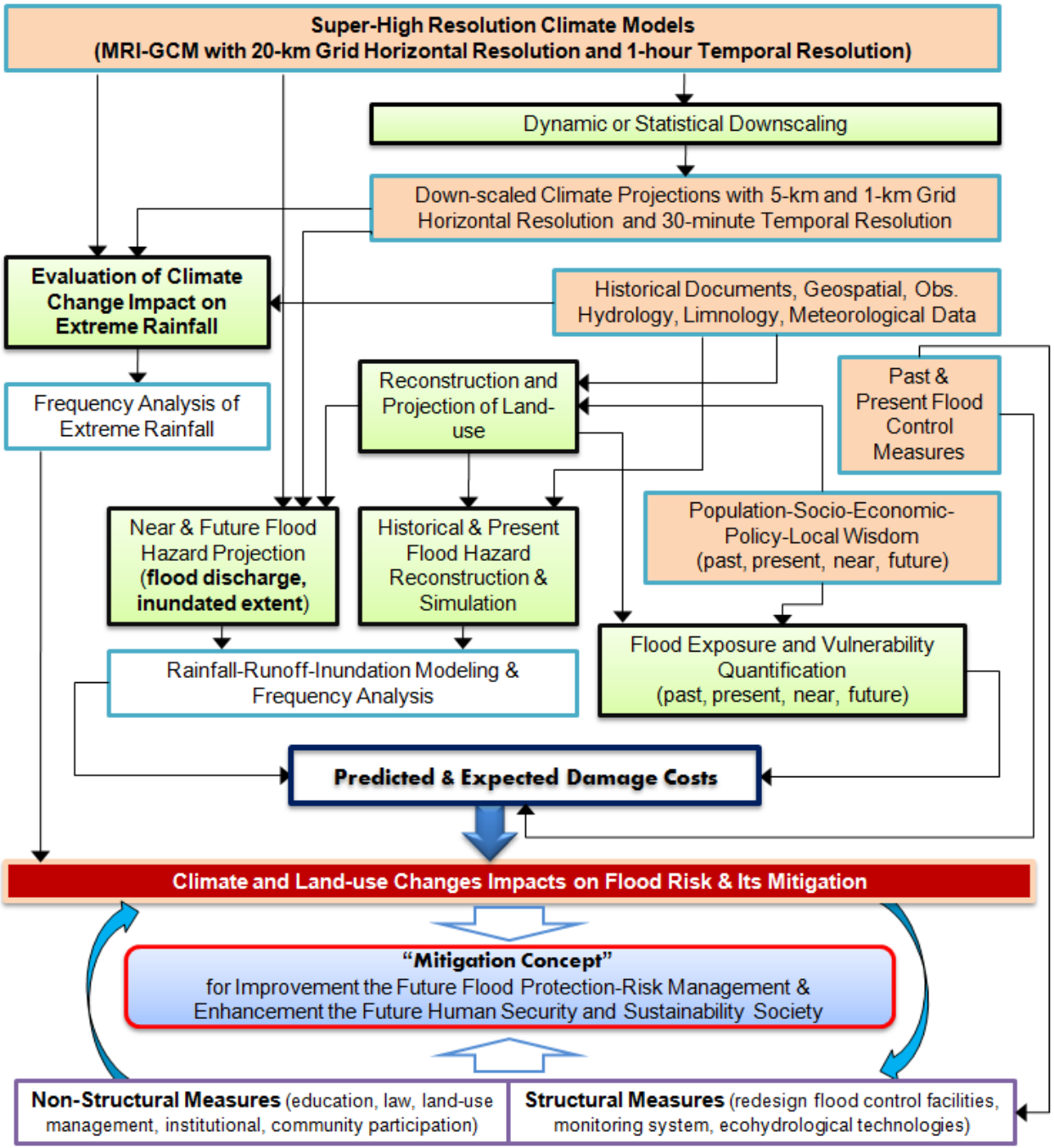
POSSIBLE PROPOSED RESEARCH

LIPI, ITB, BMKG, LOCAL GOVERNMENTS (2015-2017)

"FLOOD RISK QUANTIFICATION UNDER CHANGING CLIMATE AND ANTHROPOGENIC FACTORS"

JAKARTA MEGAPOLITAN & BATANGHARI RIVER BASIN



POSSIBLE PROPOSED RESEARCH

Flood Hazard Characteristic (Spatially & Temporally) needs to be well known

WP 4 JASTIP Int. Joint Research

"Sensitivity of Flood Inundation to Rainfall Variability and Soil Water Storage at a Tropical Large River Basin"

Flood Risk (Hazard) Knowledge Enhancement

POSSIBLE PROPOSED RESEARCH

"Sensitivity of Flood Inundation to Rainfall Variability and Soil Water Storage at a Tropical Large River Basin"

1. Flood hazard is one of the important variables in assessing flood risk at a particular river basin;

2. Generally, there are three main components affecting the magnitude of flood hazard: rainfall variability, topography and land use type, and soil property.

3. Previously, many studies addressed to quantifying the sensitivity of hydrologic responses to those factors. However, very limited studies have been conducted to assess the relationship between the flood inundation dimension (area, depth, and duration) at the basin scale considering spatial and temporal dynamic changes in input rainfall and soil water content

POSSIBLE PROPOSED RESEARCH

"Sensitivity of Flood Inundation to Rainfall Variability and Soil Water Storage at a Tropical Large River Basin"

The main objective of this study is to quantify the sensitivity and elasticity of the flood runoff and inundation to the spatial distribution of soil water storage and rainfall variability (intensity and patterns) caused by different storm types at a tropical large river basin

Results will be very important for the understanding of large-scale runoff generation and flood processes; designing an effective strategy for flood prevention and mitigation; and It will help to effectively evaluate multiple GCM outputs instead of many simulations without understandings

POSSIBLE PROPOSED RESEARCH

"Sensitivity of Flood Inundation to Rainfall Variability and Soil Water Storage at a Tropical Large River Basin"

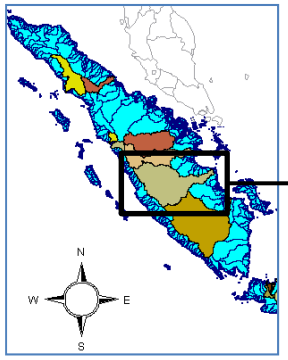
To address the research objective, a set of field and laboratory activities can be carried out:

1. Set-up hydro meteorological monitoring system (i.e. water level, rainfall radar);
2. Measurement of infiltration rate and soil property analyses;
3. Remote sensing images (ALOS-PALSAR) interpretation in order to estimate the area distribution of recorded flood inundation events and to obtain a DEM;
4. Characterizing of different rainfall patterns caused by different reason of storms, including here are seasonal heavy rainfall, convective rainfall storms, orographic rainfall storms, and their combination. They will be assessed using the long-term available historical rainfall data obtained from daily gauging stations and rainfall radar which is operated by the local meteorological agency and public works.

A Rainfall-Runoff-Inundation (RRI) model and Time-Space Accounting Scheme (T-SAS) (Sayama et al, 2012 and Sayama & McDonnell, 2009) will be advanced and applied as a tool to diagnose the long-term characteristics of the suffer floods at this tropical basin, to identify the dominant cause of rainfall, and soil property as well.

POSSIBLE PROPOSED RESEARCH

"Sensitivity of Flood Inundation to Rainfall Variability and Soil Water Storage at a Tropical Large River Basin"



Potential Location to be selected is BATANGHARI RIVER BASIN

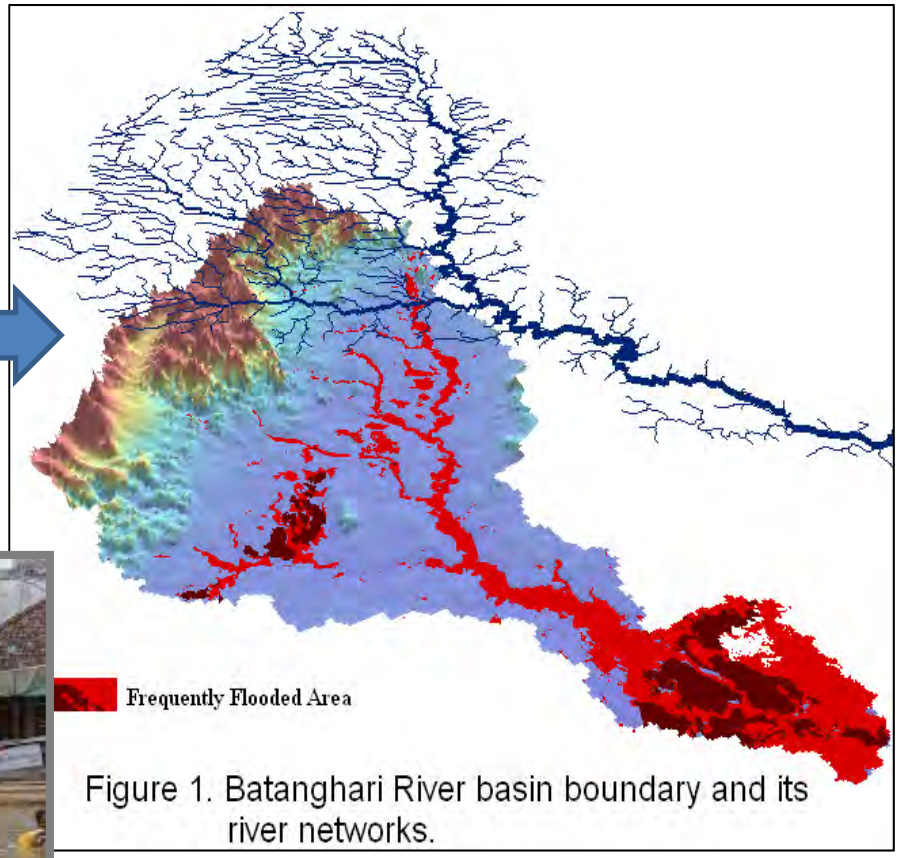


Figure 1. Batanghari River basin boundary and its river networks.

Thank You Very Much

LIPI

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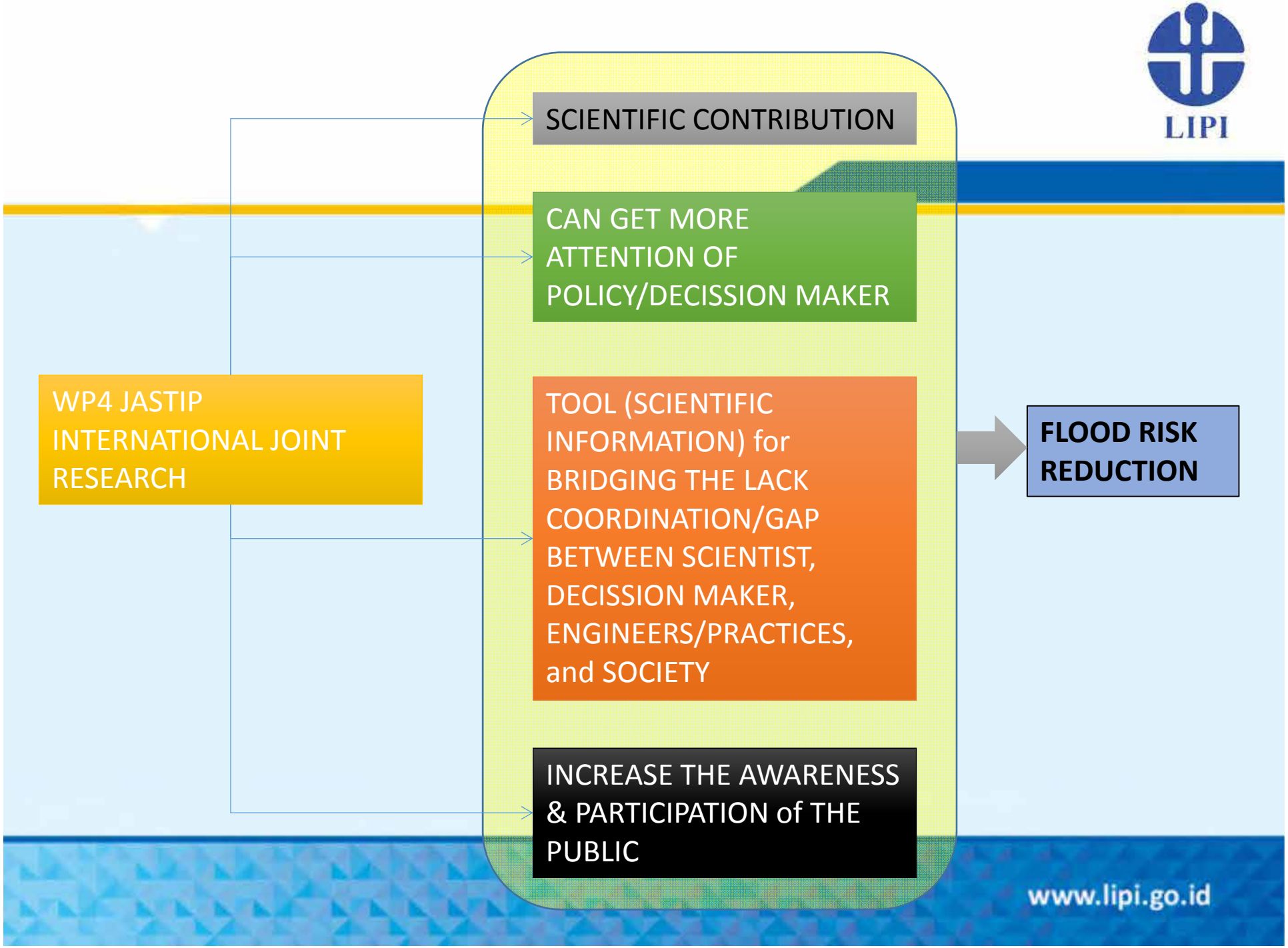
MAIN CAUSES OF FLOOD

JAKARTA FLOOD 2013

MAIN CAUSES OF FLOOD

JAKARTA FLOOD 2014


LIPI
SCIENTIFIC CONTRIBUTION
CAN GET MORE ATTENTION OF POLICY/DECISSION MAKER
WP4 JASTIP INTERNATIONAL JOINT RESEARCH
TOOL (SCIENTIFIC INFORMATION) for BRIDGING THE LACK COORDINATION/GAP BETWEEN SCIENTIST, DECISSION MAKER, ENGINEERS/PRACTICES, and SOCIETY
FLOOD RISK REDUCTION
INCREASE THE AWARENESS & PARTICIPATION of THE PUBLIC
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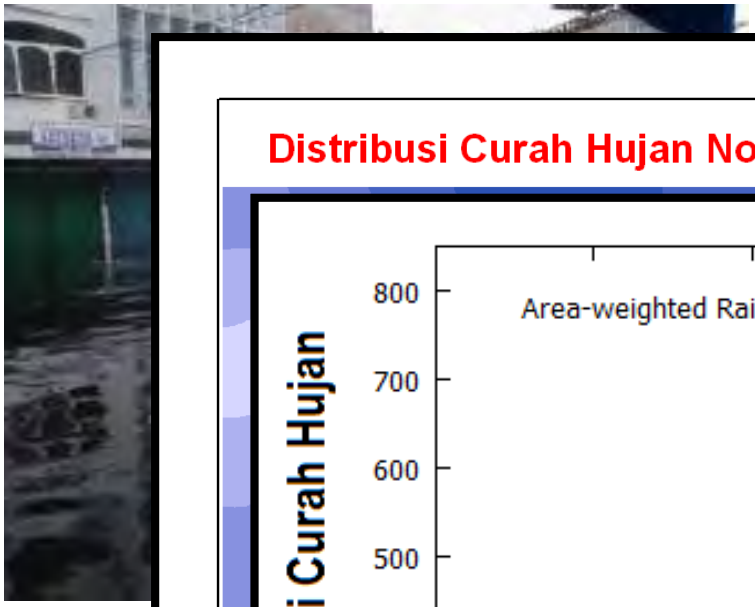
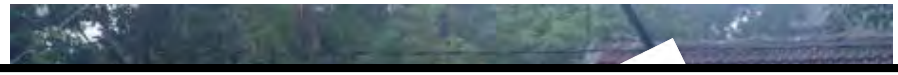
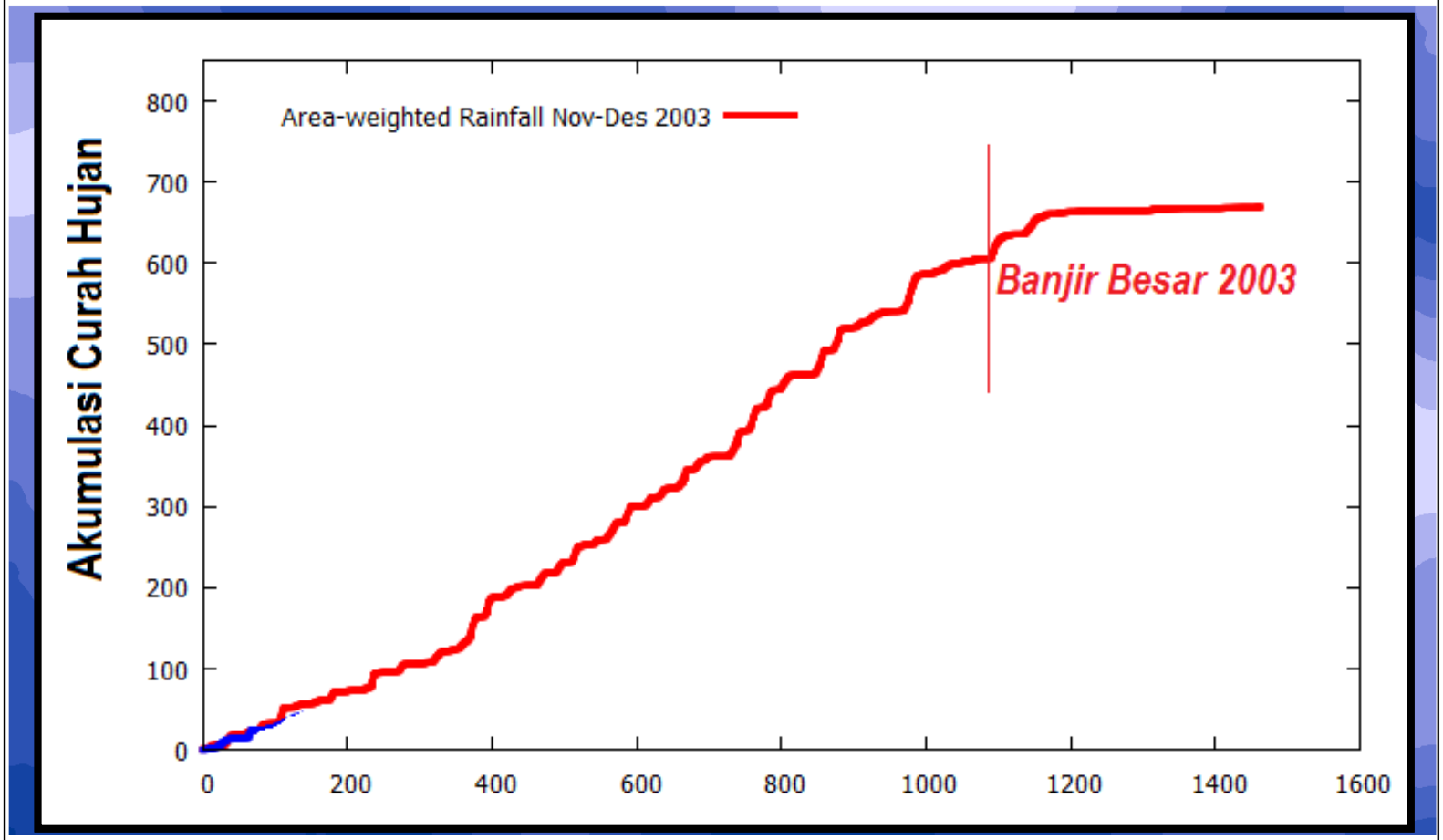
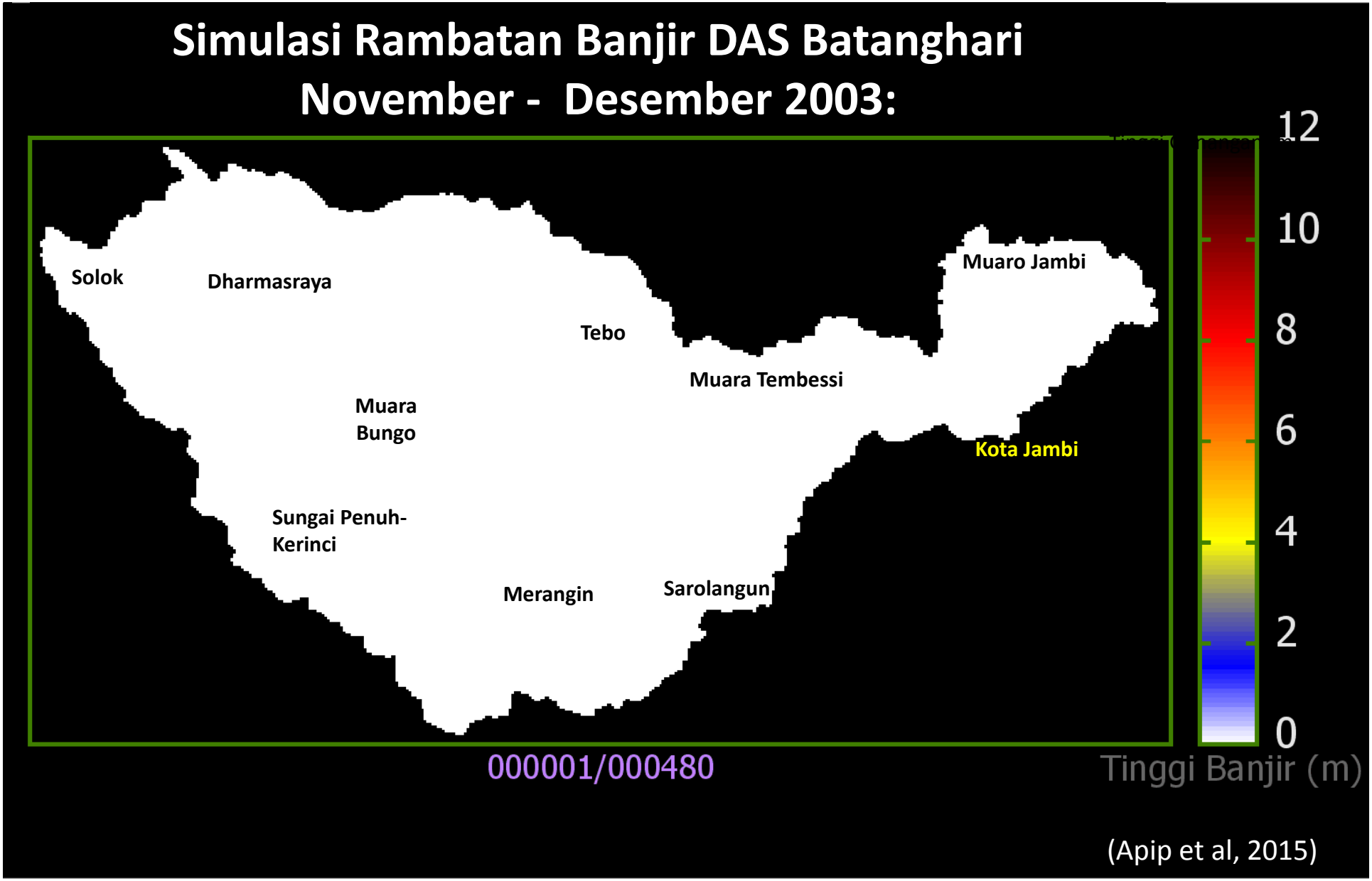
Simulasi Rambatan Banjir DAS Batanghari Nov - Desember 2003





Distribusi Curah Hujan Nov - Des 2003 di DAS Batanghari



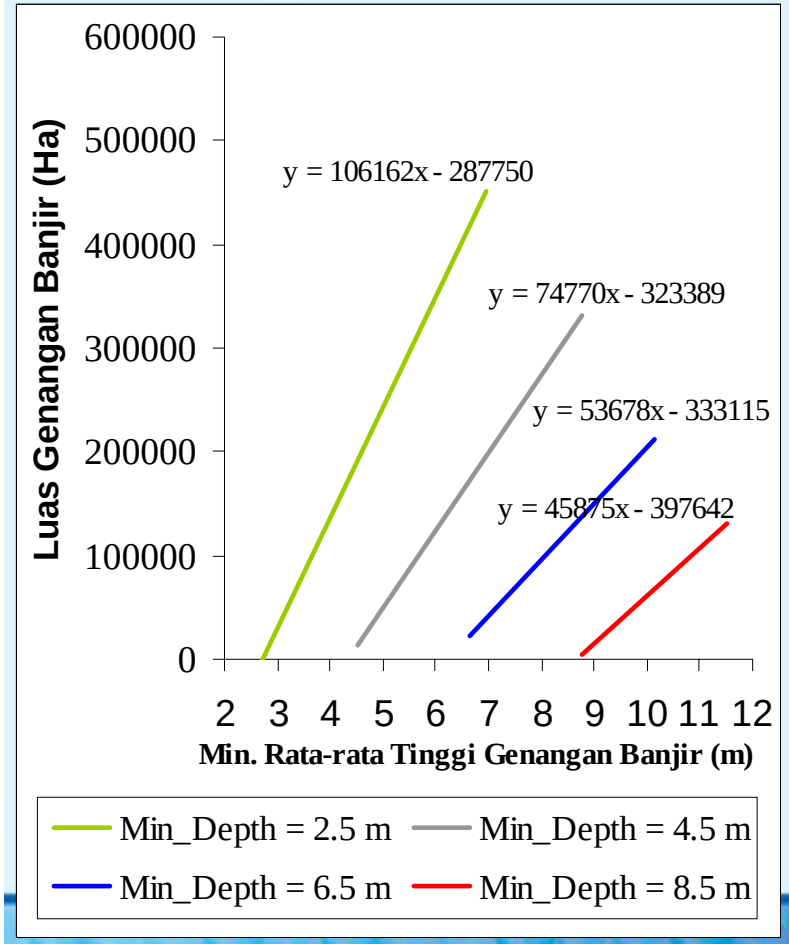


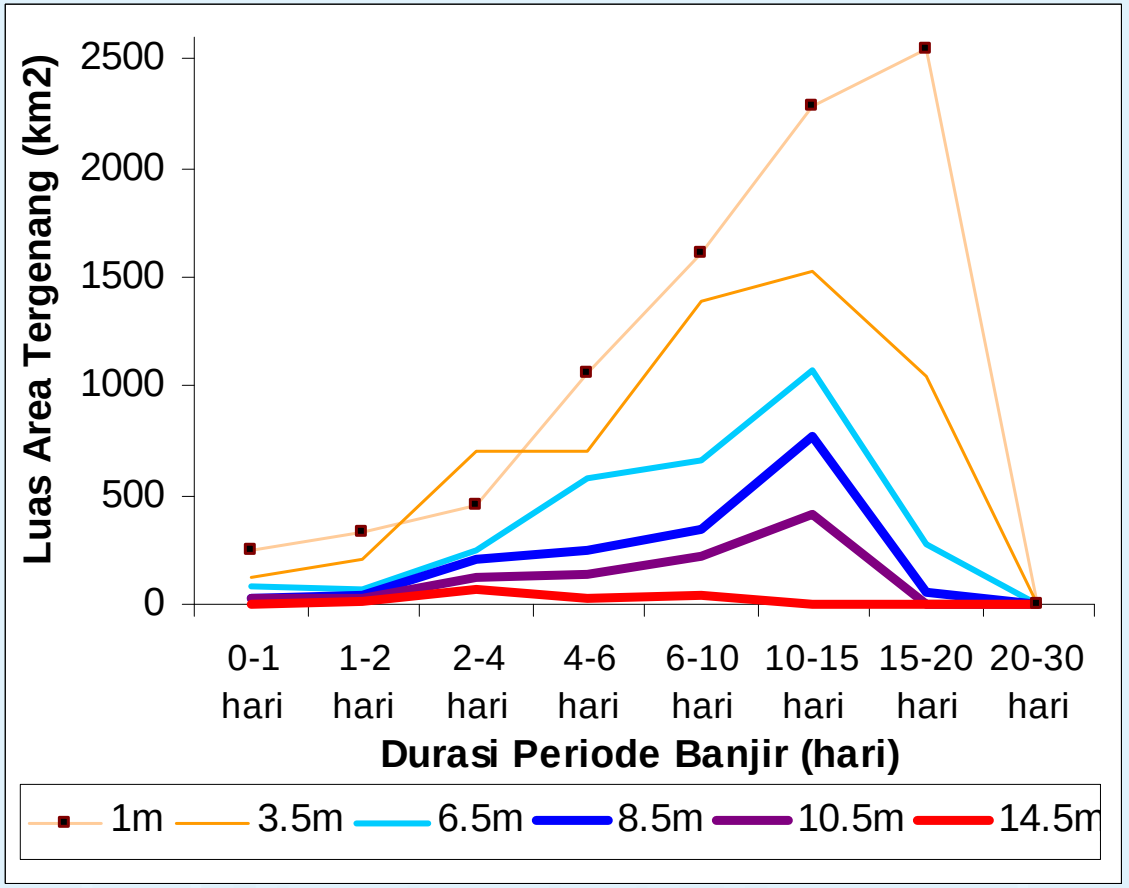
Perubahan Area & Tinggi Genangan Banjir

CAPAIAN SIGNIFIKAN HASIL RISET 2015

D. Informasi Spasial & Kuantitatif Dimensi Bahaya Banjir (*Flood Hazard*): *Durasi (t), Tinggi (h), Luas Genangan (A) Banjir*

Flood Risk (Rp) = f(t, A, h, Vulnerability)

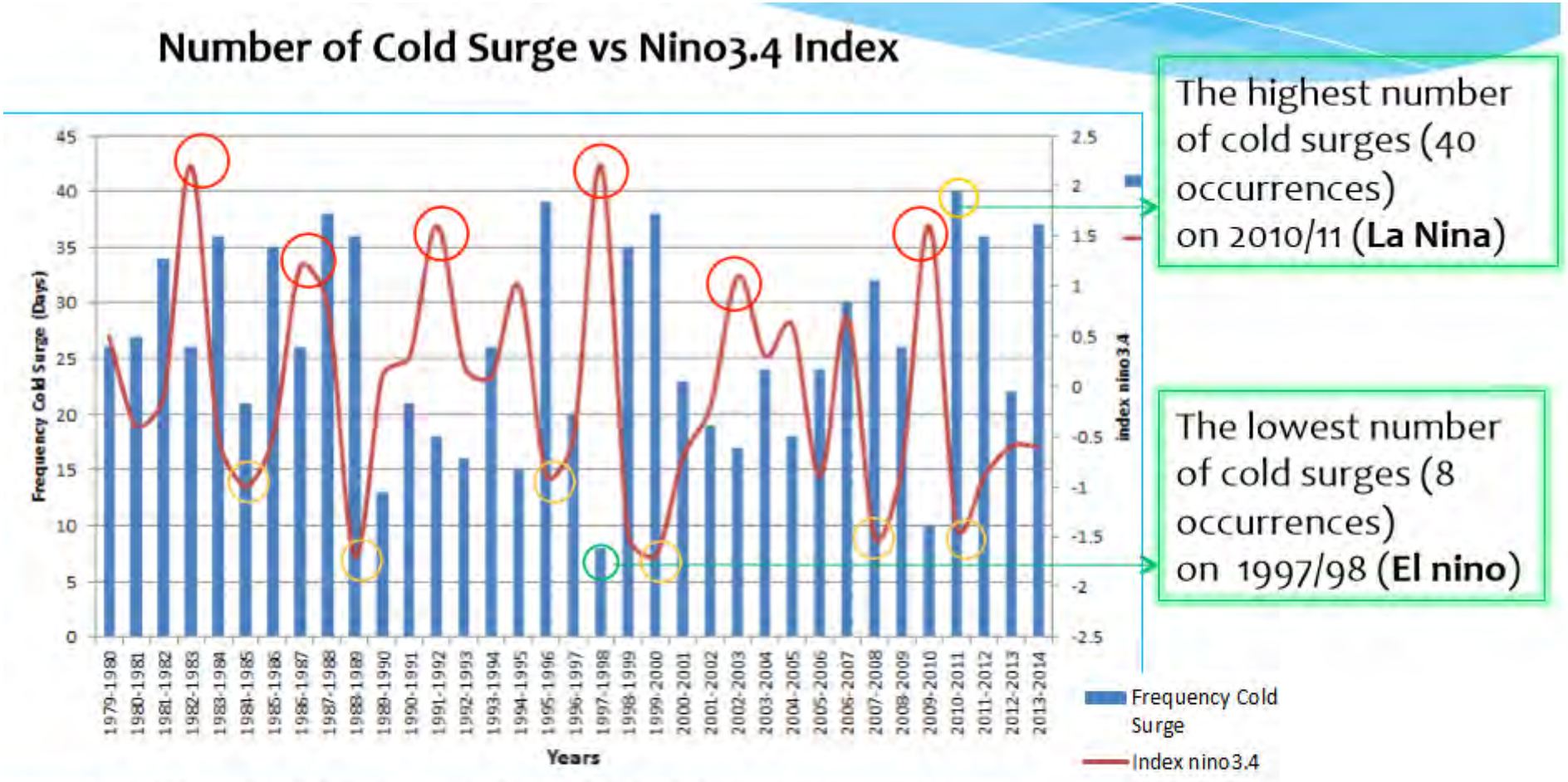




DAS BATANGHARI

INTRODUCTION

Dynamic Interaction between Ocean & Atmospheric System at two regions (Pacific Ocean & Indian Ocean) Affects the Climate Variability & Extreme Weather in Indonesia through El Nino and La Nina



La Nina → higher number of Cold surge event

El Nino → lower number of Cold surge event