



ROK-PI CLIPS

Tailored Seasonal Prediction
for
the Pacific Island Countries

*This project is funded by
the Government of Korea through
the Pacific Island Forum Secretariat (PIFS)
and is being implemented by APCC and SPREP*



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ROK-PI CliPS: Overview

Republic Of Korea-Pacific Islands Climate Prediction Services

- Objective:

“To strengthen the adaptive capacity of vulnerable communities to climate risks at the seasonal timescale.”

- Working Pillars:

One Dynamical Seasonal Forecasting System



Two Downscaled Prediction System



Three Development of the Application Guideline

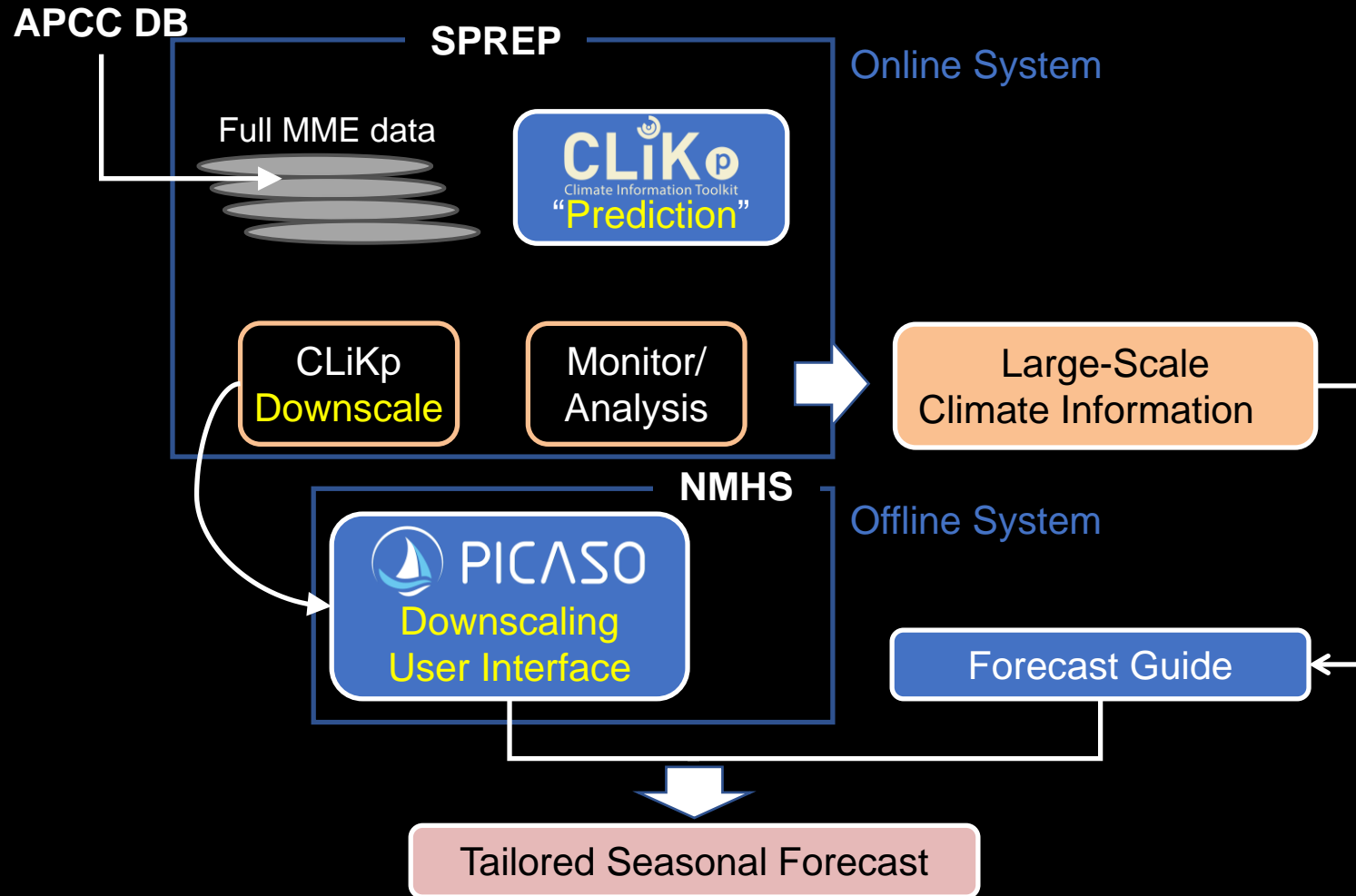
→ Forecast Guidance I & II

Four Training of the Climate Information Application

→ Training & Young Scientist Support Program

ROK-PI CliPS: Structure

Republic Of Korea-Pacific Islands Climate Prediction Services



ROK-PI CLiPS: Timeline

Republic Of Korea-Pacific Islands Climate Prediction Services

JUL
2015

1st Training and
Inception Workshop
[Tonga]



FEB
2016

CLiKp Officially
Announced and
Released



JUL
2016

2nd Training
Workshop
[Cook Islands]

ROK-PI CliPS: Timeline

Republic Of Korea-Pacific Islands Climate Prediction Services

SEP
2016

APCC & SPREP
Project Workshop
[South Korea]



May
2017

Young Scientist
Support Program
[South Korea]

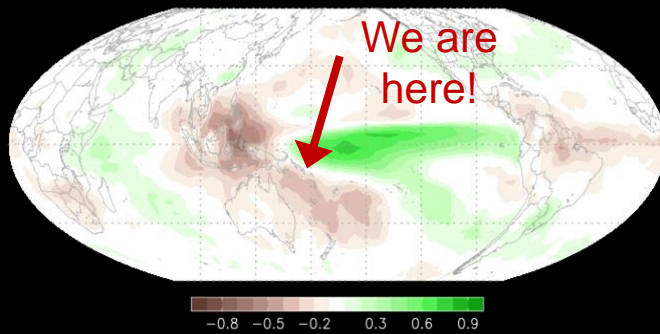


Key contributors...

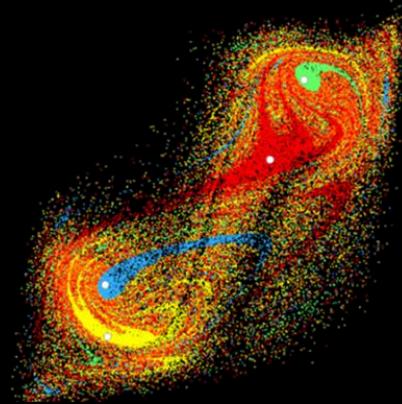


The gaps...

When ENSO impact is marginal?



Literally, the gaps...



Nonlinearity

Climate change



The needs...

easy to use

tailored & customized

Good Forecast

too much information

water

drought

climate

forecast

cold

warm

APEC Climate Center

weather

climate

forecast

warm

climate change

sea level rise

forecast

W. Kim

capacity building

cyclones

weather

rainfall

gust

forecast

cold

tropical cyclone

climate

forecast

weather

warm

Picasso

Taro

Taro



PICASO

Pacific Island Countries Advanced Seasonal Outlook

Movie Clip: PICASO Trailer

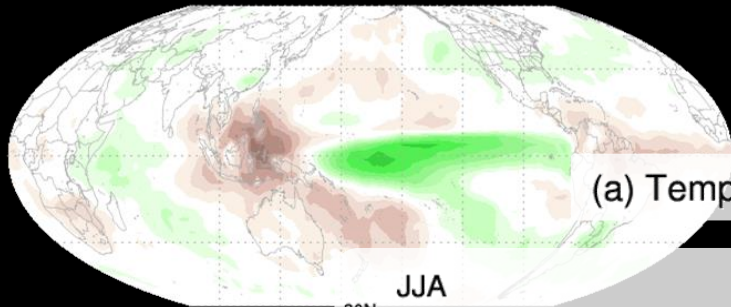


A full-page background image showing a vibrant sunset or sunrise. The sun is a bright, glowing orb on the right side of the horizon, casting a long, shimmering reflection on the dark water below. The sky is filled with layers of clouds, some of which are illuminated with a golden-yellow light from the sun. Two small, dark silhouettes of airplanes are visible in the upper left and center of the sky. The overall color palette is dominated by warm tones of orange, red, and yellow, contrasting with the deep blues and blacks of the sky and water.

Good Forecast

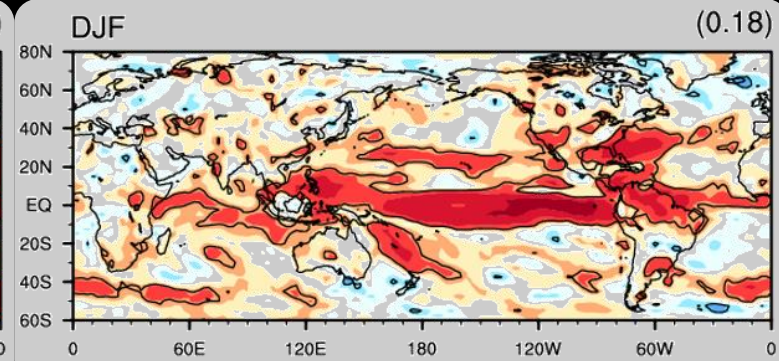
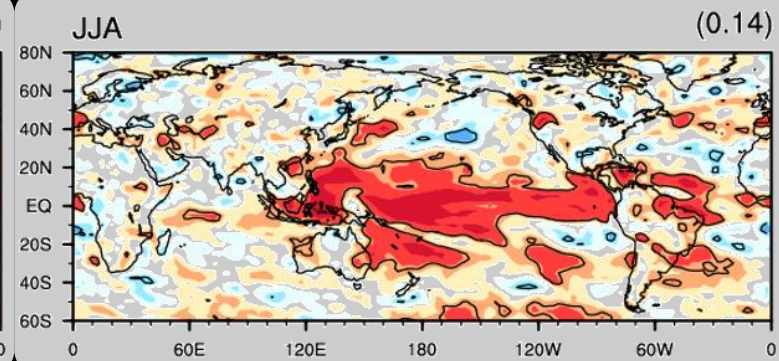
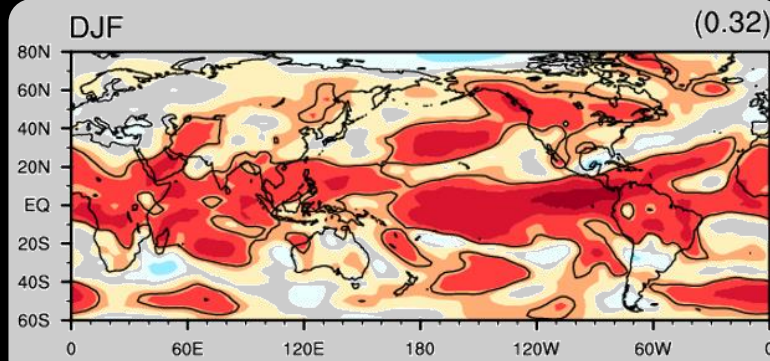
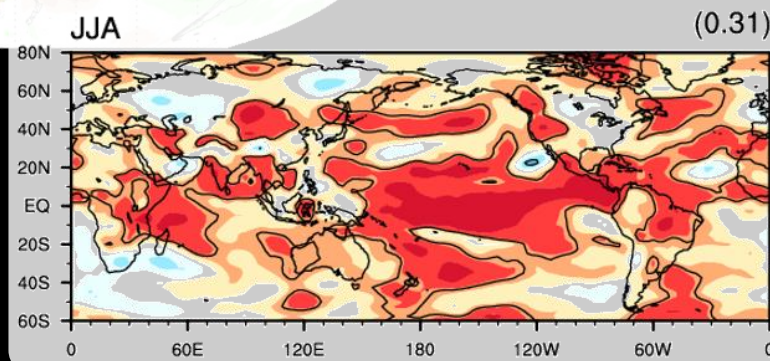
Use of the dynamic APCC Multi-Model Ensemble forecast

DSP: Predictable \neq Practice

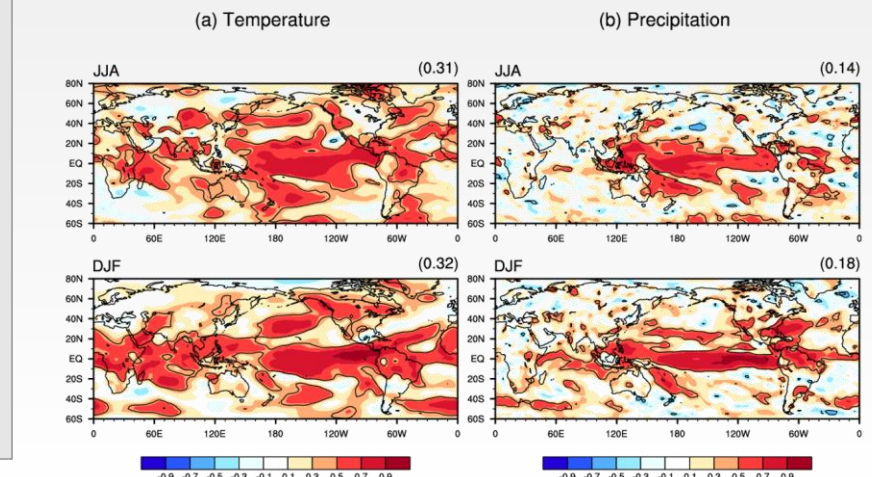
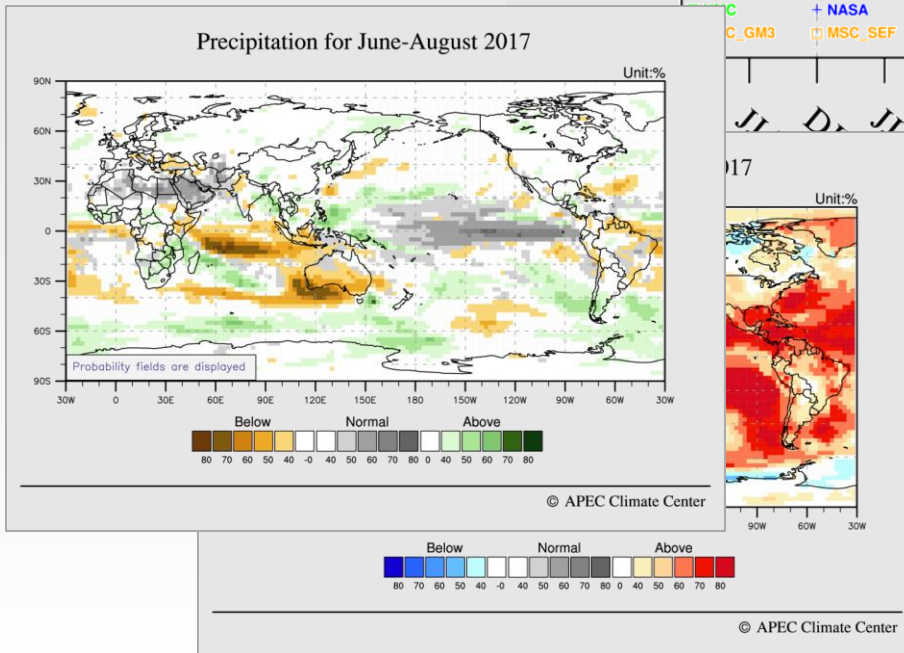
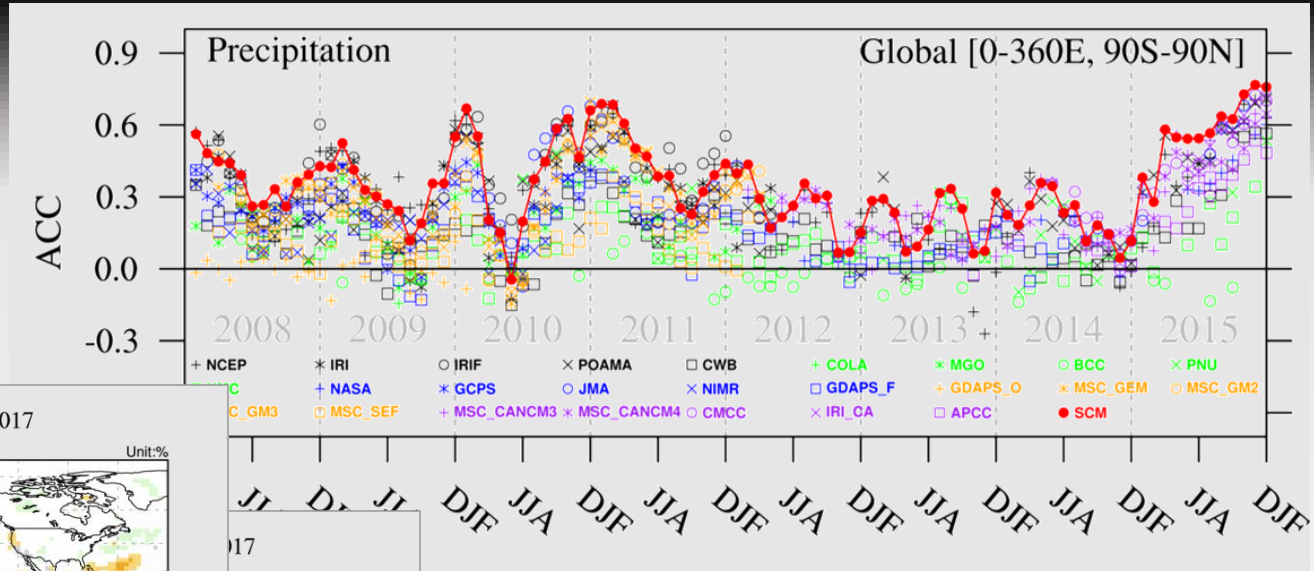
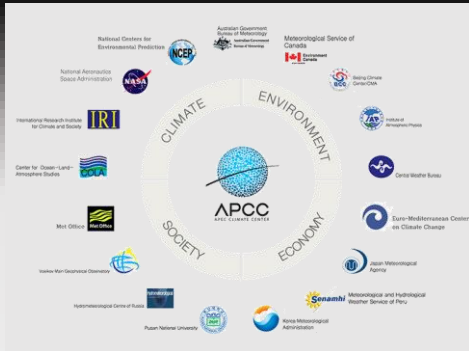


(a) Temperature

(b) Precipitation



APCC MME forecast

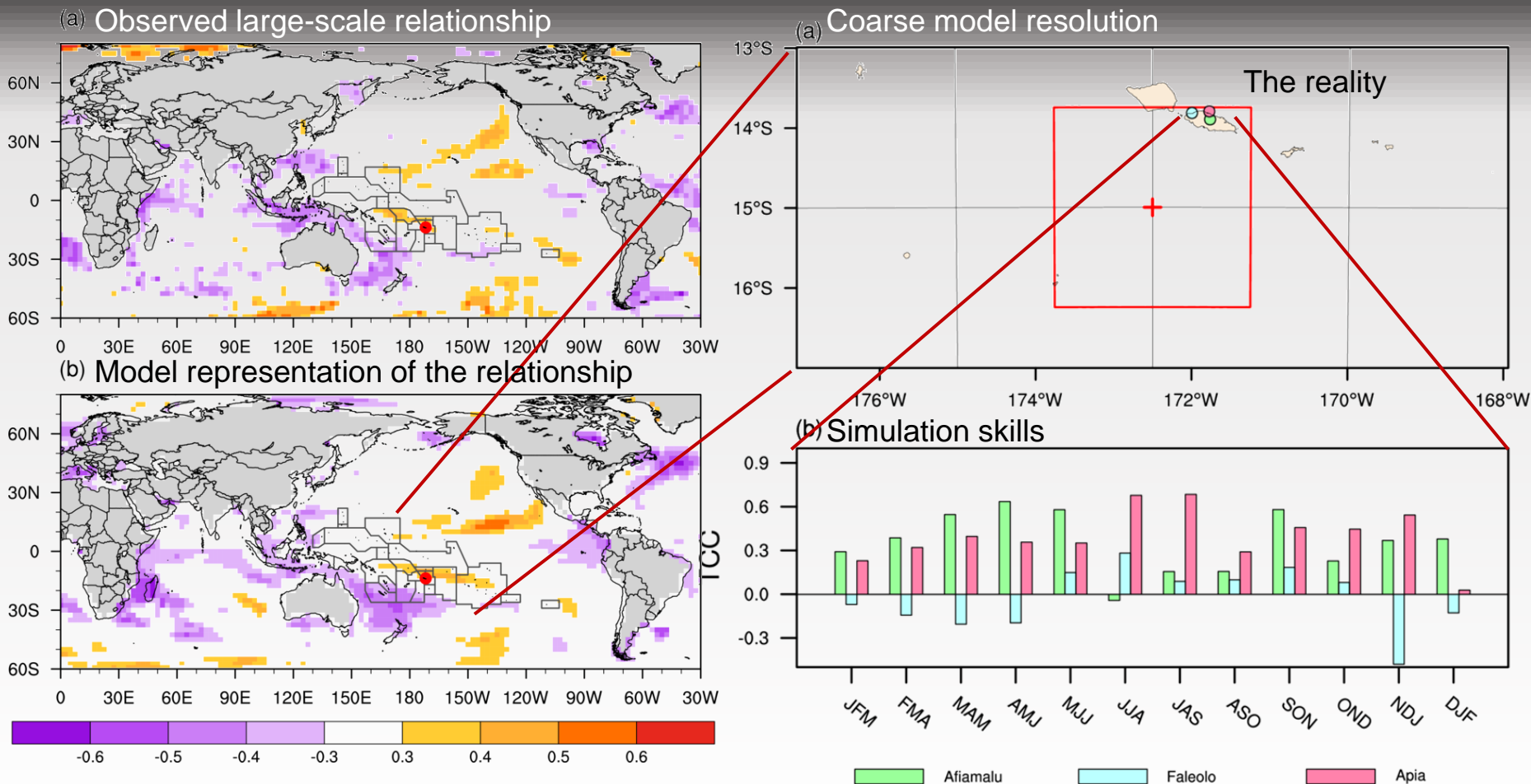




Tailored & Customized

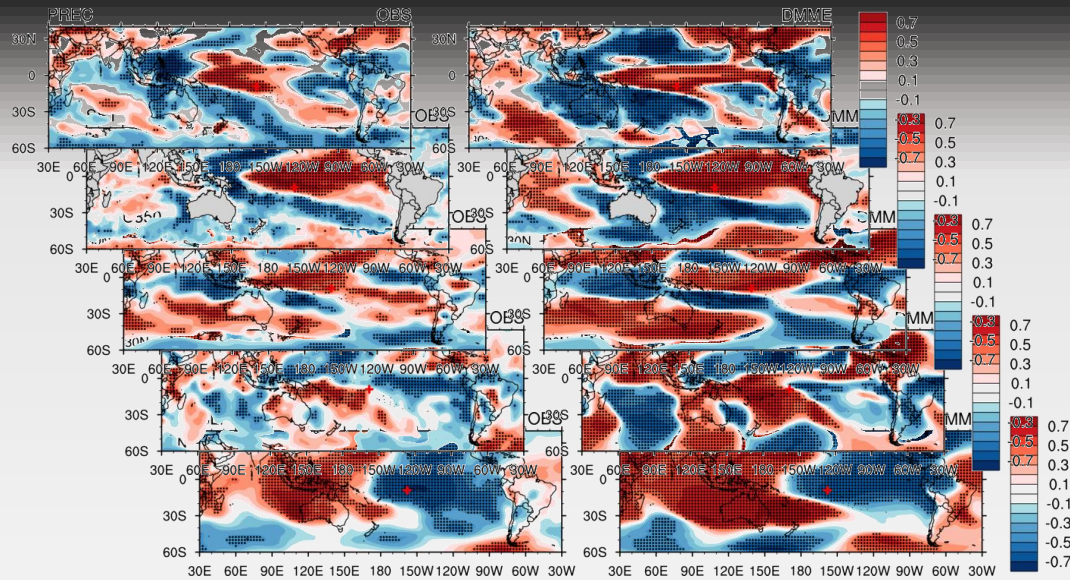
Jointly identified downscaling strategy

Tailored for your location

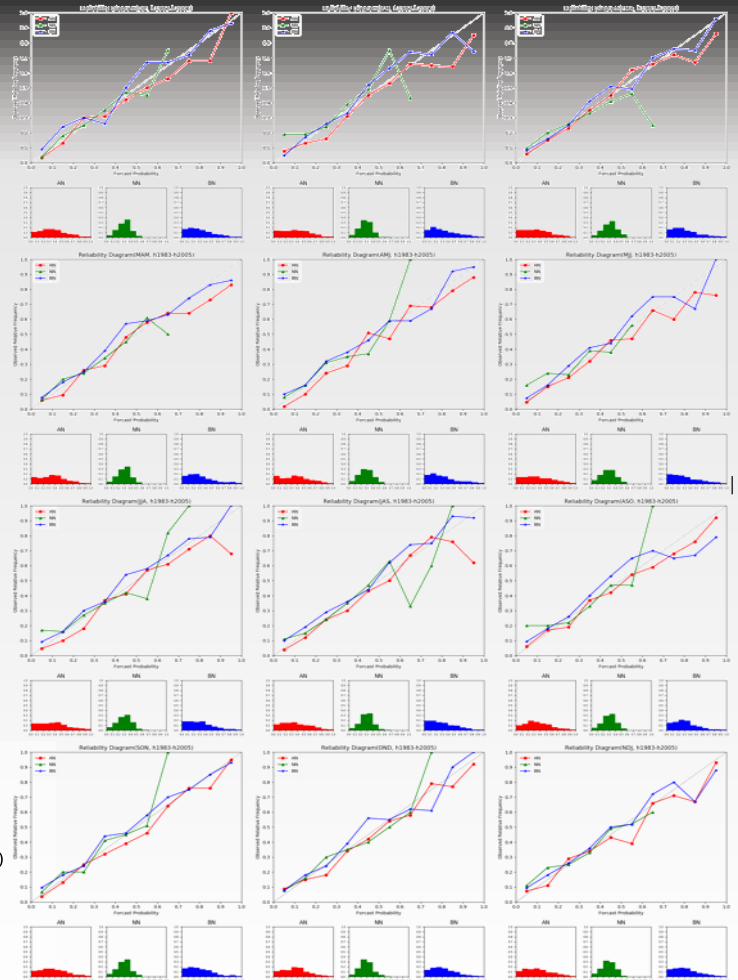


Tailoring methodology

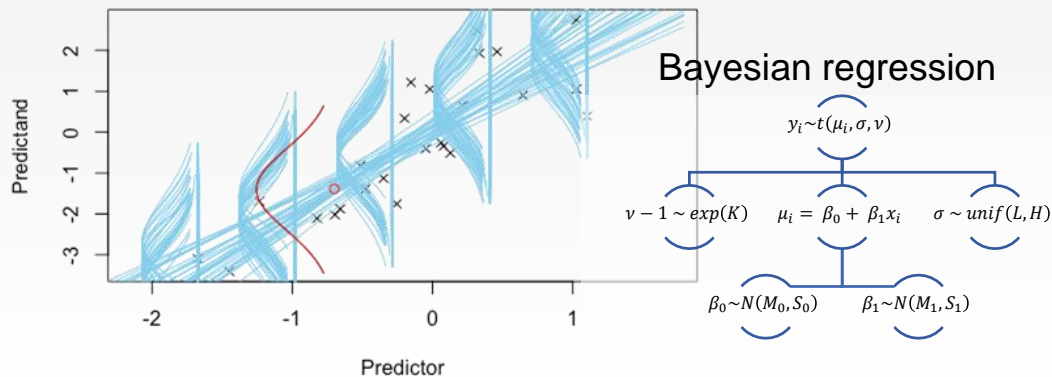
Jointly identified climate predictors



Stability verification



Hybrid downscaling technique





Easy to Use

Client-based portable UX interface

Solomon Islands 2005 JAS

Map of Solomon Islands with Precipitation Forecasts:

- Taro Islands: 38% (Below Normal), 41% (Above Normal)
- Munda: 40% (Below Normal), 41% (Above Normal)
- Honiara/Henderson: 37% (Below Normal), 31% (Above Normal)
- Kira Kira: 37% (Below Normal), 23% (Above Normal)
- Auki: 23% (Below Normal), 44% (Above Normal)
- Santa Cruz: 31% (Below Normal), 9% (Above Normal)

Auki Forecast Details:

The 2005 JAS precipitation in Auki (91507) is predicted to be **BELOW NORMAL** (44%); **ABOVE** 31%, **NORMAL** 25%, **BELOW** 44% around 188.9 mm/mon.

The prediction skill at Auki (91507) is high.

Recent forecasts (Auki)

Month	Below Normal (%)	Above Normal (%)	Normal (%)
ASO 2004	100	100	100
SON	100	100	100
OND	100	100	100
NDJ	100	100	100
DIF	100	100	100
JFM 2005	100	100	100
FMA	100	100	100
MAM	100	100	100
AMJ	100	100	100
MJJ	100	100	100
JJA	100	100	100
JAS	100	100	100


Tercile Probability

Tercile	Probability (%)
BELOW	44%
NORMAL	25%
ABOVE	31%

Verification Scores

Score: 30.9





PICASO

Solomon Islands 2005 JAS

Outlook

Details

CO-PICs

Data

Guide

Auki

The 2005 JAS precipitation in Auki (91507) is predicted to be **BELOW NORMAL** (44% ABOVE 31%, NORMAL 25%, BELOW 44%) around 188.9 mm/moon.

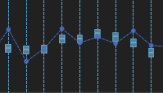
The prediction skill at Auki (91507) is high.



HSS 0.7

LEPS 30.9%

Probability distribution (JAS, 2005) at Auki



Threshold :

Upper :


Lower :

Observation Forecast

Prediction/Observation Timeline Auki, Solomon Islands (JAS, 1983-2005)



Prediction/Observation Timeline (JAS, 2006-2017)



Training Scores

Name	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	DJF
HSS	0.2	-	0.2	0.5	0.5	0.2	0.3	0.3	0.2	0.3	0.3	0
LEPS	4.6	-	12.8	17	20.9	20.7	23.5	8.1	10	22.9	17.9	8.9

Validation Scores

Name	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	DJF
HSS	-	-	-	-	-	0.4	0.7	0.4	-	-	-	-
LEPS	-	-	-	-	-	28.8	30.9	23.6	-	-	-	-

Training History (Prediction/Observation)

Year	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	DJF
2005	-/+	-/+	0/+	+/+	+/-	0/-	-/-	+/-	+/-	+/+	+/+	+/+
2004	0/+	-/+	0/+	-/+	+/+	0/0	-/-	0/0	-/+	-/+	0/+	0/+
2003	+/+	0/+	0/+	+/+	0/+	+/-	-/-	+/-	-/+	-/+	0/+	0/+
2002	+/-	-/+	0/+	-/0	+/+	+/+	+/+	+/+	0/+	-/+	+/+	0/+
2001	+/+	+/+	0/+	+/+	+/+	-/+	-/-	-/0	+/-	+/+	+/+	+/+
2000	+/+	+/+	+/+	+/+	0/-	0/-	-/-	-/+	+/+	+/+	+/+	+/+
1999	+/+	+/+	+/+	+/+	0/0	0/-	-/-	-/+	+/+	+/+	+/+	+/+
1998	+/+	0/+	0/+	-/0	-/-	0/-	0/0	+/+	+/+	+/+	+/+	+/+
1997	+/-	-/+	0/0	-/+	-/+	-/0	-/-	-/+	-/+	+/-	+/+	+/+
1996	+/-	0/+	+/+	+/+	+/+	-/0	0/0	+/0	+/+	+/+	0/+	0/+
1995	-/+	0/+	-/+	-/0	0/0	+/+	0/+	-/+	+/-	+/-	+/-	0/+

Validation History (Prediction/Observation)

Year	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	DJF
2017						+/-	+/-	+/-				
2016						+/-	+/-	+/-				
2015						+/0	+/+	+/0				
2014						+/-	+/-	+/-				
2013						-/-	-/-	-/-				
2012						-/-	-/-	-/-				
2011						-/-	-/-	-/-				
2010						+/+	+/0	+/0				
2009						+/0	+/+	+/0				
2008						-/+	+/+	+/+				
2007						+/-	+/-	+/-				

Name	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ	TOTAL
HSS	0.14	0.2	0.14	0.57	0.5	0.03	0	0.32	0.14	0.28	0.09	0.11	0.21
LEPS	33%	35%	27%	31%	35%	22%	35%	20%	22%	38%	38%	23%	0%

Name	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	M
HSS	0.14	0.2	0.14	0.57	0.5	0.03	0	0.32	0.14	0.28	0.09	0
LEPS	33%	35%	27%	31%	35%	22%	35%	20%	22%	38%	38%	2

Name	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2005	0/0	0/+	+/0	+/0	+/-	+/-	0/+	+/-0	0/+	0/+	0/+/-	+/-
2004	0/+	0/+	0/0	0/0	0/0	0/+	0/+	0/+	0/+	0/+	0/+/-	0/+
2003	0/0	+/-	0/0	0/0	+/-	0/+0	-/-	0/+	+/-	0/+	0/+	0/+
2002	0/0	0/0	0/0	0/0	+/-	-/-	0/0	0/0	0/+	0/+	0/0	0/+
2001	+/-	0/+0	0/0	0/+	0/+0	-/-	0/+0	0/0	0/+	0/+0	+/-	0/+
2000	+/-	0/+	+/-	+/-	0/0	+/-	0/0	-/-	+/-	-/-	+/-	0/+
1999	0/0	0/+	+/-	+/-	0/0	0/0	0/+	+/-	0/+	0/+	0/+0	+0
1998	0/-	0/0	0/+0	0/-	-/-	0/0	0/+0	0/-	0/0	0/+	0/0	0/+
1997	0/0	0/0	0/0	0/0	0/+	0/+	-/-	0/0	0/+	-/-	0/0	0/+
1996	0/+	0/+0	0/+	-/-	0/+0	0/+	0/+0	0/+	0/0	0/+0	0/+	+/-
1995	0/+	0/-	-/-	-/-	0/0	0/+	0/-	0/+	0/-	+/-	0/+	-/-
1994	0/0	+/-	-/-	0/0	0/0	0/+	0/+	0/+	0/0	0/0	0/0	+0

Name	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	C
2016	0/-0	0/-	+0	0/0	-/-	+/+	0/+	+0/0	0/+	+/-	0
2015	0/+1	0/+1	+0	0/+	0/0	+0/+	+0/+	0/0	+0/+	0/0	0
2014	0/+0	+/-	0/0	0/+0	+/-	0/+0	+/-	0/+1	+/-	+/-	0
2013	0/+0	0/0	0/0	0/0	-/-	0/0	0/0	0/0	0/0	0/0	0
2012	+/-	0/+0	0/0	0/+1	0/+0	-/-	0/+0	0/0	0/+1	0/+0	0
2011	+/-	0/0	+/-	-/-	0/+0	+/-	0/0	-/-	+/-	-/-	0
2010	0/+0	0/+1	+/-	0/+0	0/0	0/+0	0/+1	+/-	0/+0	0/0	0
2009	0/-	0/+0	0/0	0/-	-/-	0/-	0/+0	0/+0	0/-	0/-0	0
2008	0/+1	0/0	0/0	0/0	0/+1	0/0	-/-	0/0	0/-1	-/-	0
2007	0/+1	0/+0	0/+1	-/-	0/+0	0/+1	0/+0	0/+1	0/0	0/+0	0
2006	0/+1	0/-	-/-	-/-	0/0	0/+1	0/-	0/+1	0/-	+1	0

PICASO user experience

Outlook

✓ climate at a glance

- Tercile/Recent Forecasts
- Verification Scores
- Natural Language Outlook

Details

✓ for experts

- Interactive Probability Scale
- Historical Forecast/Observation
- Training/Validation Scores/Table

CO-PICs

✓ large-scale view

- ENSO/SST outlook
- Temperature/Precipitation
- Validation and Verification

Data

✓ manage your data

- Interactive Data Management
- Import and Export

Guide

✓ look beyond

- Detailed Application Guide
- Climate Summary

Settings

✓ optimize the system

- Themes and Styles
- Export as PDF/PNG



PICASO

Pacific Island Countries Advanced Seasonal Outlook

Movie Clip: PICASO Demonstration



ROK-PI CLIPS

Tailored Seasonal Prediction
for
the Pacific Island Countries

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and is being implemented by APCC and SPREP*



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Special thanks to...

Local Experts

NMHS Officers & YSSP Participants

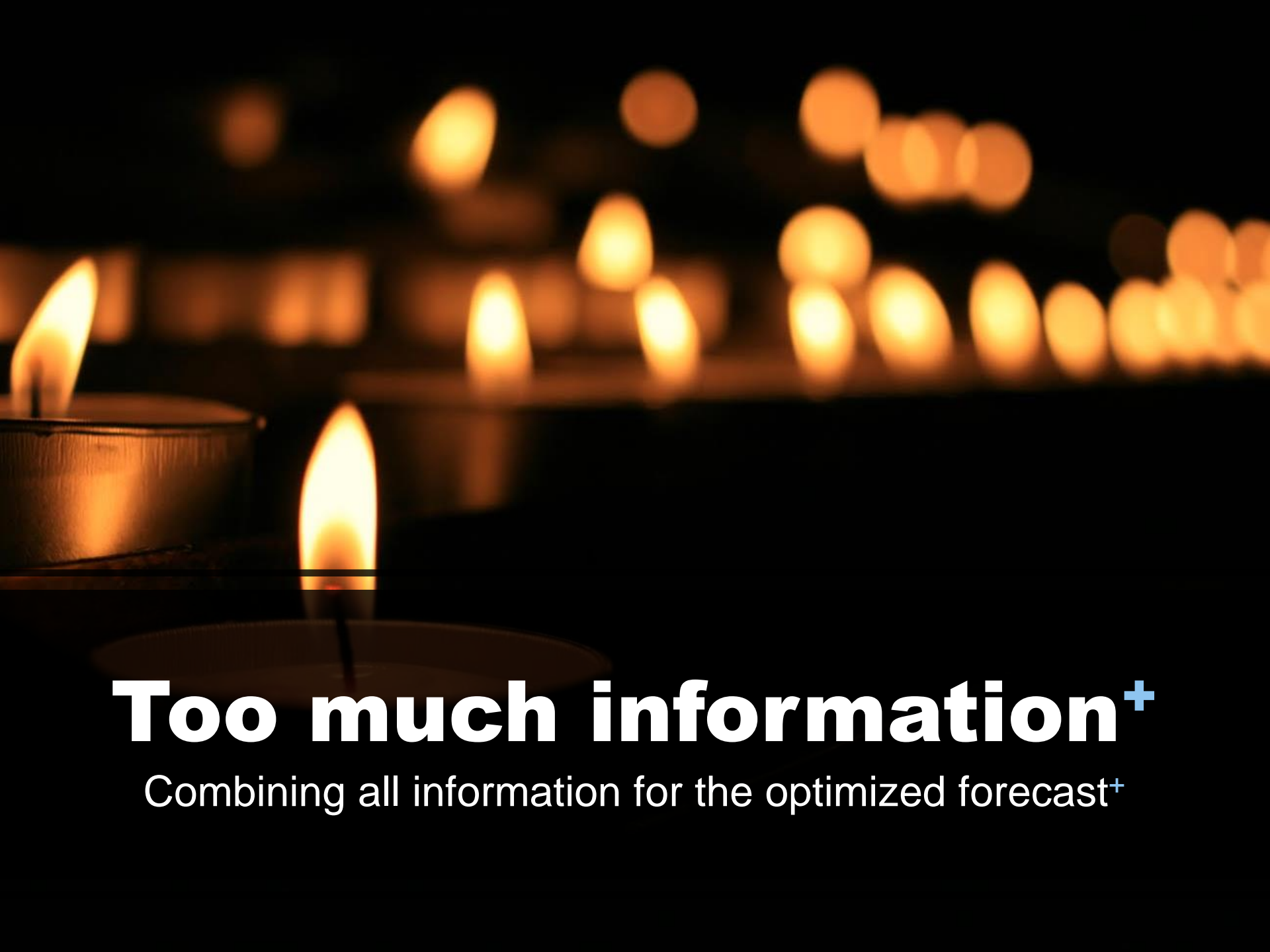
Technical Supports

Cuuva (Software)

2C Solution (Algorithm)

You want more? We have



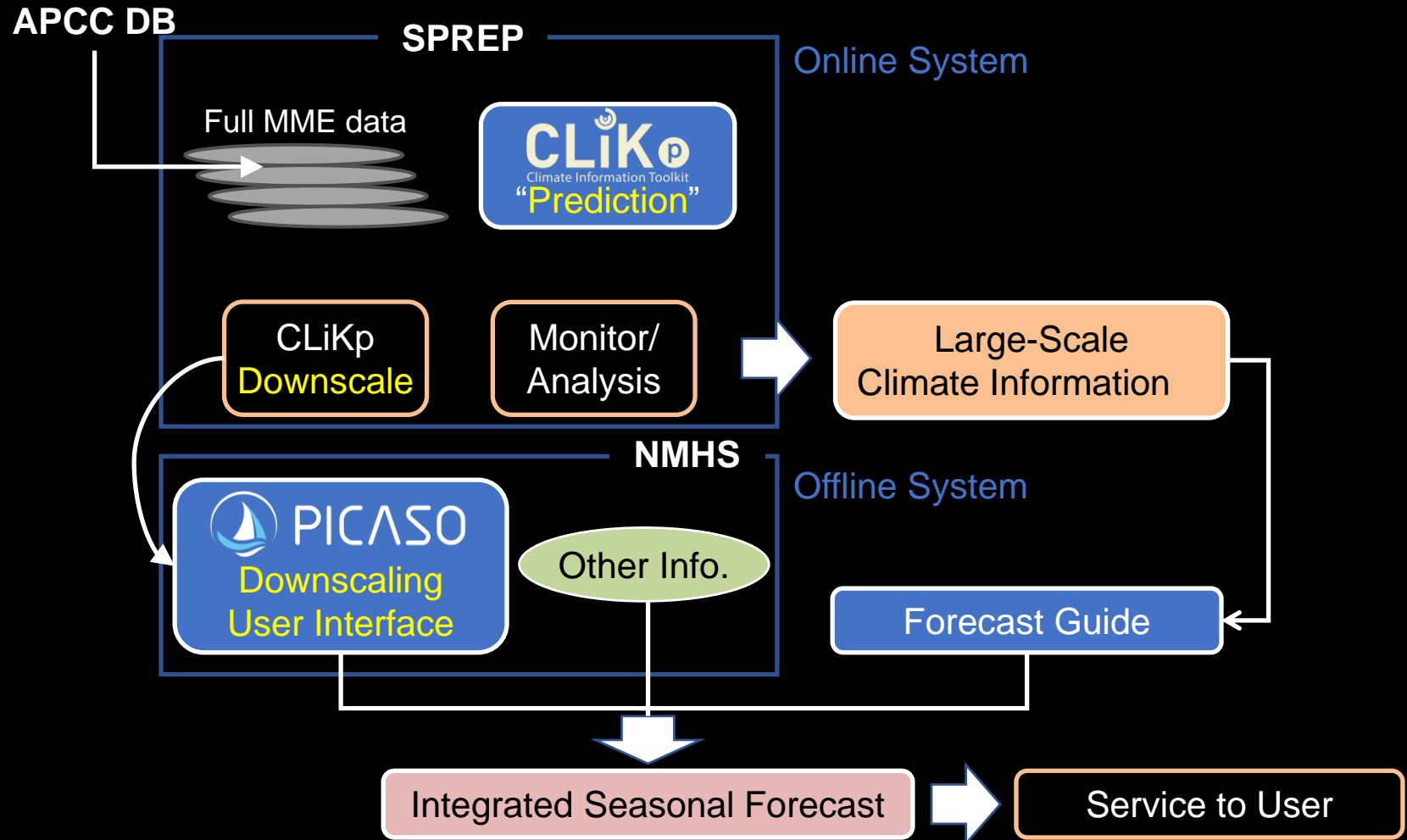


Too much information⁺

Combining all information for the optimized forecast⁺

ROK-PI CliPS: Structure⁺

Republic Of Korea-Pacific Islands Climate Prediction Service



Optimal consensus forecast

