

Integrated Flood Modeling and Pre-Disaster Loss Estimation in Asian countries

Sessions 3, S3-PS3 Collectively addressing Adaptation, Disaster Risk Reduction, and Loss & Damage (CCA-DRR-L&D)

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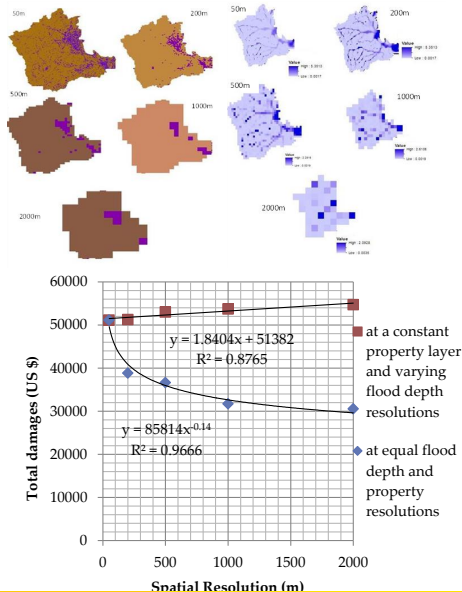
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Introduction

- Brief Report of APN project on Integrated Flood Modelling and Pre-Disaster Loss Estimation, (completed one year): Covers Japan, Sri Lanka and Thailand
- Objective: Unified methodology to apply across Asia.
- Topics Covered
 - 1 Uncertainty from spatial resolution used in the analysis
 - 2 Standardising building categories
 - 3 Development of Damage functions: Thailand and Sri Lanka
 - 4 Transforming existing Damage functions: Japan
 - 5 Validation, Future perspectives

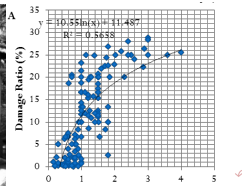
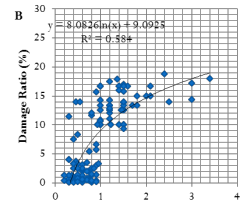
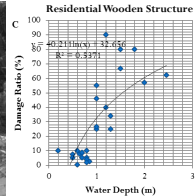
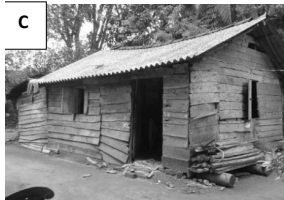
Damage Estimation Sensitivity to Spatial Resolution

- **Case Study** Ichinomiya River Basin, Japan.
- Inundation depth as well as exposure representation at 50 m to 2000 m grid resolution
- High resolution exposure information can reduce uncertainty. Produce acceptable estimates with low resolution water depth



Developing Damage Functions

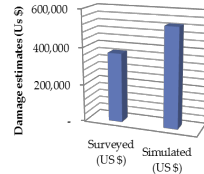
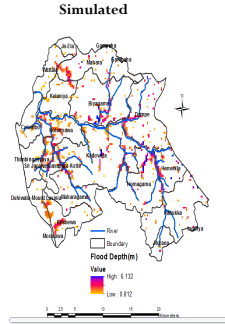
- Adopting Standard Building Categories: World Agency of Planetary Monitoring and Earthquake Risk Reduction (WAPMERR) as documented by the (UNISDR)
- Wood, All Steel Structures, All Concrete Frames(3), All Masonry (2), Adobe, Slab
- Colombo, Sri Lanka. Survey of 350 Buildings



Damage Functions

Sri Lanka

- Colombo 2010 May flood modelled and simulated. Damage estimation compared

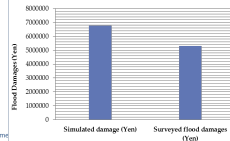
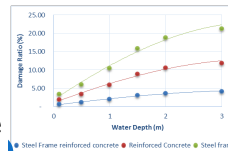


Thailand

- Wooden, Concrete frame and unreinforced masonry and Reinforced concrete moment frame

Japan

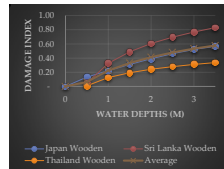
- Originally, wooden and non-wooden
- Transformed to Wooden, Steel frame, Reinforced concrete and Steel frame with reinforced concrete



Applications

- Average normalised loss functions seem to provide reasonable estimates for different countries with the modification of local cost factors as a first estimate.
- In Sri Lanka, currently an inter agency collaborating mechanism is being formed to undertake integrated flood forecasting, control and risk management
- The methodology will help in the Megapolis Development Project to assess future risks and protect investment

Wooden



Concrete

