific island countries rely on the natural environment with respect to: ecosystem services; subsistence farming; economic activities including tourism and fisheries; and natural resource use.

Vanuatu in particular is one of the most vulnerable countries in the Pacific and SIDS more generally at a global level. Ready access to credible, science-based climate forecast information together with requisite capacity and infrastructure to inform all aspects of policy development, planning and associated decision-making is a critical 'public good' requirement of key stakeholders in vulnerable countries. Indeed such use of climate forecasts also needs to be mainstreamed into institutional arrangements within different levels of government in order to underpin long-term sustainability of climate adaptation, disaster risk.

Seasonal to inter-annual climate variability has important practical, planning and policy implications for Pacific Island Countries (PICs). Acknowledging the importance of these implications and providing the basis for the introduction of dynamical climate prediction services to PICs, through CLIK® or Climate Toolkit for the Pacific islands.

CLIK[®] was developed by the **Korea-Pacific Islands Climate Prediction (ROK-PI CliPS) Project** and is based on the established CLIK (Climate Information toolkit) at APEC Climate Center (APCC). The system is developed to benefit the NMHSs in Cook Islands, FSM, Fiji, Kiribati, RMI, Nauru, Niue, Palau, PNG, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

CLIK[®] is a regionally tailored online tool for the Pacific Island Countries and Territories. It provides Pacific oriented information using multi model dynamical seasonal forecast based on different combinations of the users's preference. As the forecasts are combined with the best performance for their region of interest.

This Standard Operating Procedures (SOPs) will govern the process for generating a Dynamical Climate Forecast using the CLIK[®] Online Climate Prediction tool <u>http://clikp.sprep.org/</u>

The SOP will be administered by the Principal Scientific Officer in charge of Climate Prediction Services with overall supervision of the Director of Meteorology.

There is ample evidence to show that countries with advisory systems on the state of the natural environment and upcoming seasonal conditions, including any enhanced risks of severe weather, are in a better position to develop strategies to cope with the vagaries of climate, which will in time lead to more robust economies and improved social well-being.

1. Sign In to CLIK®

Create CLIK® Account

1 Sign In

 \square The user should create his/her account for using CLIK(P) system.

1.1 Create account

□ When the user connects to the CLIK() website, there are 'Login' and 'Register' icons on the upper right corner. Click the 'Register' icon (Fig. 1) to create a new user account.

☆ Home	Background
Prediction	The Pacific Islands region is one of the world's most vulnerable regions to climate change. The Pacific Island Countries and Territories (PICT) depend on their food production systems and fisheries, which are both expected to be largely affected by climate change. There is
i≡ My Page	also an expected increase in the intensity and frequency of tropical cyclones that have the potential to cause widespread destruction throughout this island region. These factors make it essential for these islands to adapt and prepare for the challenges posed by climate
CPU Usage	change. However, it is impossible to know which adaptive measures to take when there is a lack of high quality climate information to support planning and management.

(Fig 1) Register icon

□ Input the necessary user information to create an account and click 'Create account' button on the register page shown in (Fig. 2) below.

SIGN UP TO GET INSTANT ACCESS	
ID	
Enter ID	4
First Name	
Sunny	
Last Name	
Seuseu	
Email address	
sunnys@sprep.org	
Country	
Samoa	٣
Password	
	A
Retype Password	
Retype Password	
I agree with the terms	
Create account	
Have an account?	
Sign In	

(Fig 2) Register page

 \Box If the account is created successfully, a 'Success' message will be displayed as it is in (Fig 3). Also, the activation e-mail for the account is sent to the user's e-mail address.

	Canti Mendar Sailt for Sailt	_	
	SIGN UP TO GET INSTANT ACC	CESS	
	ID		
	sclow	A	
	First Name		
_	Sangcheol		
	Success It made a request to create an ad Please check your E-mail	ccount.	
	I agree with the terms		
	Create account		
	Have an account?		
	Sign In		
	©CLIKP ©Copyright APCC All rights rese	erved	

(Fig 3) Success notification window

 \Box (Fig 4) shows an example of the activation e-mail. The user can authenticate the new account by clicking the [LINK] in the e-mail. Then, the CLIK D login page will appear.

2. Activation of Account

[CLIKP] W	eb service Account Activitation		
보낸사람	apccclikp@gmail.com	기본 그룹	▼ +추가 ×수신거부
받는사람 🔸	sclow@apcc21.org <sclow@apcc21.org></sclow@apcc21.org>		0
보낸일시	2015/12/11 16:19		



Hi Sangcheol Kim, Your CLIK Pacific account has been created. Get started now. Please click this [LINK] to activate your account, and complete your registration. If you have any questions, reference our User Guide. Thanks,

Republic of Korea-Pacific Islands Climate Prediction Services Project - CLIK Pacific Team

The Secretary of the Pacific Regional Environment Programme (SPREP)

P. O Box 240, Apia, Samoa. (685) 21929. www.sprep.org

Email : at SPREP : clikpacific@sprep.org

or at APCC : clikpacific@apcc21.org



(Fig 4) Activation of user account

□ If the authentication is successful, the user will be able to login as shown in (Fig 5).

Cinde Information 1	K@ with the the back
SIGN IN TO	CONTINUE
sclow	۵
•••••	~ ≞
••••••	in
Log Need to S	¢ ₽
Need to S	∲n Sign Up? er Now

(Fig 5) Login page

□ After signing in, the user can edit his/her information by clicking the 'Edit' icon on the upper right corner (Fig 6).



□ In order to ensure the security of the account, the CLIK[®] system requires the user to verify their 'ID' and 'Password', as shown in (Fig 7), in order to edit his/her information.

Cinuts information Tool	it for the Pacific
Input Accou	unt Info
ID	
sclow	4
Password	
•••••	a
Apply	y

(Fig 7) User account verification

3. Modification of Account

☐ After making the necessary modifications to the user information, click 'Modify account' button to save the changes to the information. (Fig 8) shows an example.

Modify Account		
D		
sclow		4
First Name		
Sangcheol		
Last Name		
Kim		
Email address		
sclow@apcc21.org		
Country		
Korea, Republic of	~	
Password		
Password		
Retype Password		
Retype Password		۵
I agree with the terms		

Fig 8 – An example of modify user account

4. CLIK® Landing Page

 \square (Fig 9) shows the intro. page of the CLIK P system that provides basic information and user interface.



(Fig 9) CLIKP Landing Page

- 1. Home Move to the Intro. page
- 2. Prediction This menu provides MME prediction & verification
- 3. My Page Used to check user job list and processing results.

4. CPU Usage – Displays CPU usage information of the CLIK® system. It is automatically updated every 30 seconds.

5. Queue Status – Shows current number of image processing servers, number of processing jobs, number of queued jobs. It is automatically updated every 30 seconds.

6. User Job Result – Shows the status all of the user's jobs: Success, Failed, Processing, and Queued. It is also automatically updated every 30 sec.

5. Climate Prediction

□ The prediction menu provides MME prediction and verification and shows the results in the builtin map focused on the Pacific region.



(Fig 10) Prediction Screen

Prediction Tab – Options Menu

- 1. Lead Month Select lead month of MME Prediction.
- 2. When Select year and season. For example, you could select 2015 for the year and JFM (January-February-March) for the season.
- 3. Variables Select one variable for MME prediction (PREC: Precipitation, T850: 850hPa Temperature).
- 4. Methods Choose one of DMME and PMME that use simple composite method and Gaussian approximation, respectively.
- 5. Model Select model to be used in the prediction, Available models could change due to lead month, time frame, and other variables.
- 6. Predict & Verify Request "Prediction and Verification" with customized parameters due to user's choice.
- 7. Map Present the results of the "Prediction and Verification" on the map.
- 8. Move Countries Move latitude and longitude coordinates of the map to selected country.
- 9. Download This button supports the downloading of files; PNG, NC and ASCII of the result.

6. Result Details: Predict & Verify

□ Successful result of user's request will be presented in a Pacific oriented map.



(Fig 11) Result Details: Prediction Result

1. The first color bar shows the information that indicates the meaning of color for the prediction results.

2. The second color bar shows information indicating the meaning of color for the verification results.

3~5 allows the user to choose to display the (3) prediction result, (4) latitude/longitude grid, and (5) verification result. The corresponding box should be checked if the user would like to display that aspect, and unchecked if the user would like that aspect to not be displayed. The horizontal scroll bar adjusts the opacity of each display. This allows for the user to simultaneously view and compare the prediction and verification results, as well as personalize the image to fit their needs.

7. Result Details: Download

The user can download the result in various types of files such as image (PNG), binary data (NC), and text data (ASCII) files.

□ Especially, the downloaded image file precisely represents the appearance of the displayed results (lat/lon grid, transparency, etc.) to the end-user.



(Fig 12) Download button

8. My Page

□ 'My Page' allows users to check the list of jobs and their respective statuses.

ast Updated	At : 16:37:49 (auto refr	esh at about every 6	i0 seconds)			Auto Ref
10 •	records per page	3			Search:	
JOB ID 👻	USER ID	TYPE 0	STATE 0	RESULT DATA	CREATED 4	UPDATED
686	sclow	Prediction	success	download	2015-11-27 11:04:21	2015-11-27 11:12:19
685	sciow	Prediction	success	download	2015-11-27 10:46:53	2015-11-27 10:56:12
684	clikadmin	Prediction	success	download	2015-11-26 18:06:32	2015-11-26 18:14:05
683	clikadmin	Prediction	success	download	2015-11-26 16:33:58	2015-11-26 18:03:04
682	clikadmin	Prediction	success	download	2015-11-26 16:12:34	2015-11-26 18:01:59
681	clikadmin	Prediction	success	download	2015-11-26 13:51:46	2015-11-26 14:03:06
680	clikadmin	Prediction	success	download	2015-11-26 13:51:06	2015-11-26 13:56:10
679	clikadmin	Prediction	success	download	2015-11-26 13:44:56	2015-11-26 13:45:09
678	clikadmin	Prediction	success	download	2015-11-26 10:18:15	2015-11-26 10:23:21
699	ibkim	Prediction	SUCCESS	download	2015-11-24 14:53:01	2015-11-25 15:47:03

(Fig 13) My Page

- 1. The information on the jobs is automatically updated every 60 seconds, and shows the first created and the last updated time.
- 2. The status of 'Auto Refresh' indicates whether it is automatically updating or paused. It is automatically paused when searching something or when looking at other pages besides the first page.
- 3. Set the number of row shown in the jobs table.
- 4. Search jobs with keywords.
- 5. The table of jobs contains all of the information on the jobs created by the user. The user can sort the jobs according to different columns (ascending and descending) by clicking each column.
- 6. Indicates current page and provides the ability to view a specific page.
- □ 'User ID Column' is only displayed to the administrator.

□ If the user selects a prediction job that indicates a 'Success' state, a 'View Result' button will be displayed to the user. By clicking this button, the user can see the prediction results.

My Page

10 •	records per page								Search				
JOB ID 👻	USER ID	түре	STATE (RESULT DATA	0	c	REAT	ED	0		UPDA	TED	
686	sclow	Prediction	success	download		2015-:	11-27.1	1:04:21		20	15-11-27	11:12:19	
685	sclow	Prediction	success	download		2015-1	11-27 1	0:46:53		20	15-11-27	10:56:12	
684	clikadmin	Prediction	success	download		2015-1	11-26 1	8:06:32		20	15-11-26	18:14:05	
683	clikadmin	Prediction	success	download		2015-	11-26 1	6:33:58		20	15-11-26	18:03:04	
682	clikadmin	Prediction	success	download		2015-	11-26 1	6:12:34		20	15-11-26	18:01:59	
681	clikadmin	Prediction	success	download		2015-	11-26-1	3:51:46		20	15-11-26	14:03:06	
680	clikadmin	Prediction	success	download		2015-	11-26 1	3:51:06		20	15-11-26	13:56:10	
679	clikadmin	Prediction	success	dewnload		2015-	11-26-1	3:44:56		20	15-11-26	13:45:09	
678	clikadmin	Prediction	success	download		2015-	11-26 1	0:18:15		20	15-11-26	10:23:21	
677	jhkim	Prediction	success	download		2015-1	11-24 1	4:53:01		20	15-11-25	15:47:03	
Showing 1 to	o 10 of 126 entries				1	2	3	4	5		13	Next	

PREDICTION ID	153075	UPDATE At	2015-11-27 11:12:19
LEAD MONTH	3	YEAR / SEASON	2015 / 9
VARIABLE	T850	METHOD	GAUS
PROVIDERS		APCC, BCC, COLA, CWB, HM	IC,MGO,MSC_CANCM3,MSC_CANCM4,NASA,NCEP,PNU

(Fig 14) Job List - View Result

END.