Regional support and Hotspot Monitoring by Singapore

APFP – 9th Project Management Meeting (PMM9)

16-20 Dec 2013

National Environment Agency
Safeguard · Nurture · Cherish

Agenda

1. Overview of Singapore’s Role in Fire and Haze monitoring
2. Fire and Haze Monitoring - Tools
3. Fire and Haze Monitoring - Products

Overview of Singapore's Role in Fire and Haze monitoring

- Singapore hosts the ASEAN Specialised Meteorological Centre

1993 ASMC was established as an ASEAN project to enhance regional capacity through R&D activities

1994 Inauguration of ASMC in Sep 1994

1995 ASMC was requested by ASEAN Haze Technical Task Force to monitor and assess regional land/forest fires and occurrence of transboundary smoke haze

1997 The Regional Haze Action Plan, endorsed by ASEAN Ministers, designated ASMC to monitor and assess regional land/forest fires and occurrence of transboundary smoke haze

2003 The haze monitoring was extended to cover all ASEAN countries

The Minister for Communications and the Minister for the Environment, Mr Mah Bow Tan, was the guest-of-honour at the official inauguration of the ASMC

Inauguration of ASMC in Sep 1994

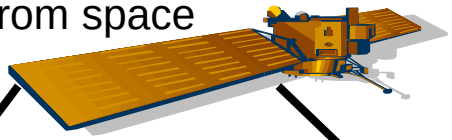
Overview of Singapore's Role in Fire and Haze monitoring

- Conduct assessment and provide regular updates of regional weather and smoke haze situation to local/regional agencies and at haze-related meetings
  - National Haze Task Force
  - Interim ASEAN Coordinating Centre (ACC)
  - ASEAN Ministerial Meeting on the Environment, COP on ASEAN Agreement on Transboundary Haze Pollution,
  - Technical Working Groups/ Ministerial Steering Committee for southern ASEAN region and Mekong sub-region
  - Meeting of ASEAN Senior Officials on the Environment

Fire and Haze Monitoring – Tools

Satellite Reception & Processing Systems at MSS

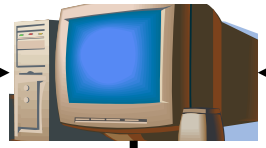
Meteorological/Environmental satellite transmits raw data from space



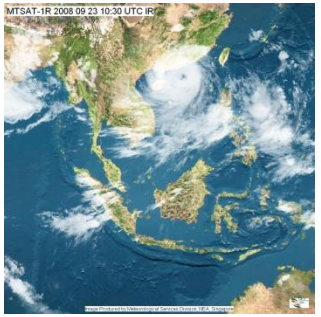
Reception System from Polar-orbiting satellites (NOAA, AQUA/TERRA)

Reception System from Geostationary satellites (MTSAT, Feng-Yun)

Ingest System



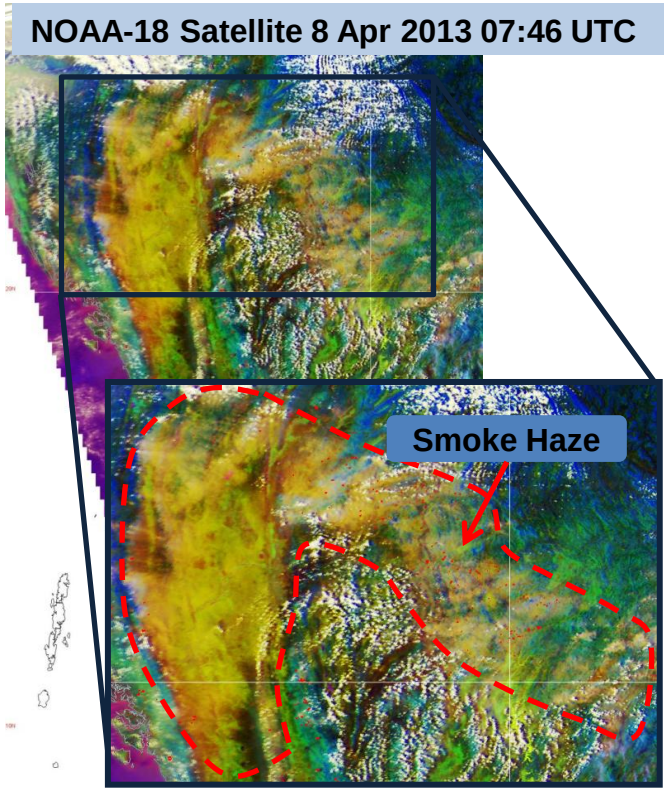
Processing System

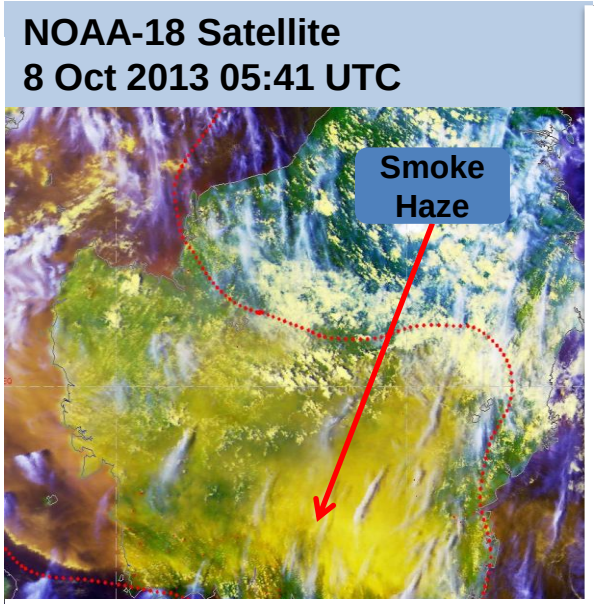


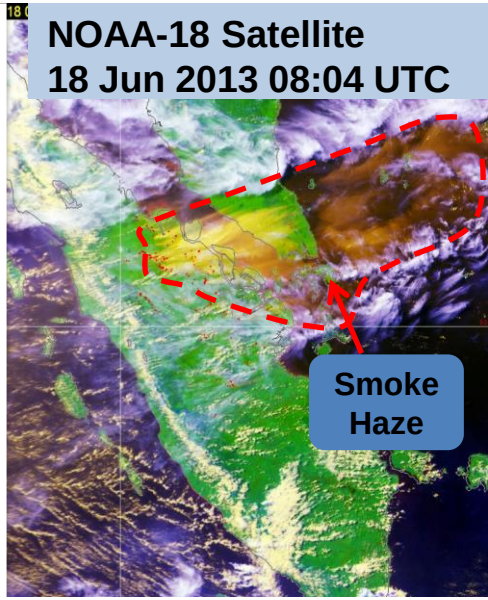
Processed satellite images

Satellite Images

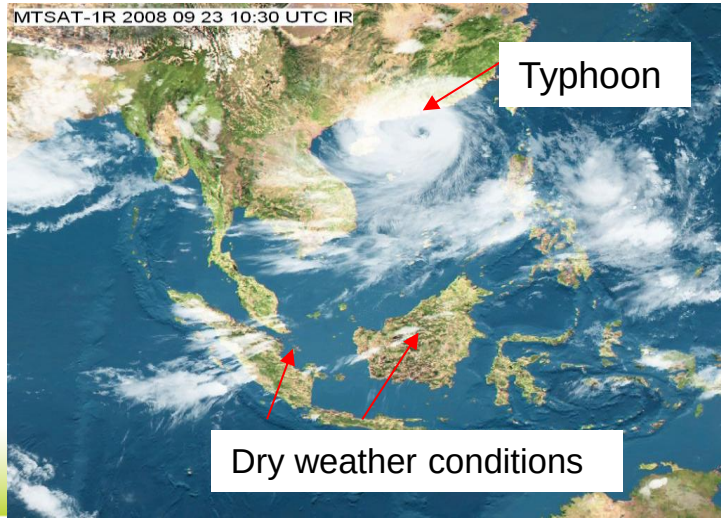
NOAA satellite image depicting smoke haze situation in northern ASEAN during the dry season





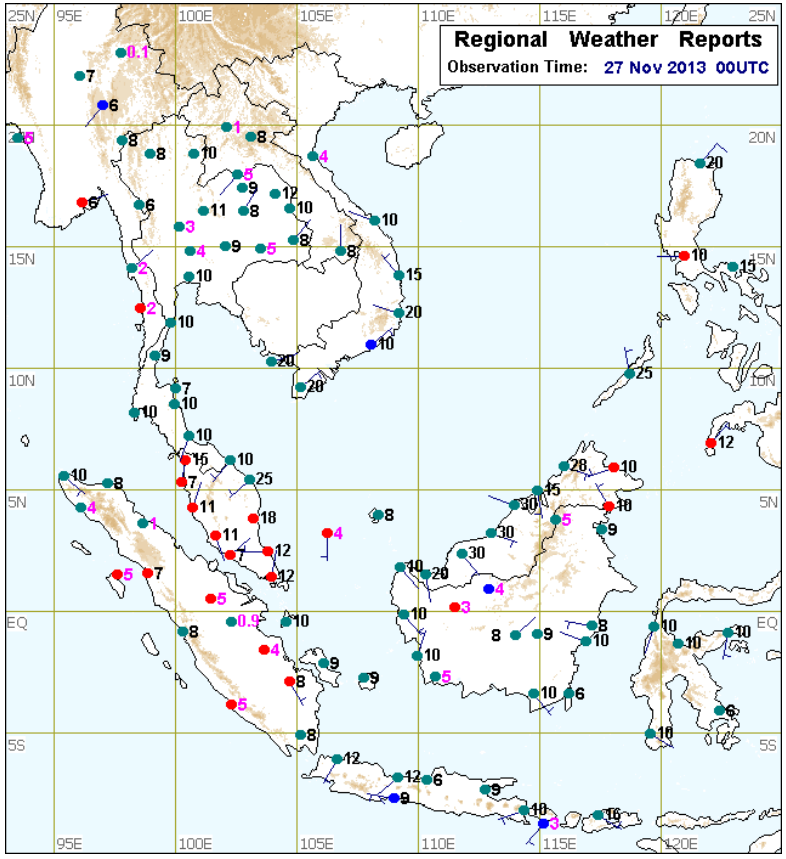


NOAA satellite images showing hotspots and coverage of smoke haze from land/forest fires

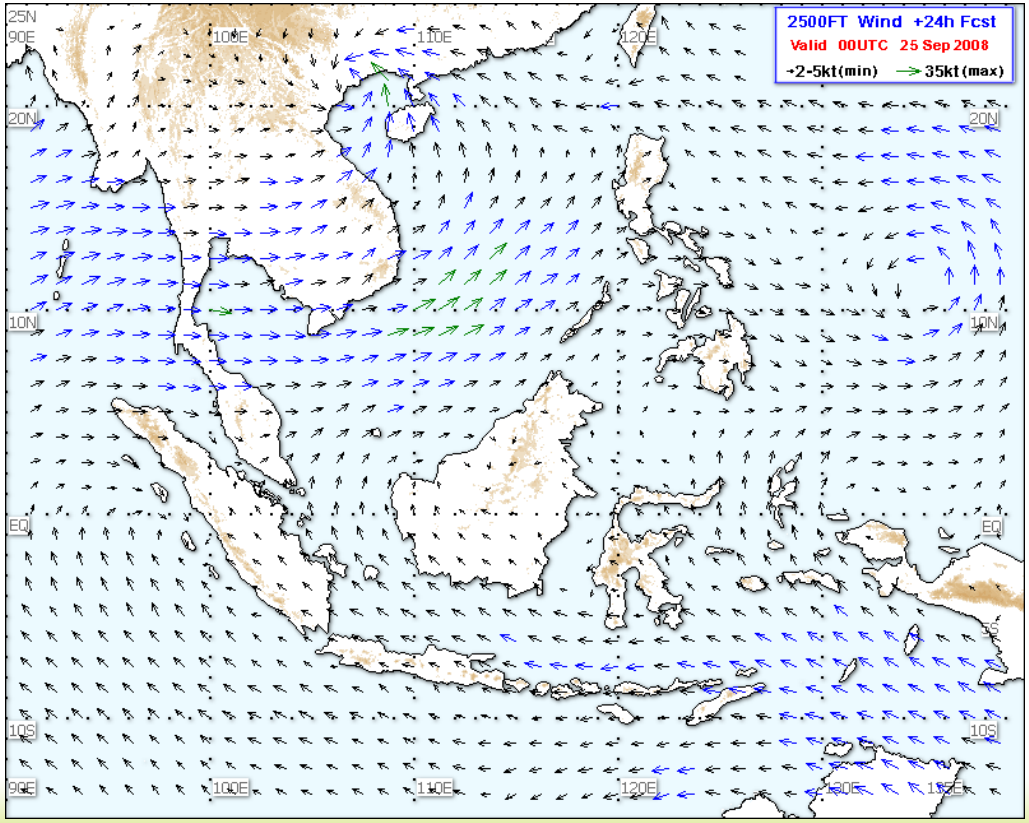


Geostationary satellite image for weather monitoring

Ground Observations and Numerical Weather Prediction Models



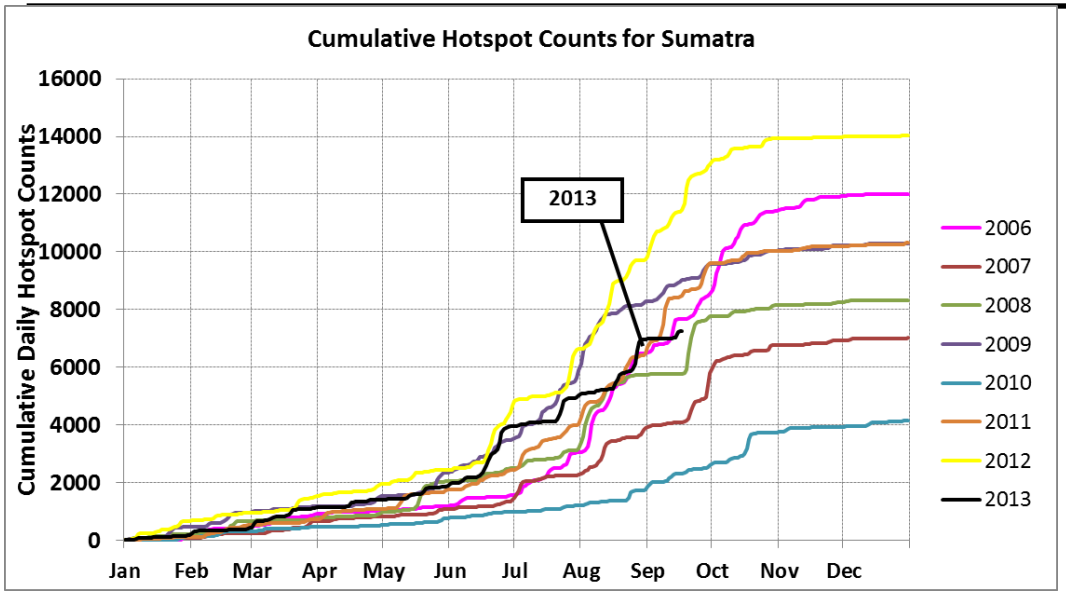
Ground observations: Surface level observations of visibility, winds, weather conditions



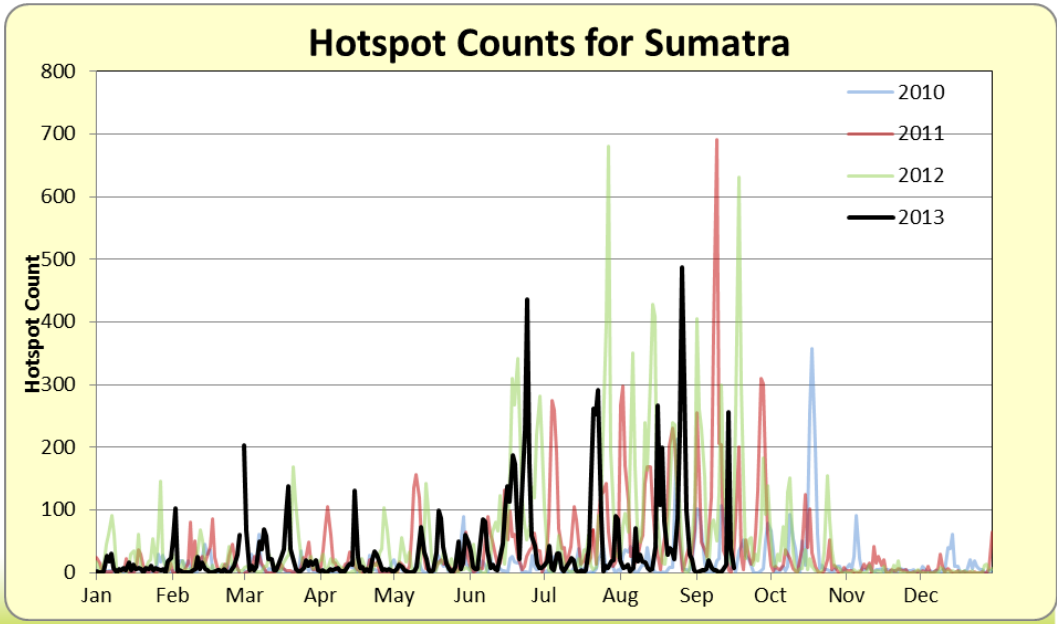
Guidance from Numerical Weather Prediction models

Fire and Haze Monitoring – Products

Regular Update of Hotspot Counts to ASEAN Countries



Cumulative hotspot count chart



Daily hotspot count chart

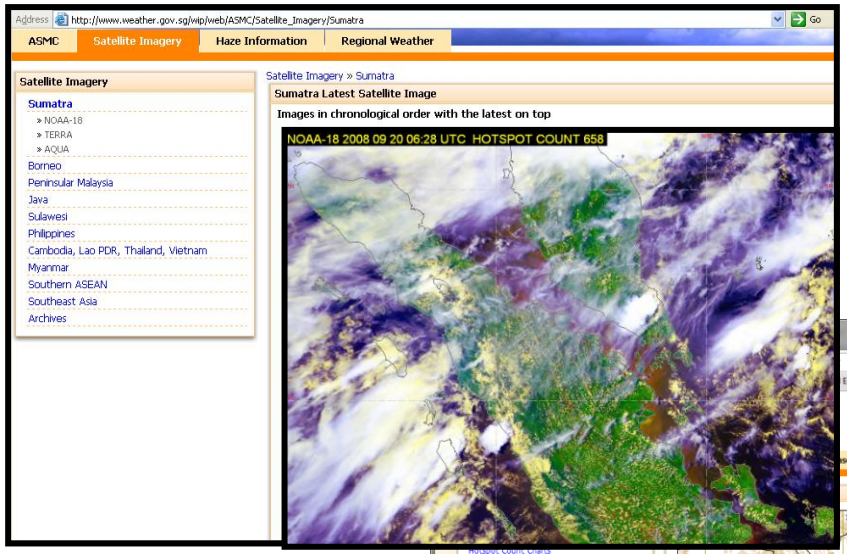
Haze Alerts and Advisories

- Issue haze alerts and advisories of impending significant haze affecting any ASEAN country to Interim ACC

Alert	Trigger Points	Action
Level 1	▪ Start of the dry season	▪ ACC to alert national focal points to inform their Experts
Level 2	• 150 hotspots in 2 days • Dry weather conditions persisting • Prevailing winds blowing towards other ASEAN countries	▪ ACC to alert national focal points to put their Experts on standby for deployment
Level 3	• 250 hotspots in 2 days • Dry weather conditions persisting • Prevailing winds blowing towards other ASEAN countries	▪ ACC to alert national focal points to immediately deploy their Experts to the affected country

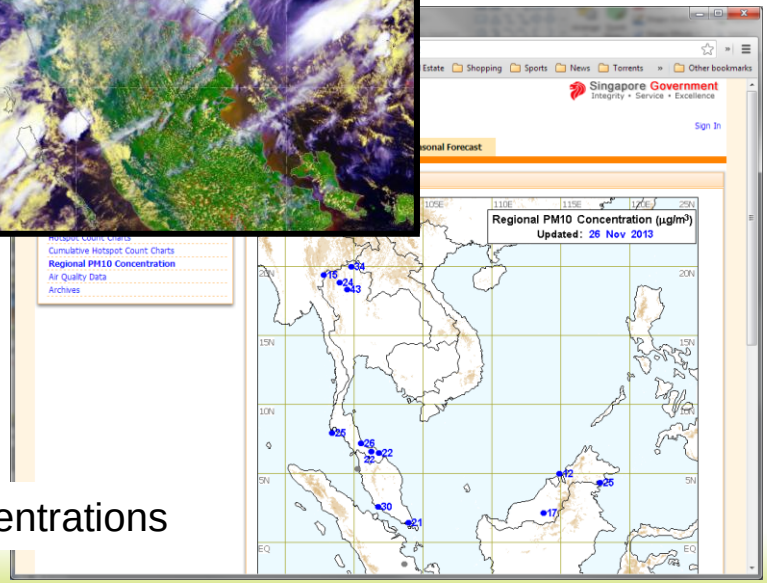
Weather and Haze Information

- Disseminate operational weather and haze information to regional agencies via ASMC website
  - **Environment and Forestry agencies in the region**
  - **National Meteorological Services of ASEAN countries**



ASMC Website

Satellite images



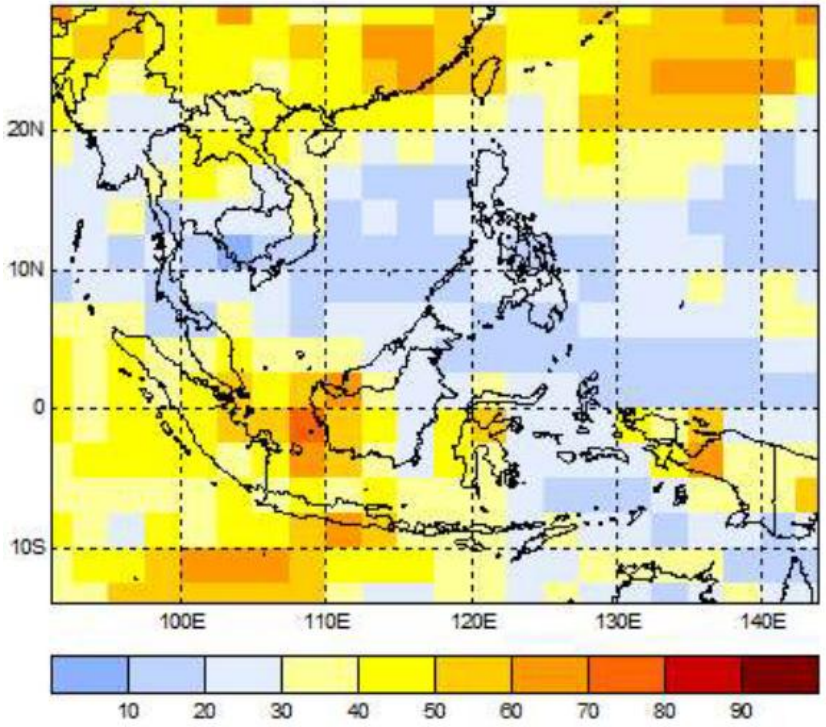
Regional PM10 concentrations

Regional haze map depicting the locations of hotspots, wind flow and areas of smoke haze

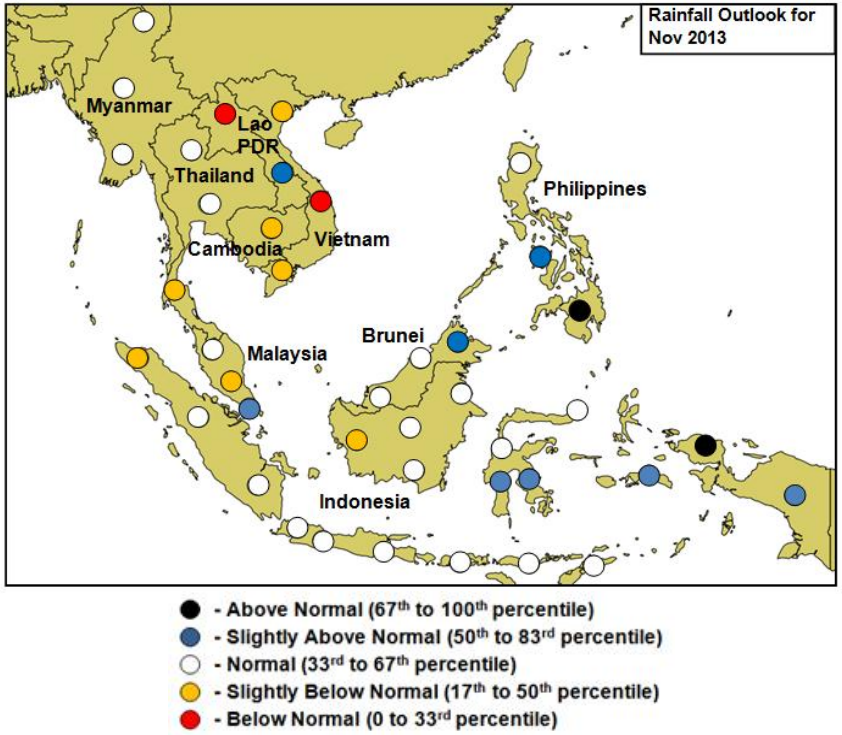
Seasonal Climate Prediction

- Co-ordinate regional capacity enhancement projects
  - Rainfall Estimation for Monitoring of High Risk Fire Areas in South East Asia
  - Capacity Building in Seasonal Climate Prediction in the ASEAN Region

Probability of Below Normal Rainfall



Regional Rainfall Outlook (forecast from National Meteorological Agencies)



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