

Workshop on  
SMART Informatics for Sustainability  
21-23, March 2018



ASEAN Next 2018:  
*Rising STI Networking for Innovative ASEAN*

# Towards Sustainable Climate Information Services

21 March 2018



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Climate Prediction Department  
APEC Climate Center

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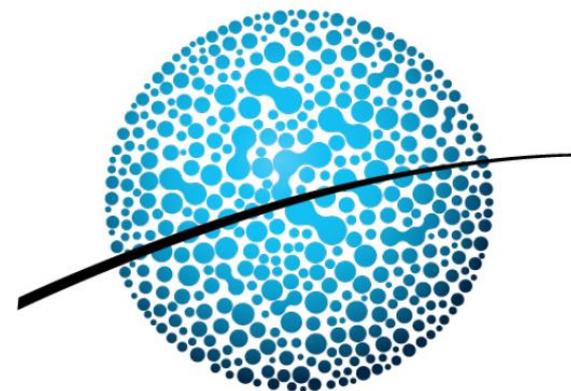
APCC

I. APEC Climate Center

II. APCC Climate Information Products and Services

III. CLimate Information toolKit(CLIK)

IV. Towards Sustainable Climate Information Services



**APCC**  
APEC CLIMATE CENTER



# Mission of APCC

- To enhance **the socio-economic well-being of member economies** by utilizing up-to-date scientific knowledge and applying innovative climate prediction techniques through



## Climate Prediction

APCC produces value-added, reliable, and real-time climate prediction information and provides the APEC region with it.



## Interdisciplinary Research

APCC leads in the development of interdisciplinary research and application techniques at the climate-environment-society nexus.



## Climate Information Services

APCC strives to be a key climate database center to distribute climate data, information products, and related tools.



## International Cooperation

APCC guides developing countries from the APEC region toward building their own capacity to produce reliable climate prediction information.

# Climate Prediction

APCC

- The APEC Climate Center **collects climate forecast information** from 17 leading climate forecasting centers and institutes in 11 countries.
- These forecasts are **combined using the multi-model ensemble (MME)** scheme and the high quality climate forecast information is disseminated to APEC member economies and Pacific Islands through APCC's website.

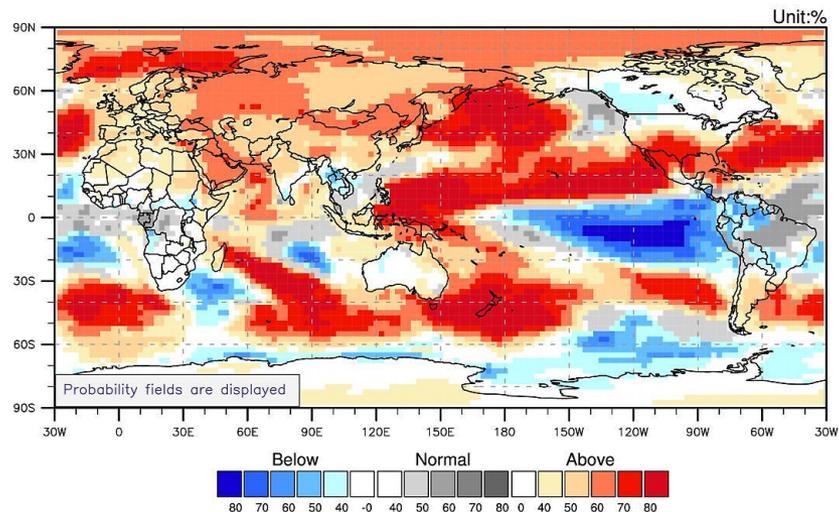


# Climate Prediction

## MME forecast products include:

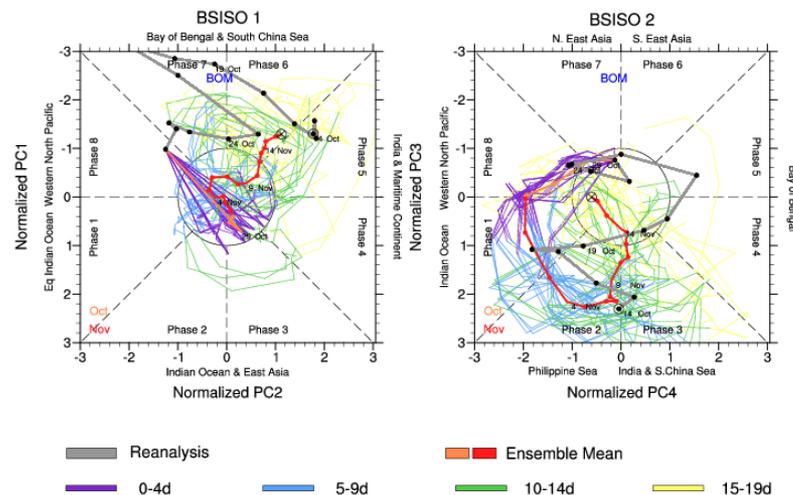
- Monthly 3-month and 6-month lead climate prediction information based on multi-model ensemble system
- BSISO Forecast: Scaling up from seasonal to intraseasonal forecasting

Temperature at 2m for March-May 2018



© APEC Climate Center

BSISO Forecast for 29Oct2017-17Nov2017



© APEC Climate Center

# Climate Information Services



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Research

Climate Information Services

International Cooperation

Media

Notices

About us



## CLIMATE INFORMATION SERVICES

Seasonal Forecast

BSISO Forecast

Climate Monitoring

CLIK

Data Service

CLIPS

### FORECASTS

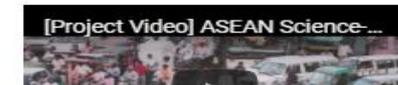


### NOTICE



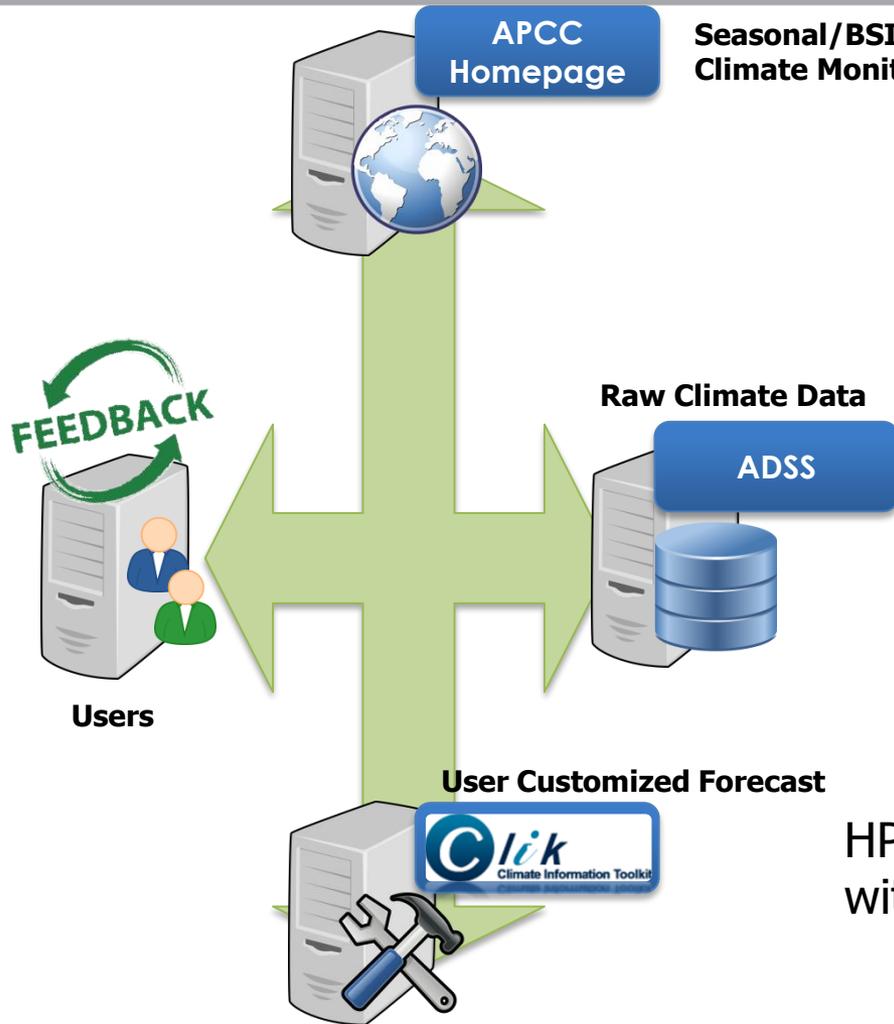
APCC News	Employment	APCC Seminars
Notice	The APEC Climate Center Received t...	02.28
Notice	APCC Climate Center Signed an MO...	02.23

### P.R.



# Climate Information Service Architecture

APCC



HPC (High Performance Computing)  
with Mass Climate Data Storage @ APCC

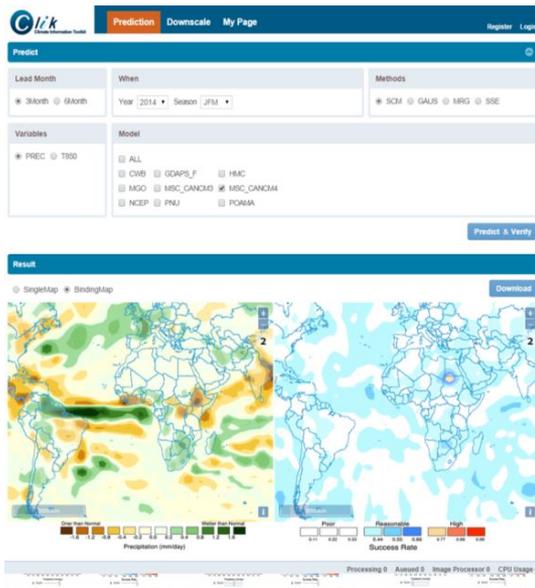
*3.47GHz \* 1,260 Cores  
3 Peta Bytes (3,000 Tera Bytes) Storage*

# CLIK Overview

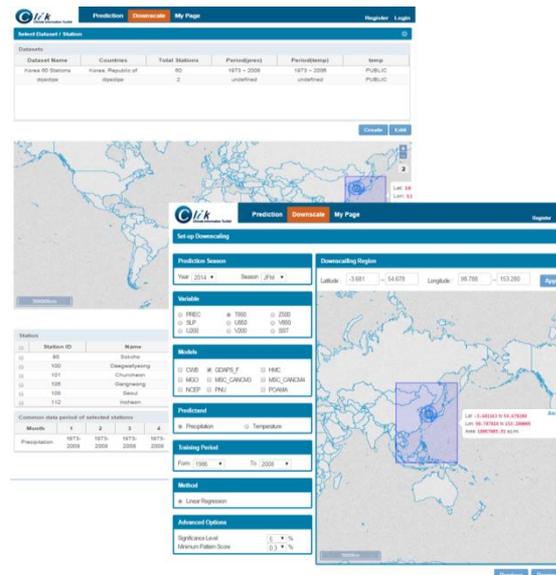
<http://clik.apcc21.org>

## ✓ CLimate Information toolKit (CLIK) :

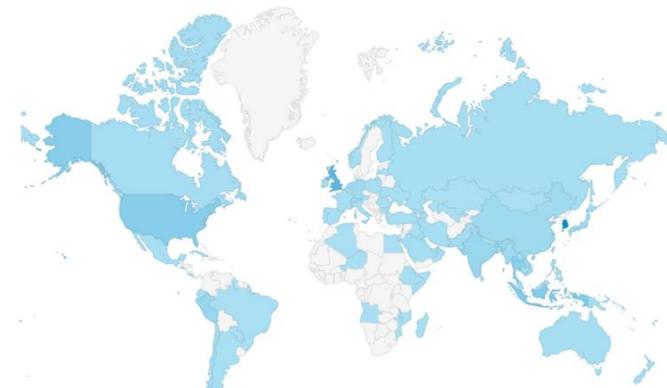
- [Online] Web based Climate Prediction Toolkit
- [Customized] Produce customized Prediction/Verification to freely select climate models, variables, areas, and analysis techniques
- [MME] Produce the state-of-art Multi-Model Ensemble climate prediction
- [Lightweight] Precomputation, Optimizing map & image size



MME Prediction



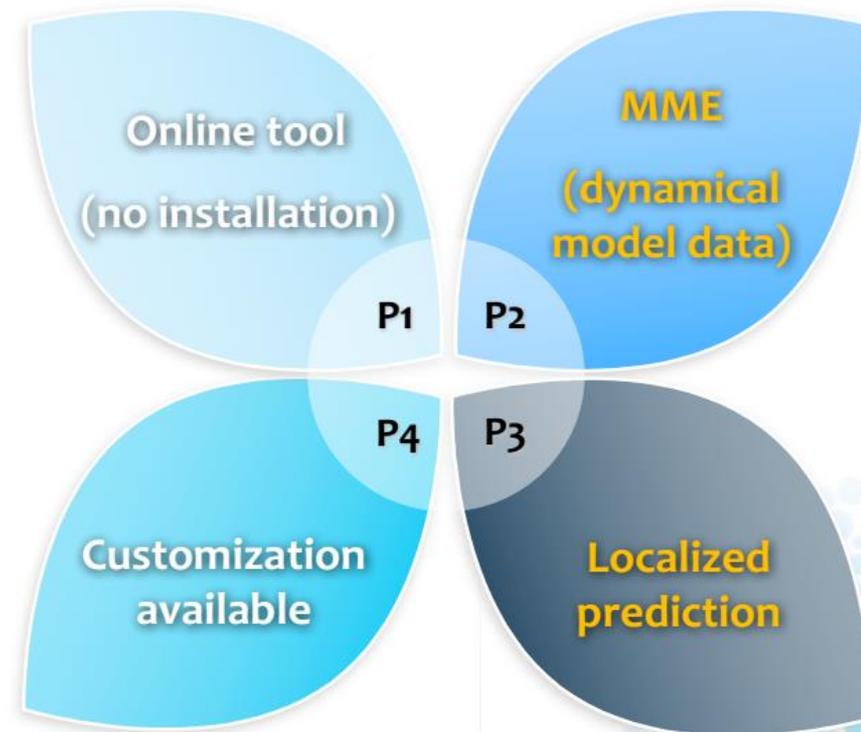
Downscale



Countries using CLIK  
(16 Mar. 2016~ 16 Mar. 2018)

# Target Users

- Target users are, but are **not limited to NMHS staffs** of developing countries having basic understanding of climate and meteorology.
- **CLIK was designed and developed based on the analysis of potential users**
  1. Limitation of manpower and computing resources
  2. Desire for utilizing **dynamical forecast data**
  3. Direct benefit on **regional community**
  4. Thirsty for Capacity building: Interests in learning science and technology and high satisfaction from participating in the model developing process







# End of development of CLIK

APCC

- Through the development of sector-specific forecast techniques tailored to target regions and countries, APCC will service customized climate change information and support technology development on sectoral climate risk management.
- **OK, our work is done successfully. Now the user will use it.**
  - 1. Let's go on vacation.
  - 2. Let's develop yet another climate service.







# CLIK for Pacific

(Pacific Islands Climate Advanced Seasonal Outlook)



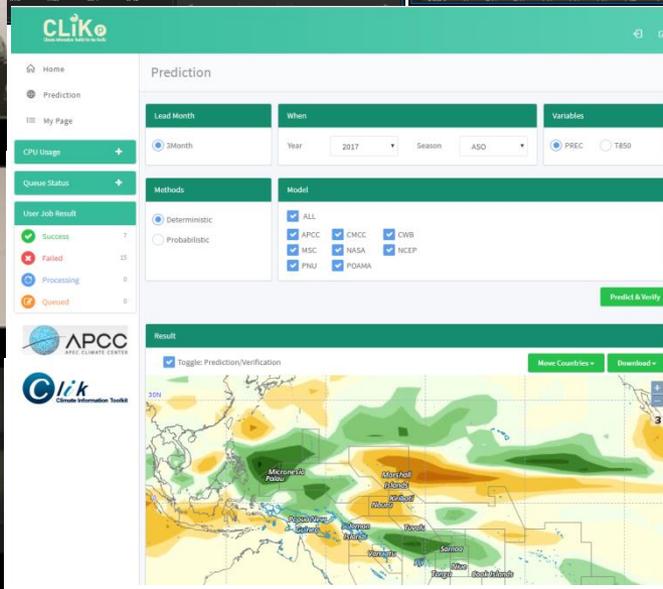
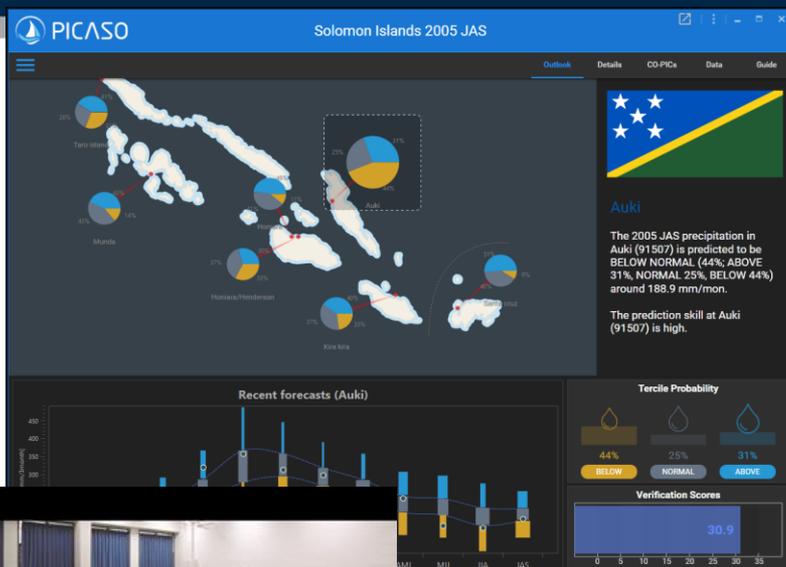
- Republic of Korea-Pacific Islands Climate Prediction Project (ROK-PI CLIPS)

<b>Implementing Agencies</b>	APEC Climate Center (APCC) Secretariat of the Pacific Regional Environment Program (SPREP)	
<b>Implementing Countries</b>	Cook Islands Federated States of Micronesia Fiji Kiribati Republic of the Marshall Islands Nauru Niue	Palau Papua New Guinea Samoa Solomon Islands Tonga Tuvalu Vanuatu
<b>CLIKP</b>	CLIKP is a web-based dynamical multi-model ensemble (MME) seasonal prediction tool optimized to the Pacific Island region	
<b>PICASO</b>	PICASO is a PC-based seasonal prediction software tailored for the Pacific Island region	
<b>Application Guideline/Country-Based Handbooks</b>	Application Guideline and the Country-Based Handbooks are a guideline to understand the local climate drivers and to interpret the tailored dynamical climate predictions	
<b>Capacity Building</b>	Capacity building increased the ability of Pacific Island climate officers to generate high quality climate forecast information for their respective countries	



# CLIK for Pacific

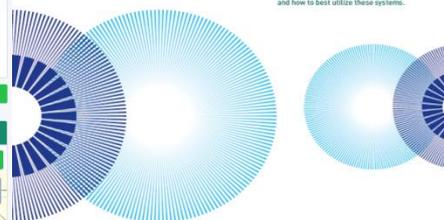
(Pacific Islands Climate Advanced Seasonal Outlook)



<https://youtu.be/TYI-IOkYQ>

## Application Guideline

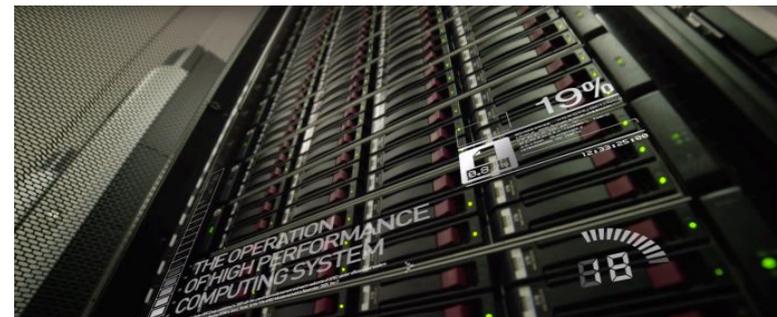
Explaining the scientific background of developing the Climate Information Toolkit for the Pacific (CLIKo) and the Pacific Island Countries Advanced Seasonal Outlook (PICASO) and how to best utilize these systems.



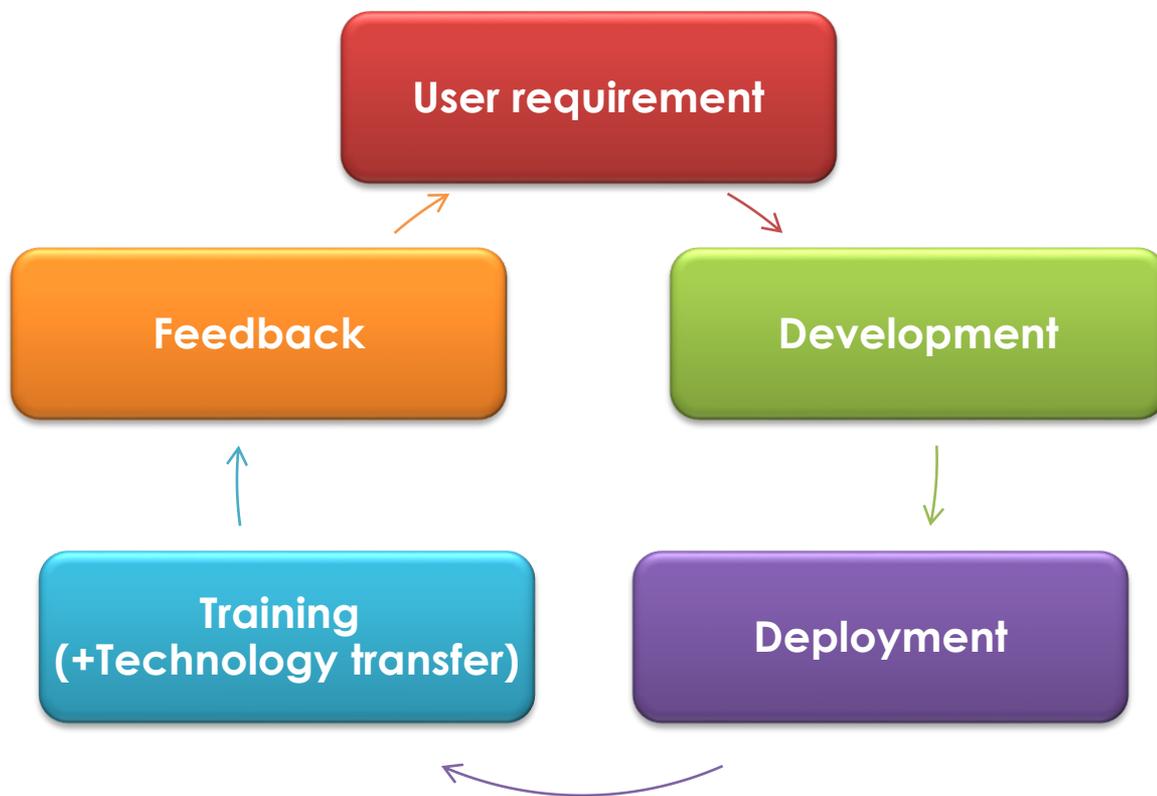
# Future Directions of CLIK

## ✓ Tailored, Customized “Information” for YOU

- **[Method]**
  - Provide additional methods on MME prediction and verification feature
  - Enhance computing mechanism through in-house HPC
- **[Localization]**
  - Develop and Improve region-specific statistical downscaling prediction
- **[Supporting program]**
  - Improve technical transfer methods
  - Enhance Training Workshop and Tutorial program
  - Continuously survey on user requirements
  - Enhancing CLIK based on user feedback



# Towards Sustainable Climate Information Services



For successful establishment of sustainable climate services, it is important **not to end with the one-off development** of the services, but to **make the climate service a living thing** through the continuous collection of user feedback

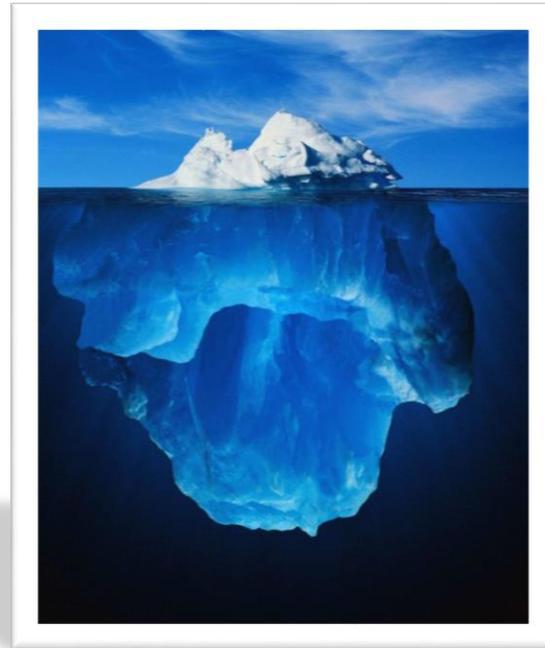


# Best Practice

- Movie Clip
  - About best practice of sustainable climate information services

# Thank You !!

APCC



For question and feedback, please contact

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[tank@apcc21.org](mailto:tank@apcc21.org)