



WORLD
METEOROLOGICAL
ORGANIZATION



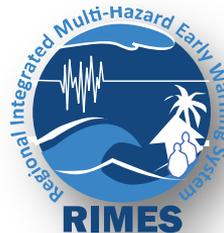
WMO WORKSHOP ON GLOBAL REVIEW OF REGIONAL CLIMATE OUTLOOK FORUMS

5-7 September, 2017
Guayaquil, Ecuador

National Climate Outlook Forum (NCOF): scaling down RCOF outlooks for decision making at national scale

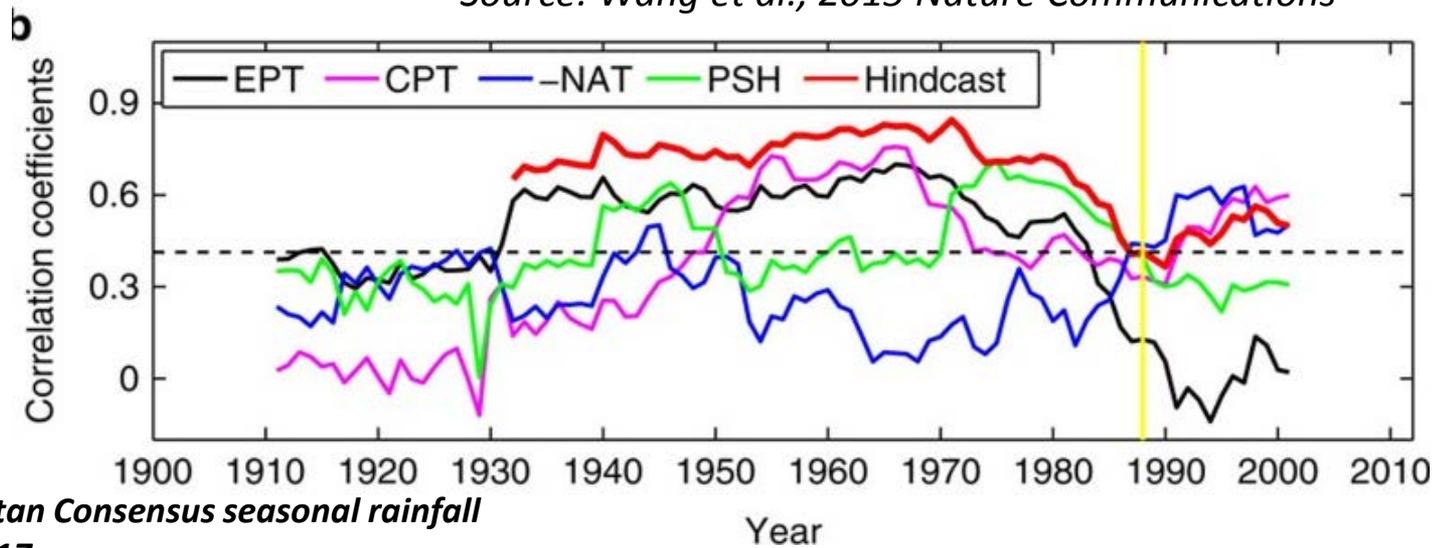
G Srinivasan

Regional Integrated Multi-hazard Early-warning System (RIMES)

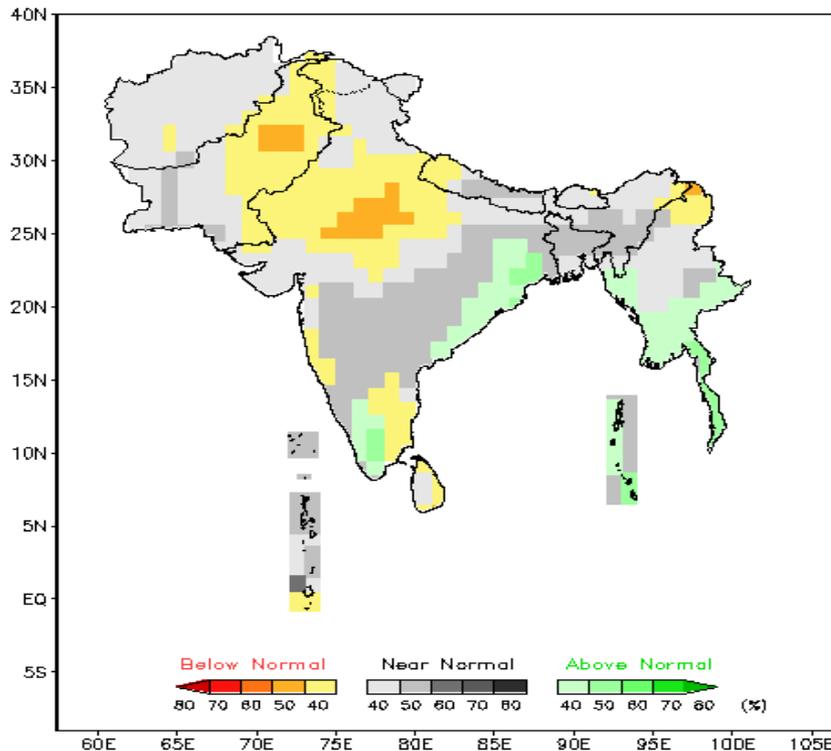


Source: Wang et al., 2015 Nature Communications

Indian Region
Summer
Monsoon
Rainfall
Predictability



SASCOF 10, Thimpu, Bhutan Consensus seasonal rainfall outlook SW Monsoon 2017



How to make such products useful to decision makers?

Generally, in a decision context climate is one factor among many!!

Myanmar Dry zone farmers

Irrigating a 4 acre farm needs operating a pump for a whole day that consumes 2 gallons of fuel

- In an above normal “wet season” paddy crop requires only 2-3 irrigations
- In a below normal “dry-season”, it has to be irrigated about 15 times
- Normal – 9 times.



SASCOF consensus Outlook

Actual situation during the season

Winter 2015 SASCOF 7: Consensus forecast indicated Normal to **above normal rainfall as likely** during the 2015 Northeast monsoon season (October - December) over southern parts of South Asia including **southeast peninsular India, Sri Lanka and Maldives.**

Many parts of Tamil Nadu in southern India and Sri Lanka experienced **heavy rainfall spells with some locations getting flooded** during this season.

Winter 2016 SASCOF 9: **below normal rainfall was likely** over some areas of southeast peninsular India, Sri Lanka and Maldives.

North East Monsoon rainfall over most of the southern peninsular states of India **was deficient (-20% to 59% below their normal)**. Sri Lanka also experienced **deficient rainfall** season during Oct-Dec, 2016 (-23%)
Later prolonged drought (WFP, 2017)

Global

Regional

National

Global Producing
Centers

Regional Climate
Centers

National Met
Hydrological Services

RCOFs

NCOFs

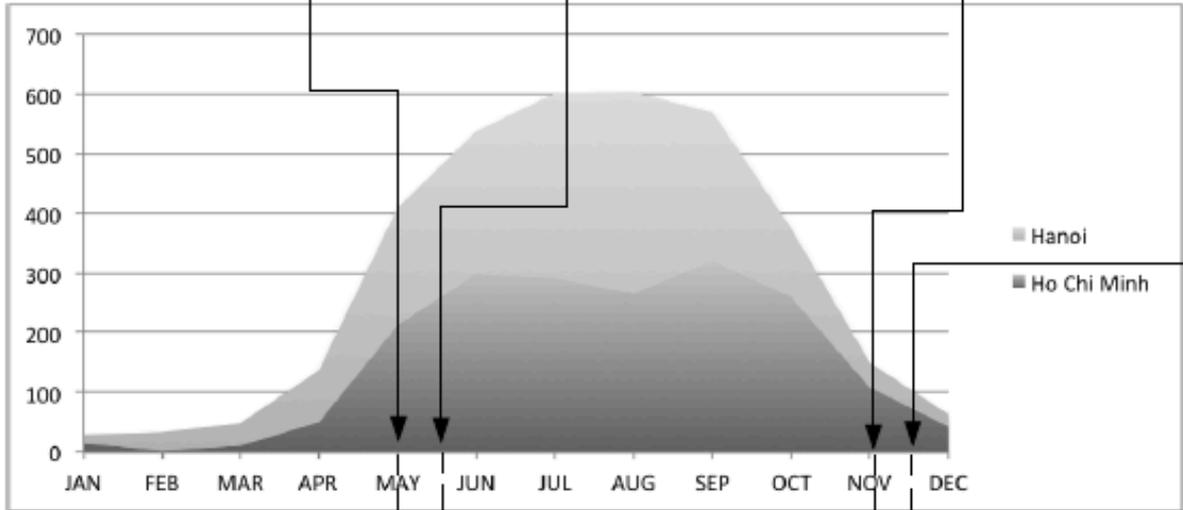
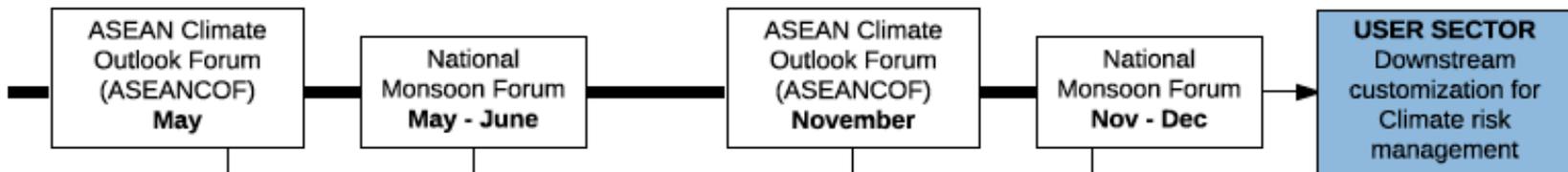
Sector Users

Awareness, training
and advocacy

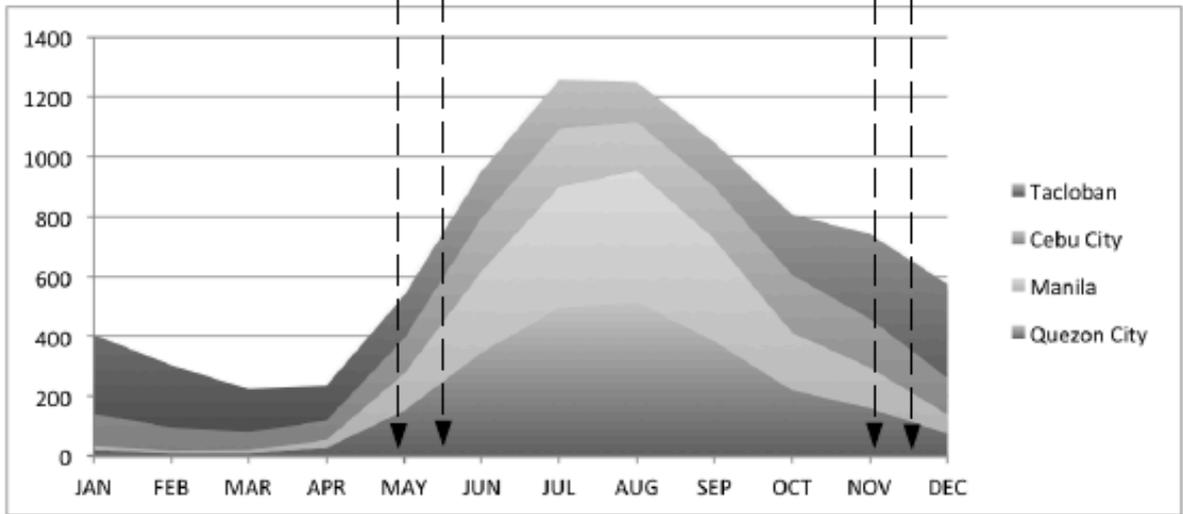
e.g Farmer's climate field
schools



Farmers Field Schools for
CRM, Tamil Nadu, India



VIETNAM



PHILIPPINES

Monthly Rainfall (mm)



EC-FAO Food Security Programme



Linking Information
and Decision-Making
to Improve Food Security

*In selected countries of the Greater Mekong Sub-region –
Cambodia, Lao PDR and Myanmar
FAO-RAP, Bangkok/RIMES implemented the Climate Component
–“Enhancing Utility of Seasonal Climate Forecasts and
Managing Climate Change Risks”*

***Activity 1: Monsoon Forum: enhancing the utility
of seasonal climate forecasts***

Activity 2: Managing climate change risks

Phase I: Started August 2010 to September 2011
Final evaluation completed by September 2012

Evaluation

Support to the EU Programme on Linking Information and Decision-Making to Improve Food Security for Selected Greater Mekong Sub- Regional Countries - GCP /RAS/247/EC

- In the field of climate information the major **achievement of the project was in bringing together the users and producers of the information in the Monsoon Forums**. Potentially this process could lead to tailored applications of climate forecasts.
- In terms of **linking information and decision making, the climate work had the most potential impact, but this is still as yet unrealized**.

NCOFs

- Ensure that climate information products, including their uncertainties and limitations, are **regularly communicated**, interpreted and understood by users;
- Discuss user views, and based on their **feedback** to make this climate information accessible, user-friendly and applicable;
- Provide an **institutional platform for understanding risks and opportunities** of past, current and future climate information; and for inter-agency coordination of policies, sectoral plans and programs linked to potential impacts of hydro-meteorological hazards;
- Evolve a **culture of working together** through joint climate information interpretation sessions for managing risks in various climate-sensitive sectors, like agriculture, irrigation, disaster risk reduction and health.

NMHSs: Products, Services and capacities

Climate Sensitive Sectors

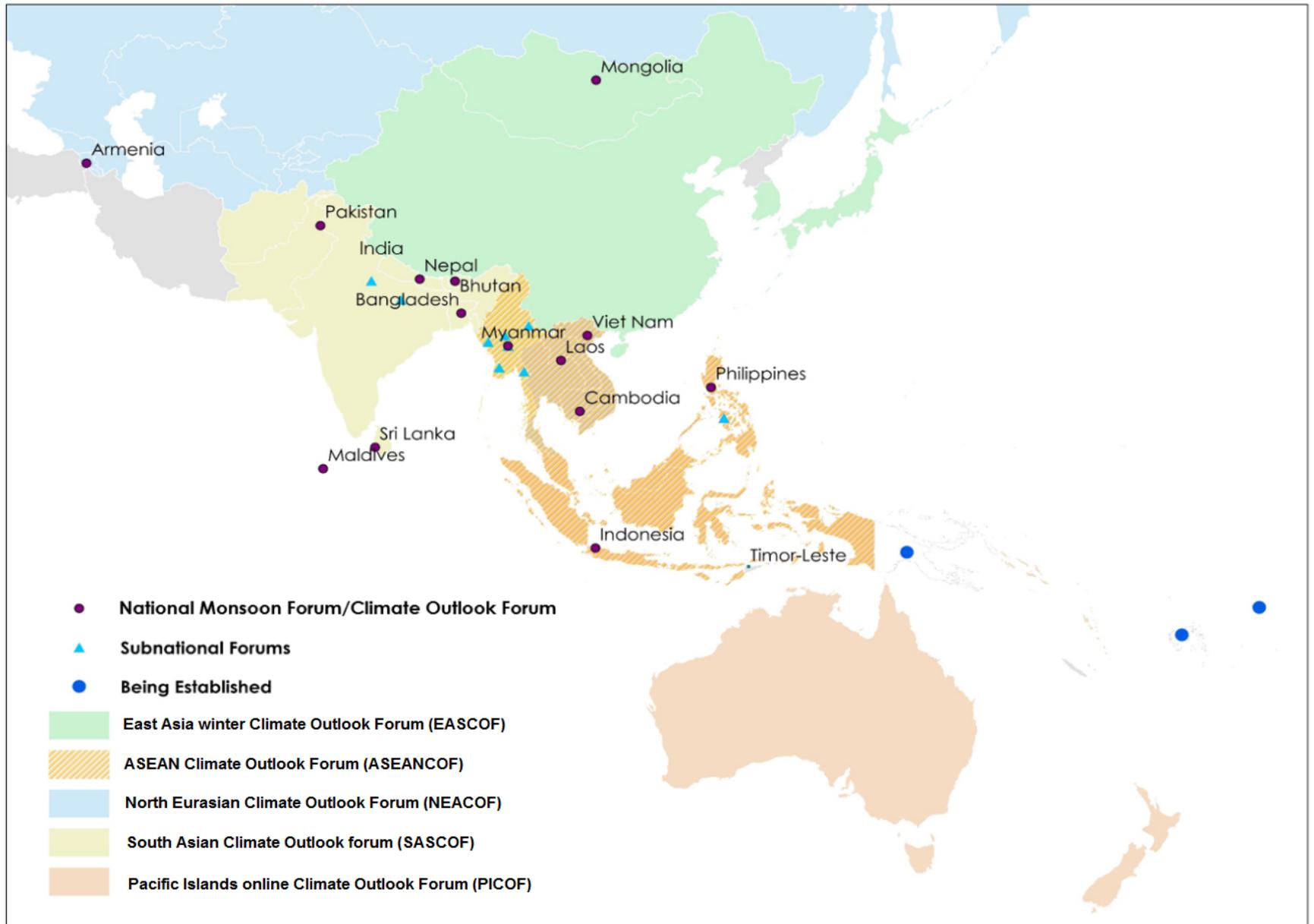
National & Sub-national Institutional Profiles

Identification of Capacities and gaps in climate information application

User Needs Assessments

**Strategy
Pilot testing
Evaluations
Scaling up
Feedback & improvements Cycle**

National Climate Outlook Forums connected to RCOFs



Source: ESCAP, forthcoming Asia-Pacific Disaster Report, 2017

Sri Lanka – water sector

- The Department of Irrigation (DoI) and Department of Agriculture (DoAg) are regular and active participants in the Monsoon Fora organized by the DoM
- Irrigation Department of Sri Lanka received this message in **October 2015** at the **South Asian Climate Outlook Forum**. These forecasts were reviewed during the **Monsoon Forum organized by DoM**





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Ce projet a été réalisé avec l'appui de



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada



WMO Global Framework for Climate Services (GFCS) project

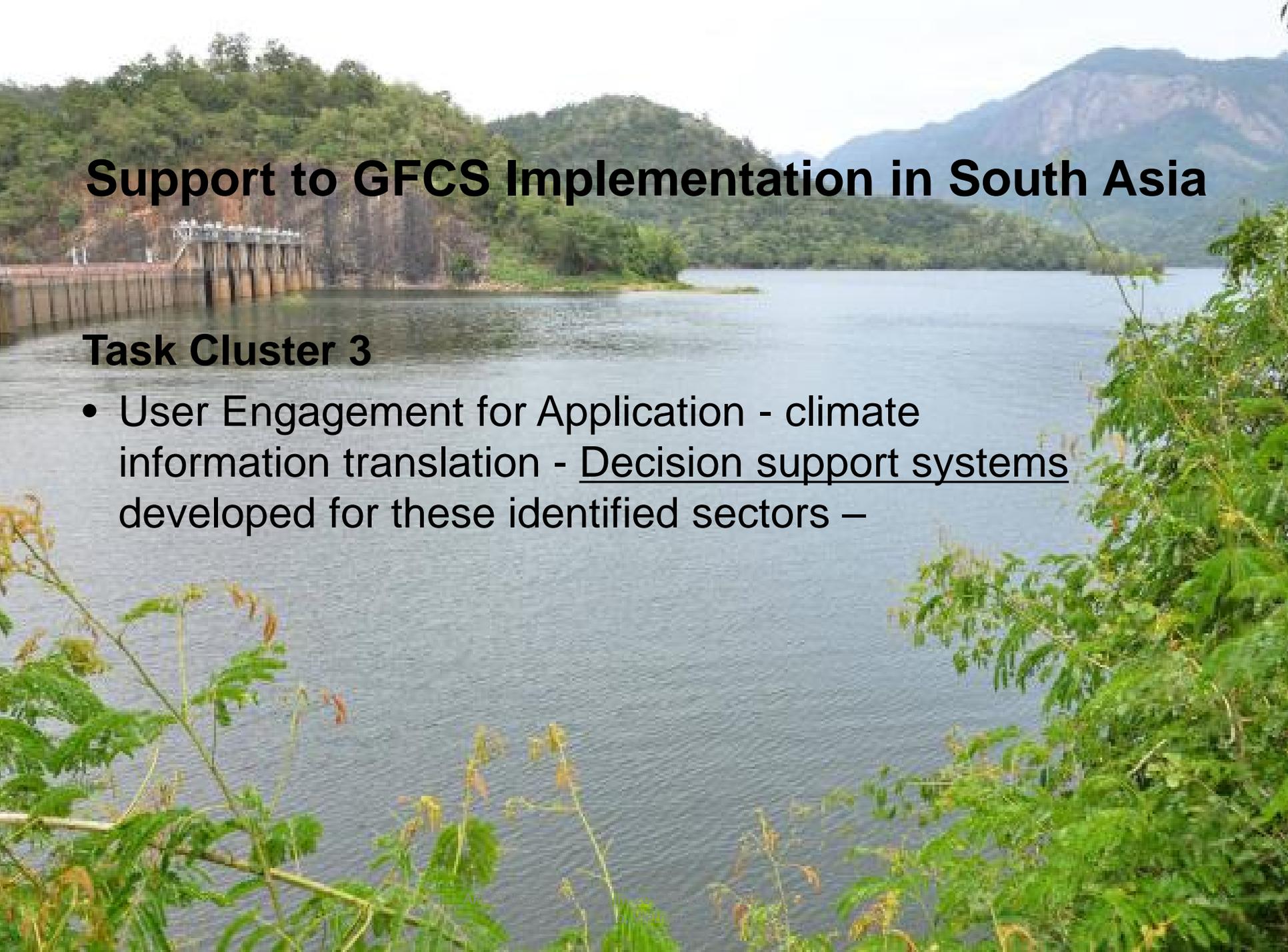
Support to GFCS Implementation in South Asia in cooperation with NMHSs

Since Feb 2016

Ending March 2018



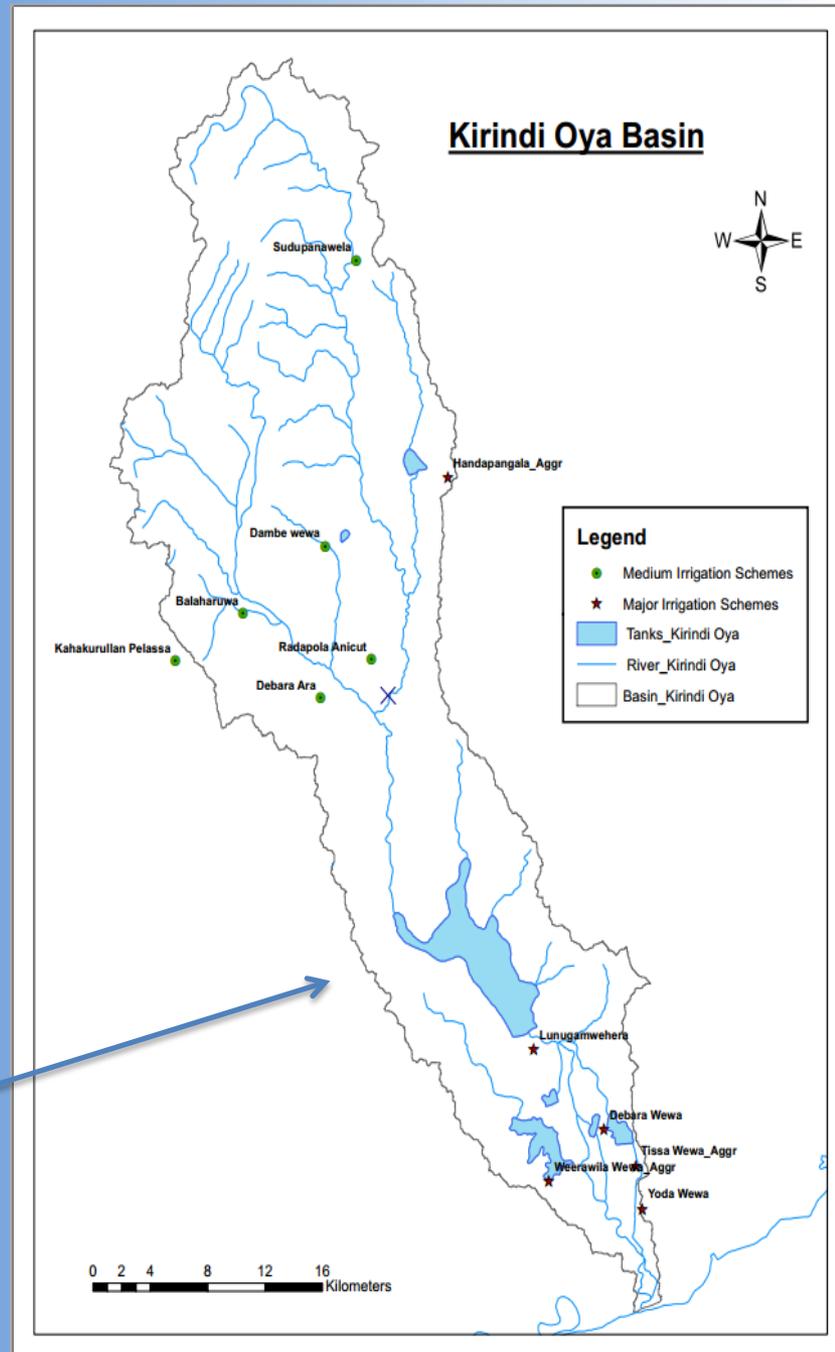
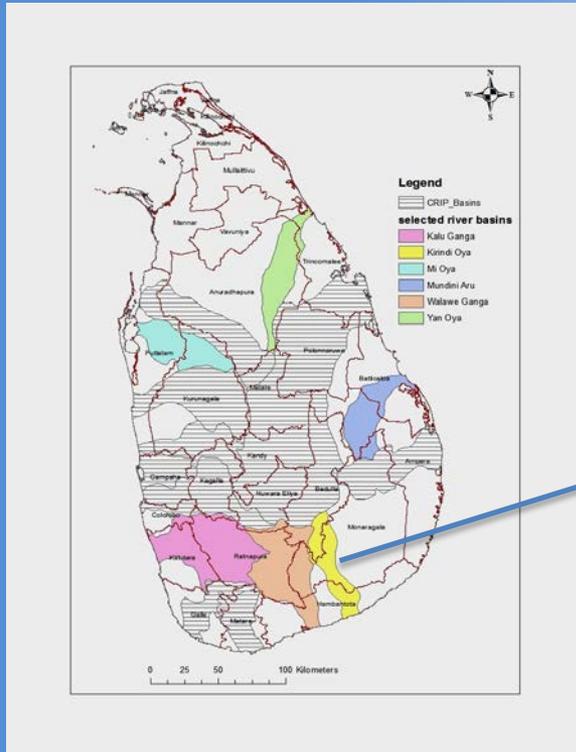
Support to GFCS Implementation in South Asia



Task Cluster 3

- User Engagement for Application - climate information translation - Decision support systems developed for these identified sectors –

Department of Irrigation (DoI), Sri Lanka proposed *Kirindi Oya basin* as the pilot location. Basin with a catchment area of 1157 km² is located in the dry zone of southern Sri Lanka and faces challenges linked to water shortage in dry season and floods in the monsoon season.



The Planning & implementation process

Engagements with DoM and DoI

- Project initiation meeting was held on **31st May, 2016** at DoM office Colombo to define the project scope and identify the study basin.
- **August, 2016 survey of the project site** and discussions with irrigation engineers involved in reservoir operations
- **December, 2016** familiarization to climate information and participatory discussion to share DSS design and data requirements
- **July, 2017** Workshop to handover the system that is currently undergoing testing

Collaborating Institutions: DoM, DoI and DoAg, Sri Lanka, RIMES, IIT Madras

Integrated Systems for Decision Support

Weather and
Climate
prediction
data

HEC-HMS
Kirindi Oya basin

Estimated
flows into
the reservoir

WEAP
Lunugumwehera
reservoir

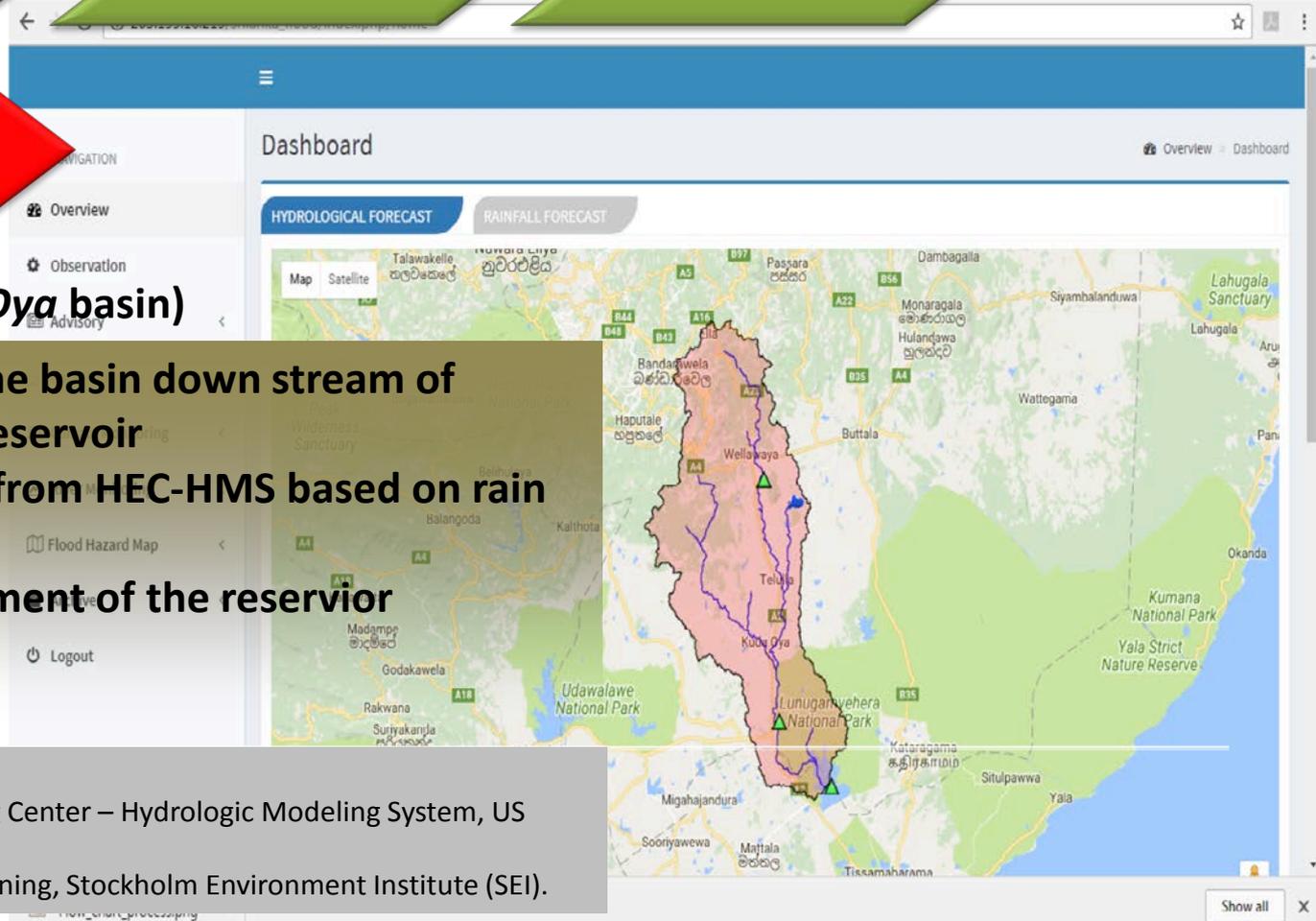
WEAP model (*Kirindi Oya basin*)

- Model set up for the basin down stream of *Lunugumwehera* reservoir
- Inflows generated from HEC-HMS based on rain gauge data
- Improved management of the reservoir

Open Source software packages

HEC-HMS: Hydrologic Engineering Center – Hydrologic Modeling System, US Army Corps of Engineers

WEAP: Water Evaluation and Planning, Stockholm Environment Institute (SEI).



In Summary

	Experiences	Future Needs
NCOFs	ideal starting points to work with key sectors at National level – RCOF Outreach to users	Need to be held regularly as a sustained operational function
	National context and priorities	Innovative and relevant
	Key stakeholders to provide committed institutional support and partnership	Created institutional mechanism to sustain/fund; embedded in national systems
Decision support systems	Build on existing capacities , User friendly design and web-based system; Scalable - evolve gradually to more sophisticated systems	Steady capacity development of NMHSs as well as sector agencies; innovative dissemination systems – <i>text – social media</i>
Feedback Sessions	Regular, participatory process – must be captured centrally through web-based archival systems	Sustained and responsive – considerations for traditional knowledge systems



.. **thank you**

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