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CLIMATE SERVICES FOR AGRICULTURE IN INDONESIA

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WMO RA V Regional Seminar on Climate Services

Honiara, 1-4 November 2011

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OUTLINE

- BACKGROUND
- BMKG ROLE IN NATIONAL FOOD SECURITY
- CLIMATE FIELD SCHOOL (CFS)
- CLOSURE

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1. Background

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BACKGROUND

1. Agriculture is one of the climate sensitive sectors, that needs to apply adaptation to climate change and climate variability
2. Extreme climate condition has induced significant decrease in crops yield and paddy harvest in Indonesia (e.g 2010)
3. Farmers could not easily understand BMKG's climate information, for it contains many technical terms and cover wide forecast/predicton area.

ROLE OF "SCIENTIFIC ACTIONS " ON THE APPLICATION OF ADAPTATION & MITIGATION MEASURES

1 SCIENTIFIC ACTIONS

BMKG –UNIVERSITIES-RELATED INSTITUTIONS

- Observation - Data Collection
- Research & Modeling
- Capacity Building
- Dissemination of Climate Information

Climate change information
(Historical – on going - and Projection/Trend)

Ministry of Env.

NAT'L POLICY
(RAN MAPI 2007)

2 ADAPTATION

Climate Sensitive Sectors
- Agriculture
- Public Works
- Health, Fishery
- Tourism

3 MITIGATION

Climate Sensitive Sectors
- Energy
- Forestry
- Transport

BAPPENAS
- Min. of Finance
- Nat'l Development Planning Agency

CLIMATE SENSITIVE SECTORS
Ministries of :
Agriculture – Health – Public Work – Fishery – Tourism
Energy – Forestry – Transport

CLIMATE SENSITIVE SECTORS

- ***AGRICULTURE***
- ***INFRASTRUCTURE***
- ***COASTAL INFRASTRUCSTURE***
- ***HEALTH***
- ***FISHERY***
- ***TRANSPORTATION***
- ***WATER RESOURCES***
- ***ENERGY***
- ***TOURISM***
- ***FORESTRY***

INDONESIA AGENCY FOR METEOROLOGY CLIMATOLOGY AND GEOPHYSICS

Jakarta, 2011

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2. BMKG ROLE in NATIONAL FOOD SECURITY

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ADAPTATION - MITIGATION MEASURES & AT SUB DISTRICT LEVEL (AGRICULTURE SECTOR)

National Action Plan/Mitigation Adaptation of Climate Change (Ministry of Environment-2007)	Sub District Level Climate Services, Provided by BMKG & Universities and Relevant Institutions
❖ **Planting pattern and crop variety**	▪ ***Rainy season prediction (season onset, season onset fluctuation, rainfall intensity during season period)***
❖ **Food diversity**	▪ ***Dry season prediction (season onset, , season onset fluctuation, rainfall intensity during season period)***
❖ **Wetland intensification**	▪ **Monthly Rainfall Prediction (3 months ahead)**
❖ **Primary seed**	▪ **Monthly potential flood forecasting (3 months ahead)**
❖ **Crop area extensification**	▪ **Information for soil water availability (monthly)**
❖**Increase use of natural fertilizer and reduce use of chemical fertilizer**	▪ ***Agroclimate suitability for crops and plantations map***
IPCC (Nov 2007) & WMO (World Meteorological Organization)	▪ ***Indonesia average rainfall map period of 1971-2000***
• Planting area diversification	▪ ***Normal climatic parameter map (temperature, humidity, wind)***
• Management improvement and land protection (reforestation)	▪ ***Drought potential map***
	▪ ***Information of Greenhouse Gases concentration (CO2, CH4)***
	▪ ***Climate early warning information***
	▪ ***Risk evaluation and information delivery***
	▪ ***Cooperation and partnerships***
	▪ ***Adaptation startegies for resilient agricultural***
	▪ ***Climate change mitigation***

■ Existing services subject to further development

■ Recommendations from GFCS

11 NATIONAL DEVELOPMENT PRIORITIES

1. BUREAUCRACY REFORM
2. EDUCATION
3. HEALTH
4. POVERTY ALLEVIATION
5. FOOD SECURITY
6. INFRASTRUCTURE
7. INVESTATION AND BUSINESS ENVIRONMENT
8. ENERGY
9. ENVIRONMENT AND DISASTER RISK REDUCTION
10. LEAST DEVELOPED, FRONTIER AND POST CONFLICT AREAS
11. CULTURE, CREATIVITY AND TECHNOLOGY INNOVATION

President Instruction No 5/ 2011:

on

National Food Security

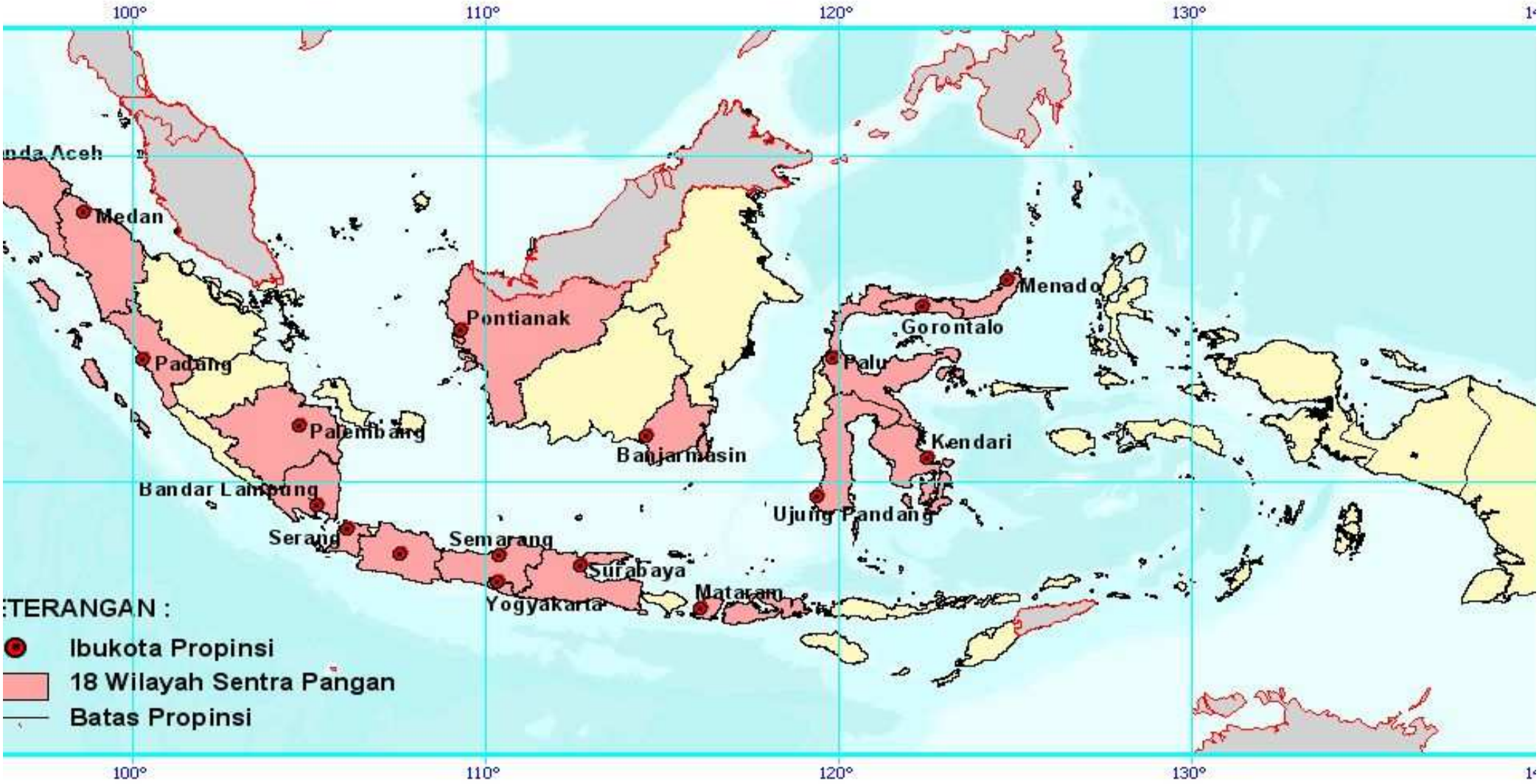
in Facing Extreme climate condition

12. BMKG tasks are to analyse and to disseminate extreme climate information and climate early warning to the Ministry of Agriculture and other related institutions

ACTION PLANS- FOLLOWING UP INPRES 5/2011

- Establishment of 100 Agroclimate sites in the 11 food production provinces
- Climate Field School in the 11 rice production centres (in 2011).
- Climate Field School in the 18 food production centres (in 2012)

18 PROVINCES of FOOD PRODUCTION CENTER in INDONESIA



N
E
S

0 500 1000 Kilometers

BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA
DEPUTI KLIMATOLOGI
PUSAT IKLIM AGROKLIMAT DAN IKLIM MARITIM

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3. Climate Field School

Partnership Between Provider and End User through interface entities
(Flow of Climate Information)

NATIONAL LEVEL CLIMATE INFORMATION

BMKG Head Office

DOWNSCALED CLIMATE INFORMATION (***PROVINCIAL*** LEVEL)

BMKG Regional Office

Feedback

CONVERTION OF ***TECHNICAL*** LANGUAGE
- Rainfall above normal
- Rainfall normal
- Rainfall below normal

TO ***PRACTICAL ACTIONS***
- Cropping pattern
- Type of crop varieties
- etc …

INTERFACE INSTITUTIONS :
- Local Agricultural Service
- Universities
- Agro Research Institute
- Agriculture extension worker

DISSEMINATED TO END USER: FARMERS

End Users : Farmers

REQUIRED CLIMATE INFORMATION

INFORMATION WHICH ARE **RAPID, PRECISE, ACCURATE, AND EASY TO BE UNDERSTOOD** BY THE END USERS/ SOCIETY

CLIMATE FIELD SCHOOLS FOR FARMERS: METHODOLOGY

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Phase I:

Training of trainers

- Local Agr'l Service, trained by NMHS staffs

Phase II:

Training of trainers

- Agr. extension worker, trained by Local Agr'l Office & Regional NMHS

Phase III:

Training for farmers

- Groups of farmers, trained by agriculture extension workers
- Supervised by NMHS

CLIMATE FIELD SCHOOLS FOR FARMERS: (CURRICULA)

Core characteristic curricula:

1. Understanding weather and climate characteristics
2. Introduction on impact of climate change on agriculture
3. Adaptation and mitigation strategy
4. Introduction on impact of climate change on plant and livestock
5. Simple measurements practices

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6. Simple water balance approximation for soil moisture
7. Use of seasonal forecast information for planting strategy & calendar

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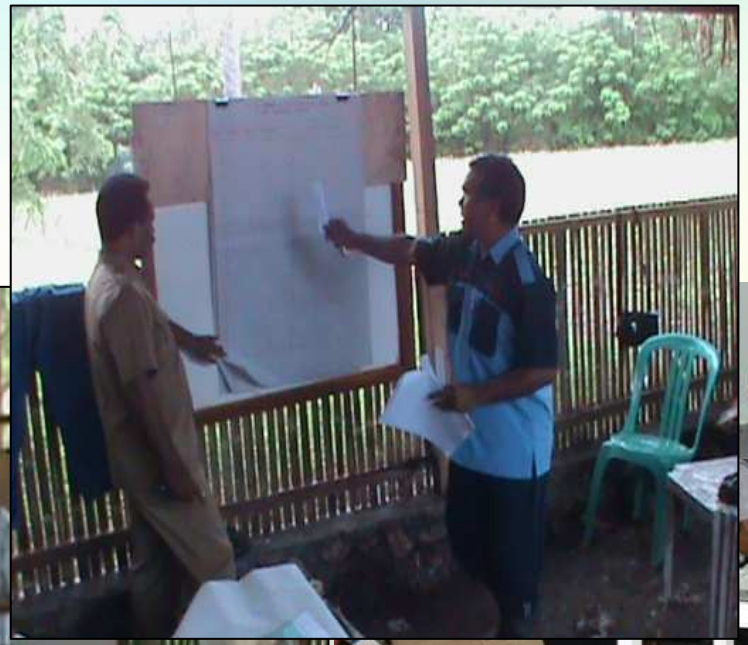
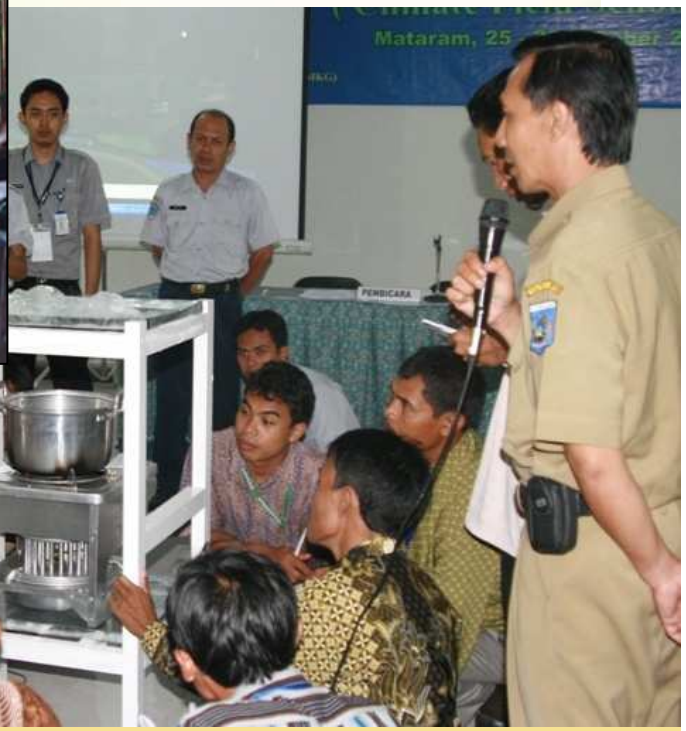
8. Understanding the economic value of seasonal forecast
9. Anticipating crop diseases and plant pests

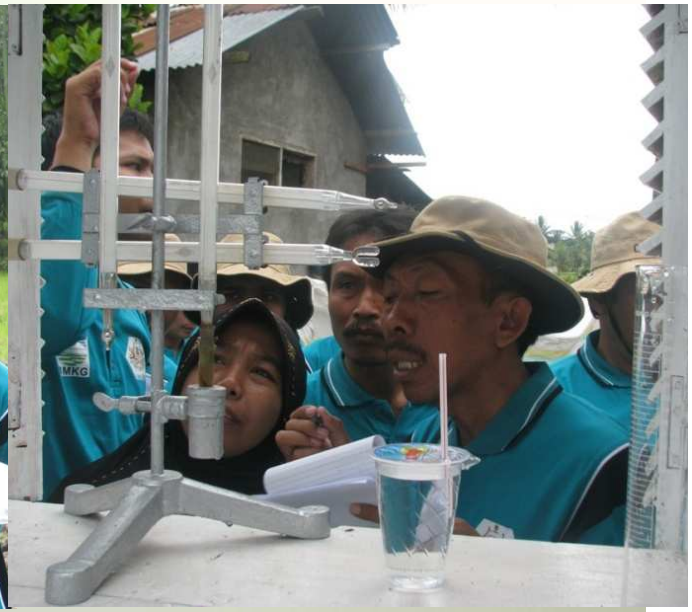
Min of Agri-culture

Understanding weather and climate characteristics





Simple Measurements Practices



Understanding the economic value of Seasonal forecast

PADI

I = 1,4 kg x1.600 = 2.240 kg

II . 1,2 kg x1.600 = 1.920 kg

III . 1,4 kg x1.600 = 2.240 kg .

4,0 / 3 = 1,33 kg Rata²

1,33 x 1.600 = 2.128 kg

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IV: 13,1 kg x1600 = 20.960 kg

V = 11,9 kg x1600 = 19.040 kg .

X 25,0 / 2 = 12,5 x 1600 = 20.000 kg .

BEFORE	AFTER
The farmers still use the traditional way to plan their planting, just by looking at the signs of nature	The farmers can find out the beginning of rainy season or dry season based on the climate information provided by BMKG (no longer using traditional methods), so they can decide when to start planting. They also can determine what crops should be planted in dry season or wet season period
Because of the climate change phenomena, farmers become difficult to identify the sign of the onset/beginning season (caused the loss of natural signs, eg. fireflies that indicate the coming of rainy season which cannot be found anymore) so they don't know when they must start to plan and as result they often experience crop failure	
The farmer is still confused with the term El Nino and La Nina, so they don't realize the impact caused by that phenomena	The farmers have better understanding about El Nino and La Nina and they also understand its influence on climate, and its all give more to their insights about climate
The farmers still don't understand with the terms used by BMKG in their climate information. The farmer is also confused with the "false onset" of rainy season	The farmers understand the terms used by BMKG in providing information, such as zona musim (ZOM), monsoon, etc. They also understand with the "false onset" of rainy season
The farmers are frustrated with the current climate condition	The farmers become more confident in facing climate change conditions that has recently happened

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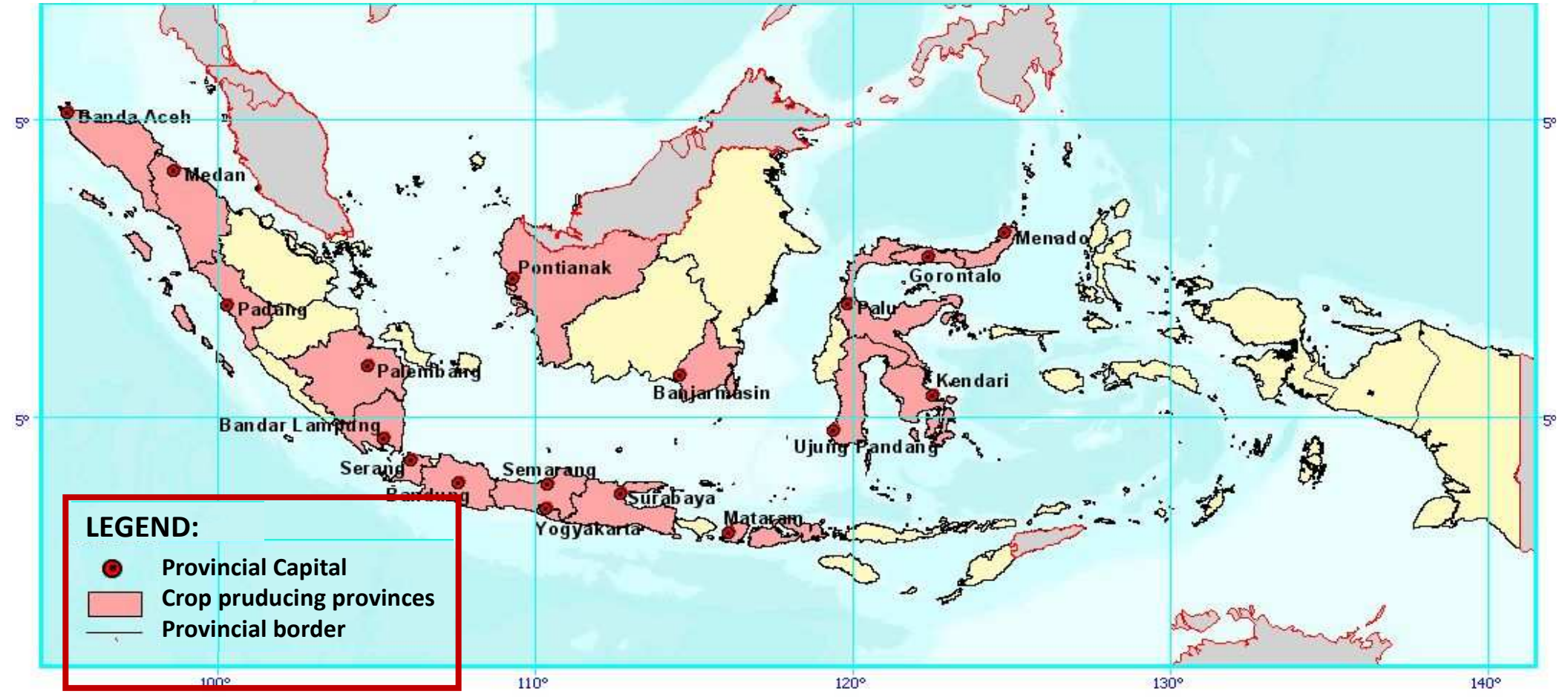
4. Closure

Map of Climate Field School Locations 2012 (Call for CFS Partnership....)



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THANK YOU

Science *is more essential for* ***our prosperity, our security, our health, our environment, our quality of life,*** *then it has ever been before*
(US President, B. Obama)

IRI – Columbia , New York - USA, 17-19th Oktober 2011

Partnership NMHS & Relevant Institutions

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Mishandling of CC issues management
- Adaptation not executed
- Most of available funding for mitigation
- Themes of International meeting ≠ content of discussions

Setup of National level framework

A&M Action Plan

Law on M&C

National Concept on Climate Change Issue

National Law on M&C: Chapters on Climate Change and R&D

National concept:
- 3 pillars on CC management: Science Basis, Adaptation, Mitigation
- Monitoring and evaluation of A&M

Flow of tasks, concrete role of scientific basis

Climate Sensitive Sectors: A&M table

M & C = Meteorology and Climatology
A & M = Adaptation and Mitigation
R & D = Research and Development