

# Developing Regional Climate Change Projections (for Southeast Asia)

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**2<sup>nd</sup> WMO Workshop on Operational Climate  
Prediction, Barcelona, Spain**

**30 May – 1 Jun 2018**

# Background

- ASEAN - Association of Southeast AsiA Nations
  - Ten countries in two WMO-regions: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam
- Rapidly developing region; vulnerable to climate effects

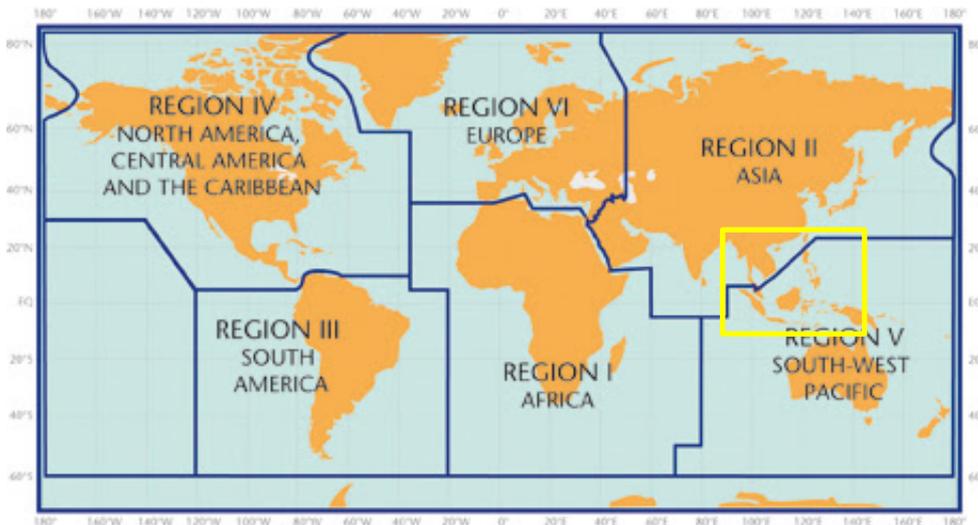
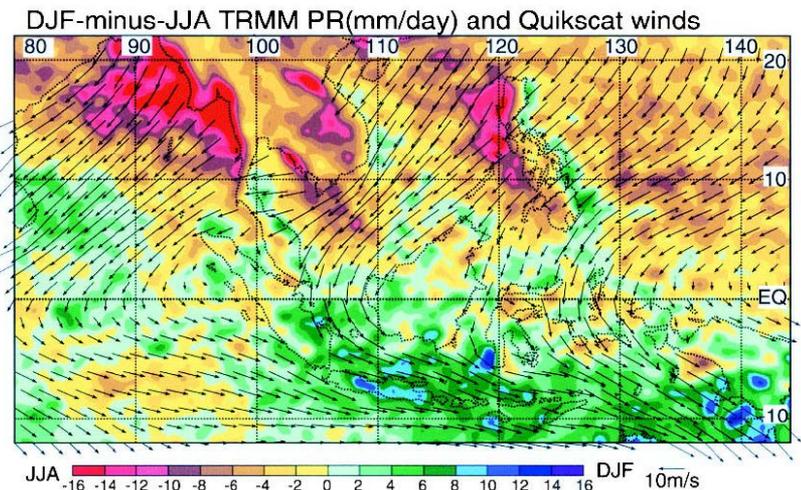


Image: WMO

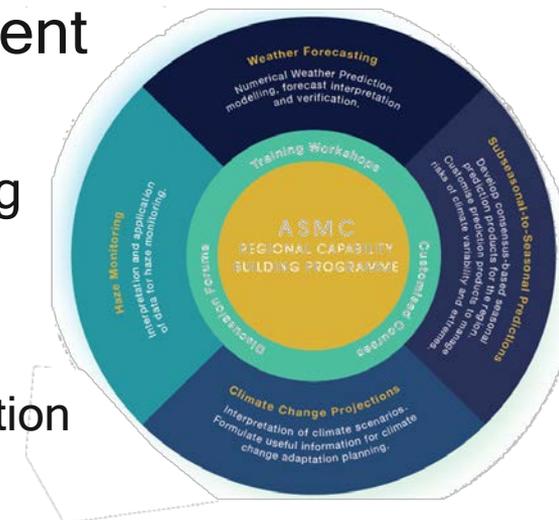
Monsoonal rainfall (DJF – JJA)



Chang et al. (2005a)

# ASEAN Specialised Meteorological Centre (ASMC)

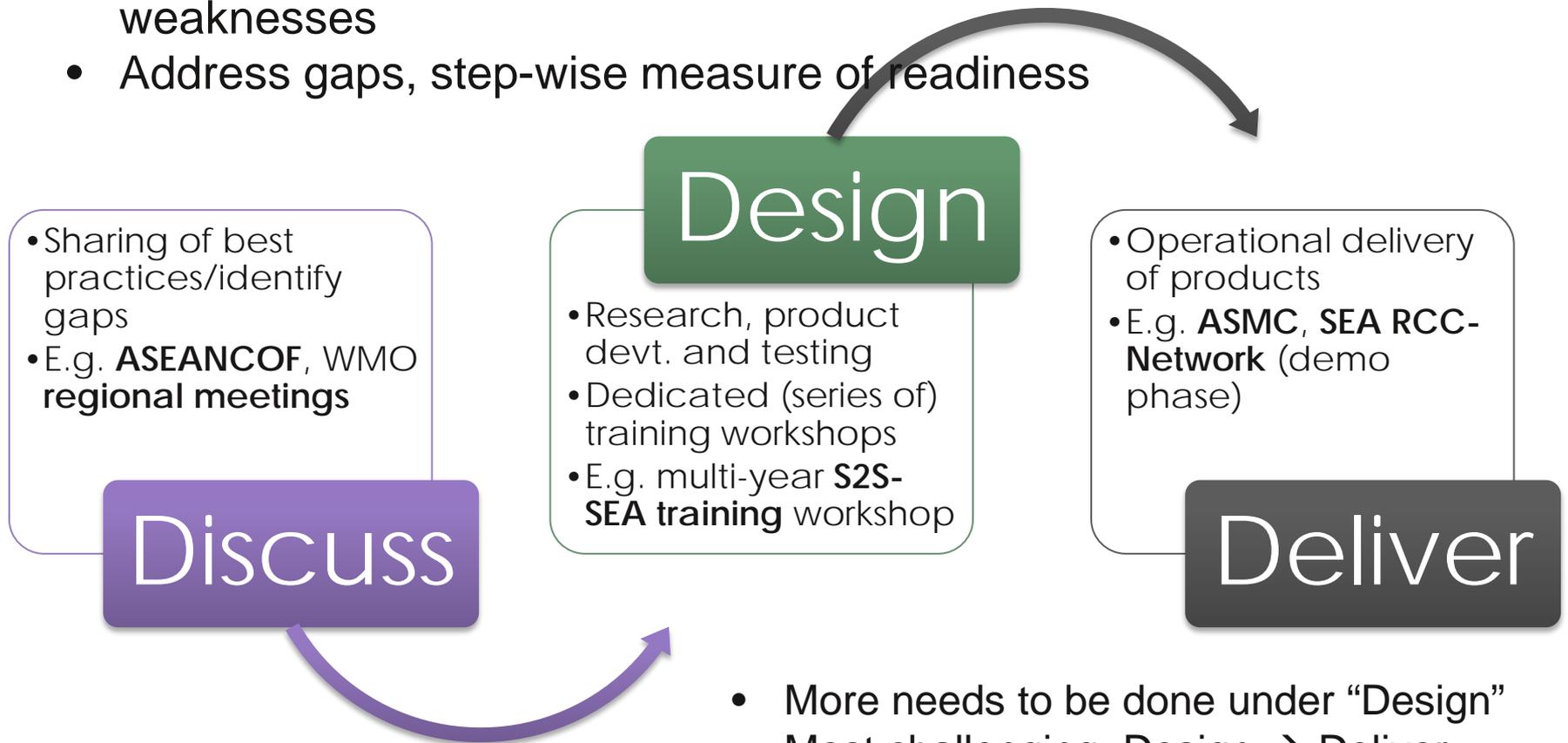
- Est. January 1993; collaboration programme among NMHS of ASEAN member countries.
  - Hosted by Meteorological Service Singapore (MSS)
- Aims: enhance **regional capacity** and **strengthen support** in provision of meteorological services
- Recently launched *Regional Capability Building Programme* to renew drive for development
  - Weather Forecasting, S2S Predictions
  - Climate Change Projections, Haze Monitoring
- **Activities** (thru partnerships, collaborations)
  - Modelling, output interpretation, verification
  - Product customisation, formulating useful information
  - Detection, monitoring, attribution



# Regional Activities

## (Seasonal/Subseasonal Predictions)

- Iterative ‘3D’ framework
  - Stocktake activities/how they relate, identify strengths and weaknesses
  - Address gaps, step-wise measure of readiness



# Best Practices Workshop on Climate Change Projections & their Applications for Southeast Asia



# Best Practices Workshop on Climate Change Projections & their Applications for Southeast Asia

- 20 - 23 March 2018, Singapore
- Objectives:
  - *Compare and contrast* the (regional/national) studies for the region
  - Recommend *guidelines for best practices* in the generation of scenarios.
  - Scoping activity of Climate Projections Function in SEA RCC-Network
- Participants:
  - IPCC Secretary, regional NMHSs, CSIRO (Australia), CORDEX-SEA Chair, regional/local university researchers, BoM (Australia), UK Met Office
  - AHA Centre (disaster risk), ICRISAT (agriculture), Global Water Partnership-SEA & Mekong River Commission (water resources), RIMES, Pacific-Australia CCSAP (community engagers), national decision-makers
- Co-funding: Environment and Climate Change Canada, WMO, and ASMC.



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# Workshop Sessions

National projections  
& regional initiatives  
*(NMHSs/Research Institutes)*

Regional scientific  
issues  
*(ENSO, Monsoon, Sea Level  
Rise, Convection)*

End-user perspectives  
of climate information  
*(requirements, adaptation  
planning, resilience)*

Group Discussions  
*(science & applications,  
best practice guidelines)*  
“Do we have consensus on key  
emerging issues?”

# Workshop Discussion/Recommendations

## National projections & regional initiatives

- **Diversity** of approaches → need to **standardize** GCM selection/downscaling (robustness; optimise resources).
- **Uneven** distribution of tech expertise → estb. of regional **scientific authority** (generation & application).
- **Wide spectrum** of user engagement and communication needs → **early** engagement; **regular sharing** of lessons learnt across region.
- Limited communication of scenario and other **uncertainties** → **wider range experiments** to be more encompassing/**synthesizing** contrasting projections.

## Regional scientific issues

- Incomplete understanding of **key drivers** (e.g. ENSO, monsoons under CC) → more studies **regional-specific** effects (“whys” beyond the “whats”).
- Lack of understanding of the **sensitivities** of regional projections to model formulation → regional model **intercomparison/process** studies
- Quantifying effects **limited by data** → more **comprehensive data** collection, storage and sharing, portals
- Optimize **spatial resolution?** → balance between computing expense and local details

# Workshop Discussion/Outcomes

## End-user perspectives of climate information

- Institutions tasked with handling climate information/data are not well equipped → climate scientists to focus on **developing** and **training of models/indices** with more **practical applications**
- Climate extreme indices are still **generic/non-sector specific** → need to **bridge** the gap
- **Growing number** of regional platforms for climate-based information sharing upstream producers are **not aware of** → consolidate communications platform into a **centralised** regional entity

## Bridging science and applications

- Regional coordination effort in promoting end user engagement through developing a **framework**
- User requirement **workshops**
- **Demonstration projects** for bridging science and applications
- **Designated staff/expert** to deal with bridging/application issues
- Innovative **communication tools** (well-designed websites/education materials) to propagate climate information

# Summary

- Need for a **centralised entity**
  - Coordinate studies on projections and data consolidation activities
  - Provide guidance on: **generation** and **usage** of climate models
- **Region-specific guidance document**
  - Standardisation of technique for **intercomparability** → easier to synthesise different studies
  - Provide bird's eye (regional) view based on robust scientific understanding → optimisation of resources
- **Early user engagement/sharing** of lessons
  - Better communication of uncertainties, packaging of climate information
- **Other issues:** probabilistic projections still not common → translation to risk?; Not all NMHSs are tasked to generate climate projections

