

“Mainstream Space Technology” in Implementing SFDRR - GPSTAR



Srimal Samansiri
Disaster Management Centre
Government of Sri Lanka

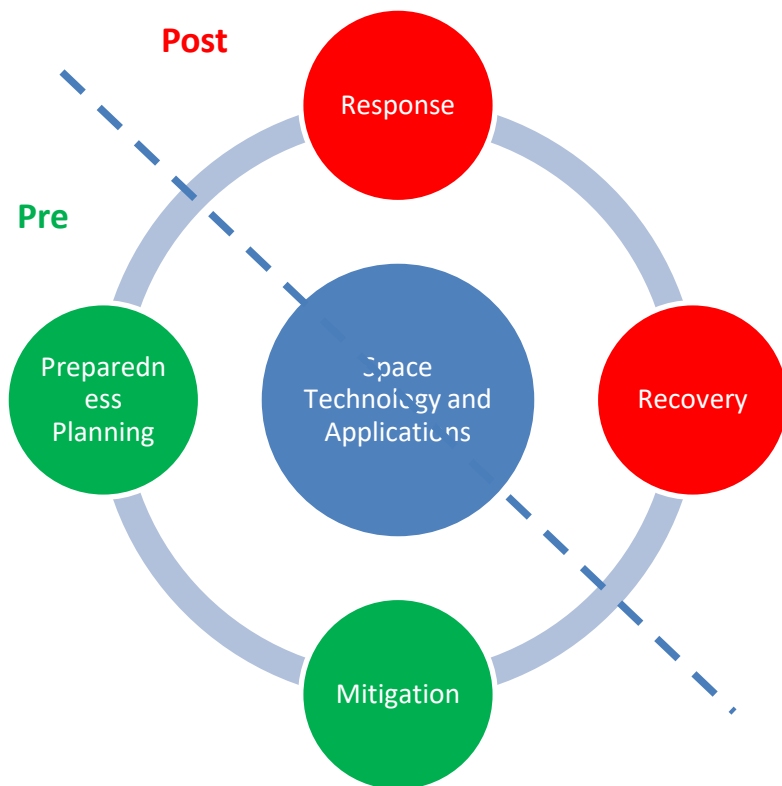


SFDRR Priority Actions...

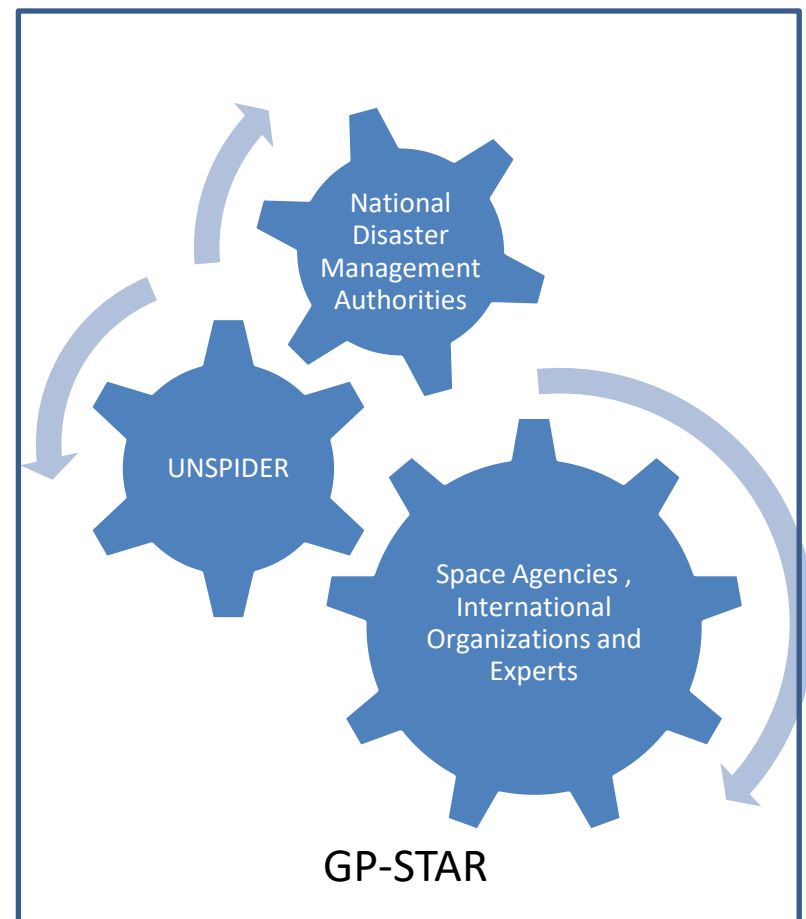


Effective use of “Space technology” in SFDRR Priority 01 and Priority 04 ...

UNOOSA - Aim of promoting the use of space-based information in all phases of the disaster management cycle



GP-STAR - Facilitate to better implementation of Sendai Framework for Actions Disaster Risk Reduction (SFDRR)



SFDRR Vs Space Technology

Priority 01 Understanding Risk

- Hazard Assessment
- Exposure Assessment
- Vulnerability and Risk Assessment

Priority 04 Enhance Disaster for Effective Response and to Build Back Better in Recovery Rehabilitation Reconstruction

- Early Warning

HAZARD PROFILES SRI LANKA 2008 - 2012

Floods

Department of Irrigation

Landslides

NBRO

Drought

Department of Agriculture

Cyclone

Department of Meteorology

Lightning

Tsunami

Coast Conservation
Department

Sea Level Rise

Storm Surge

Coastal Erosion

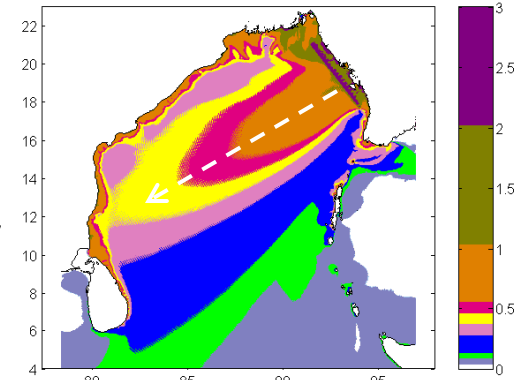
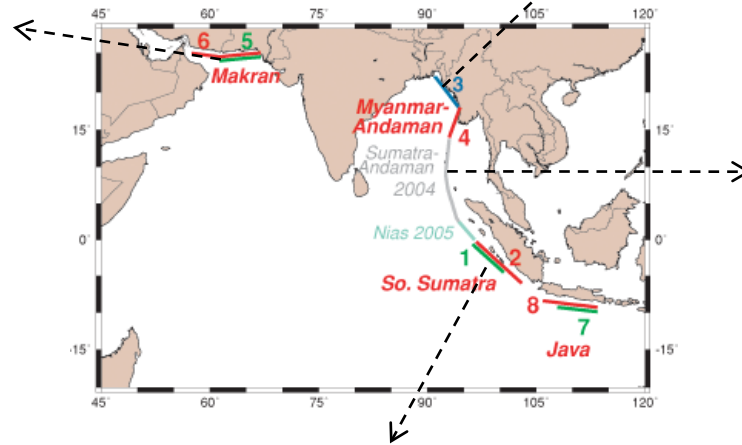
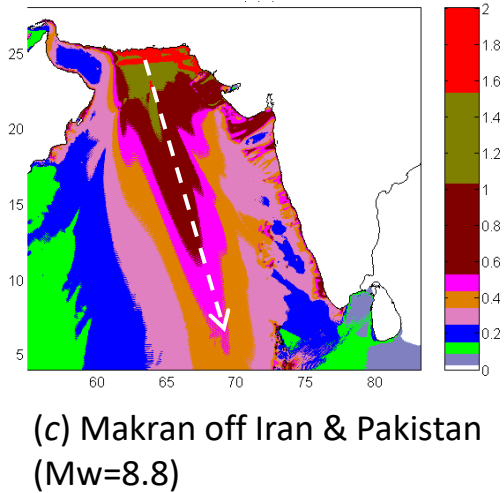
Launched on 26th December 2012

www.dmc.gov.lk

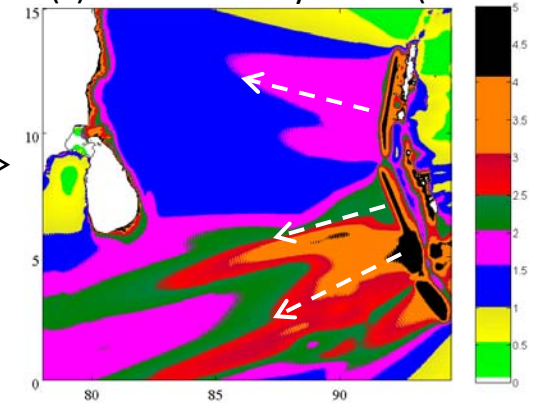
Tsunami Scenario Modeling

Tsunami Scenarios...

Max. Tsunami Amplitude



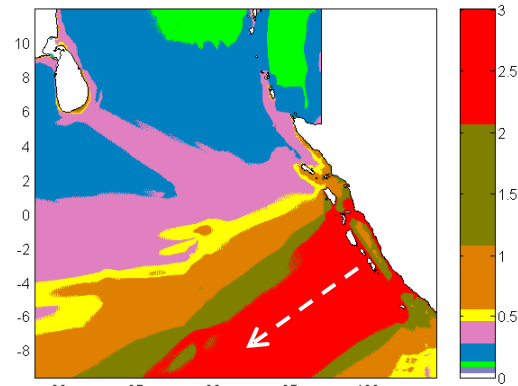
(c) Arakan off Myanmar (Mw=8.8)



(a) Northern Andaman - Sumatra (Mw=9.3)

**‘Maximum-Credible’ Tsunami
Scenarios
in the Indian Ocean Basin**

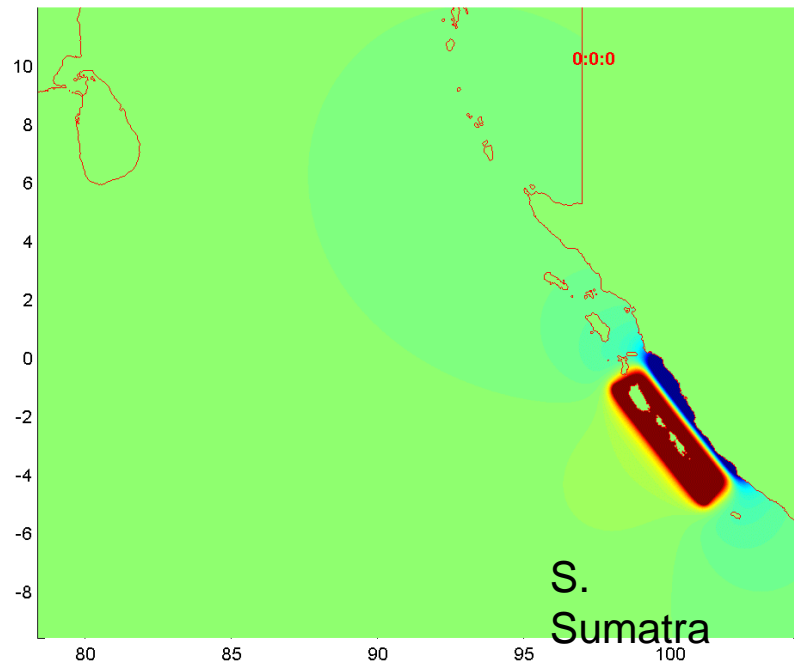
**Maximum ‘Tsunami
Heights’**



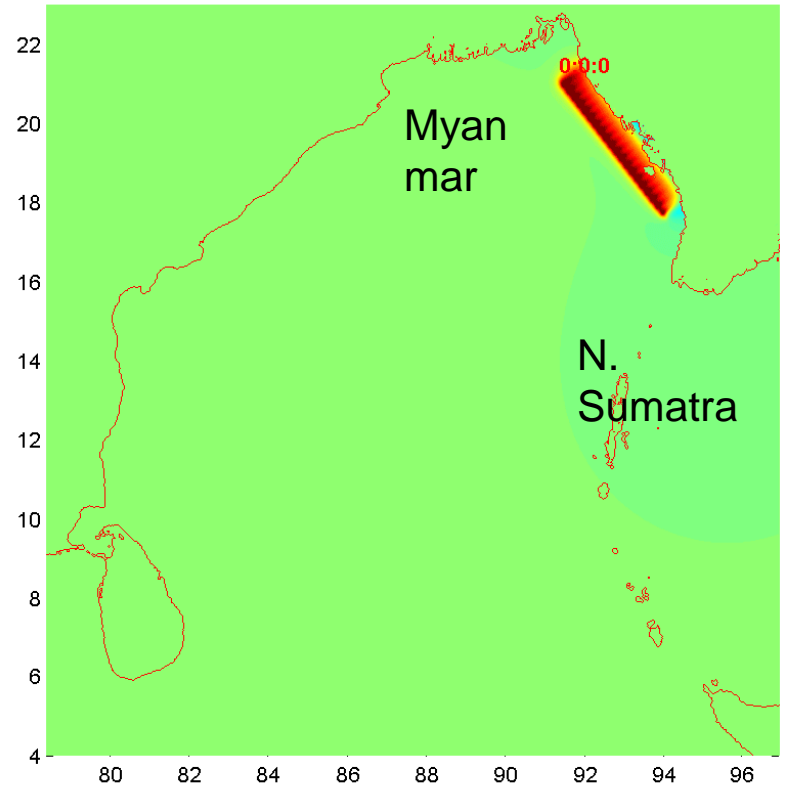
(b) Southern Sumatra (Mw=9.3)

Source: Dr. Janaka Wijetunga
University of Peradeniya

Tsunami due to an Earthquake of $M_w = 9.3$ in Southern Sumatra Seismic Zone

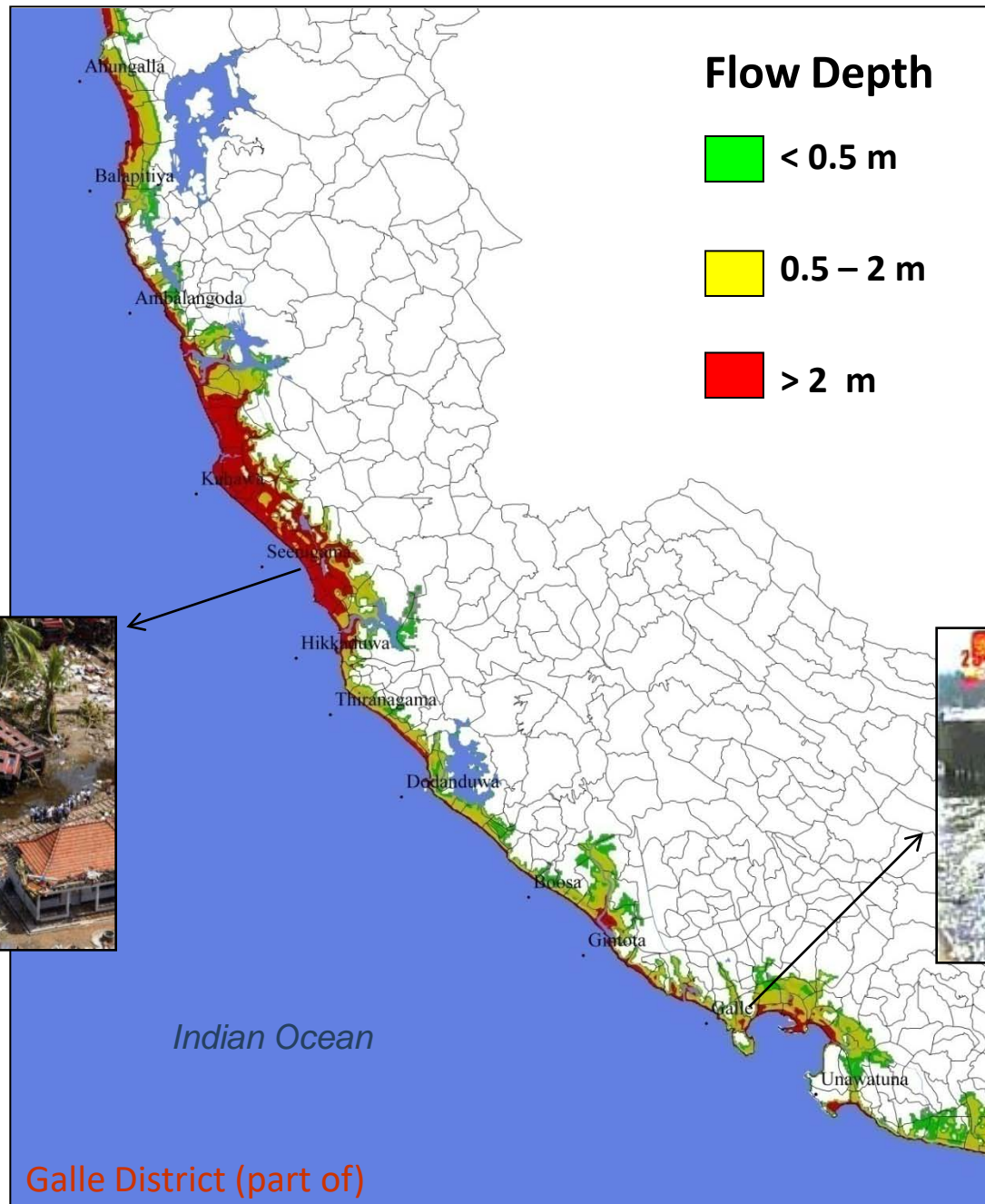


Tsunami due to an Earthquake of $M_w = 8.8$ in Arakan Seismic Zone off Myanmar



Tsunami Inundation Map – District Level (Galle)

Computed
inundation
distribution
due to an event
similar to
2004 tsunami



MAP LOCATION

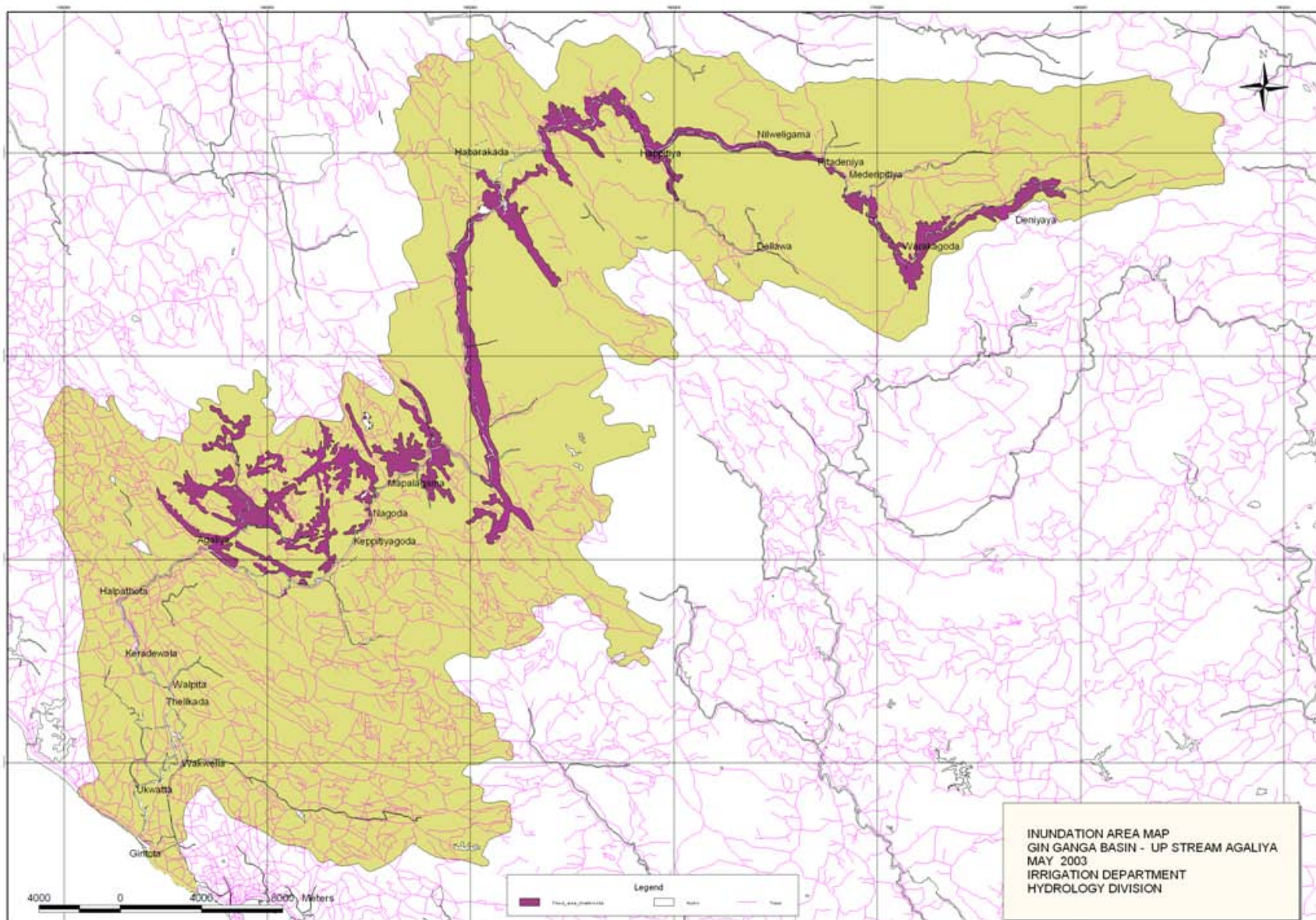


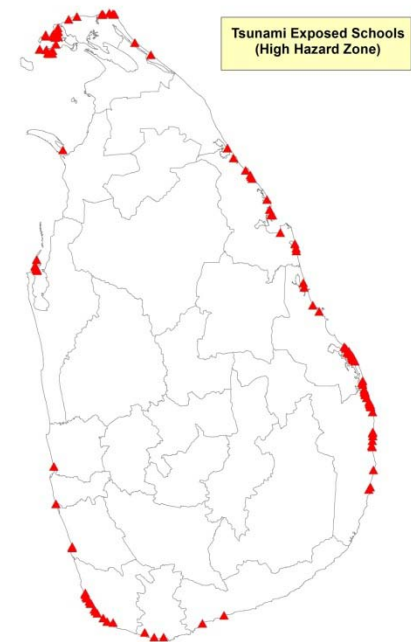
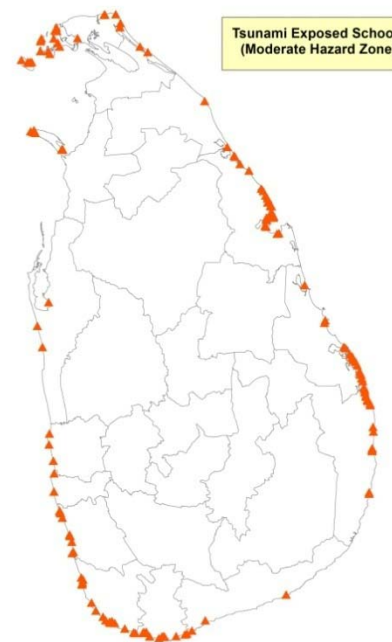
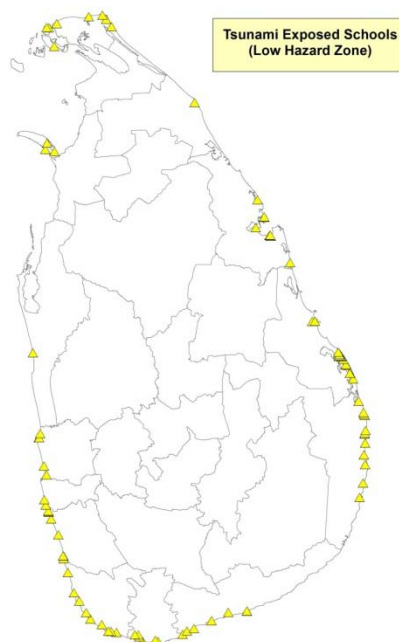
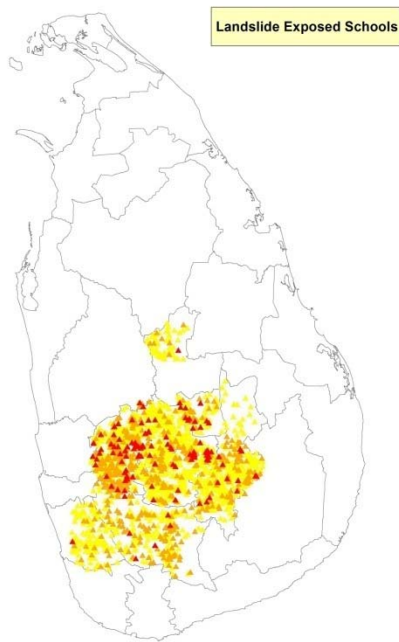
Peraliya - Train Tragedy



Galle - Bus Station

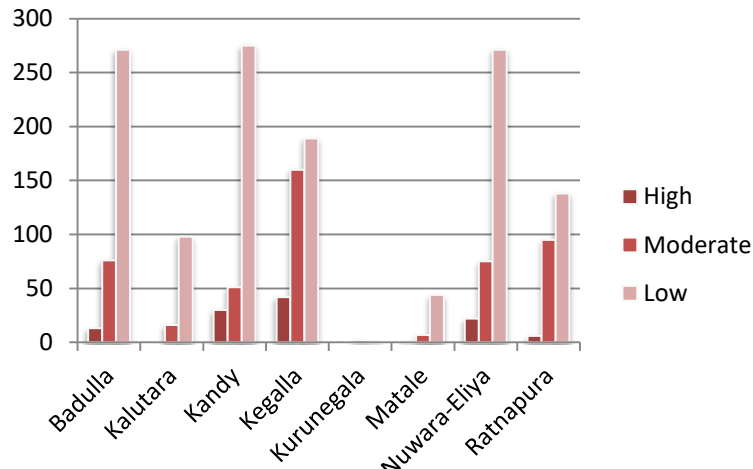
Flood Inundation Map - Gin Ganga



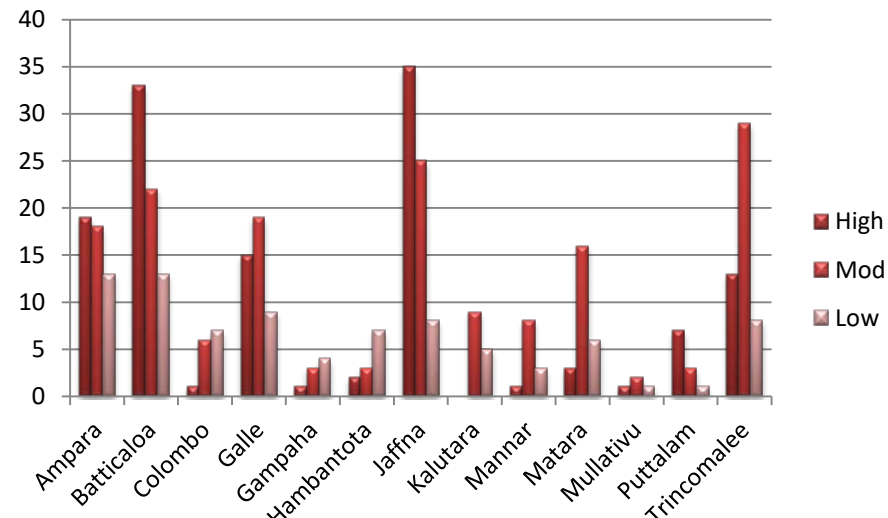


SECTOR LEVEL EXPOSURE MAPPING - Schools

District Profile of Tsunami Exposed Schools



District Profile of Tsunami Exposed Schools

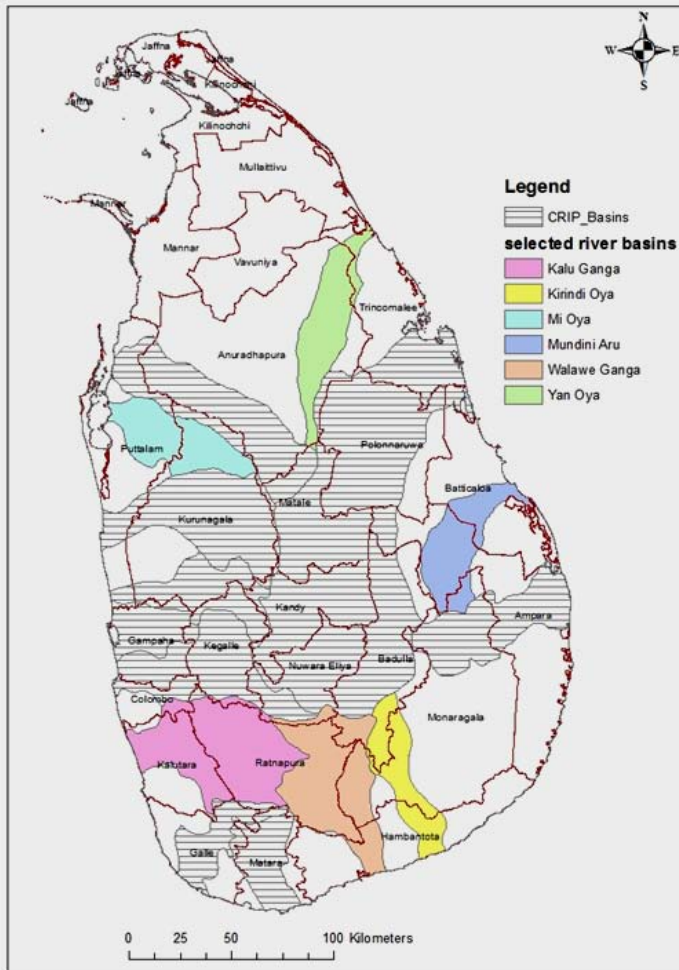


NATIONAL RISK PROFILE 2016-19

Risk Map Development for

- **Riverine Floods** - 7 River basins
 - **Urban Floods** - 23 Urban Cities
 - **Tsunami** - (Northern Coast)
 - **Storm Surge** - (Entire Coast)
 - **Drought** – (Entire Country)
 - **Strong Winds / Cyclone** – (Entire Country)
-
- **Duration 2016 – 2019 : 48 Months**

07 River Basins



Mundeni Aru Basin (1475 sqkm)

Kirindi (1230 sqkm)

Mi Oya (1113 sqkm)

Yan Oya Basin (1782 sqkm)

Walawe Ganga Basin (2596 sqkm)

Kalu Ganga (2976 sqkm)

Bolgoda Oya (366 sqkm)

Historical Flood Mapping

Map historical flood events by Satellites

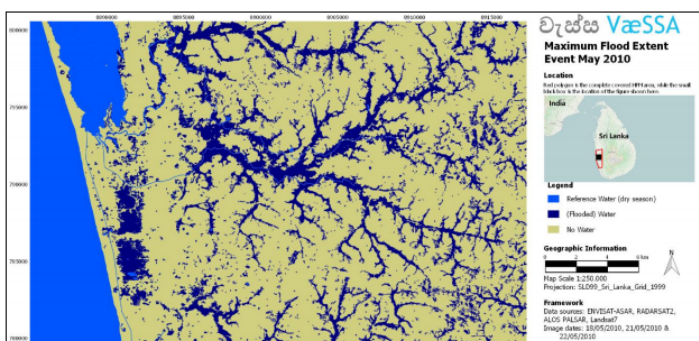
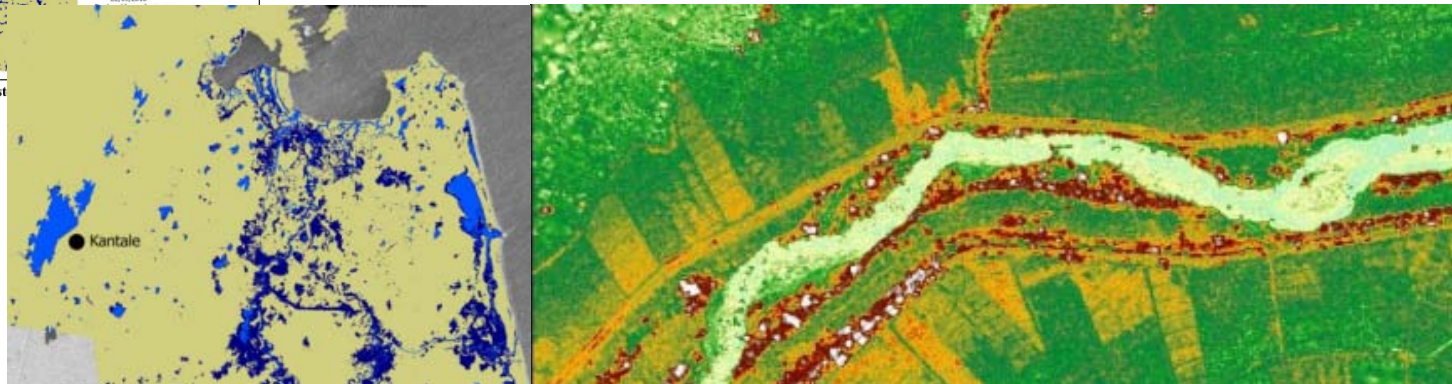


Figure 3: Part of the Maximum Flood Extent map in West

May 2003,
Dec 2007,
Nov/Dec 2008,
May 2010



Integrated Historical Flood Map

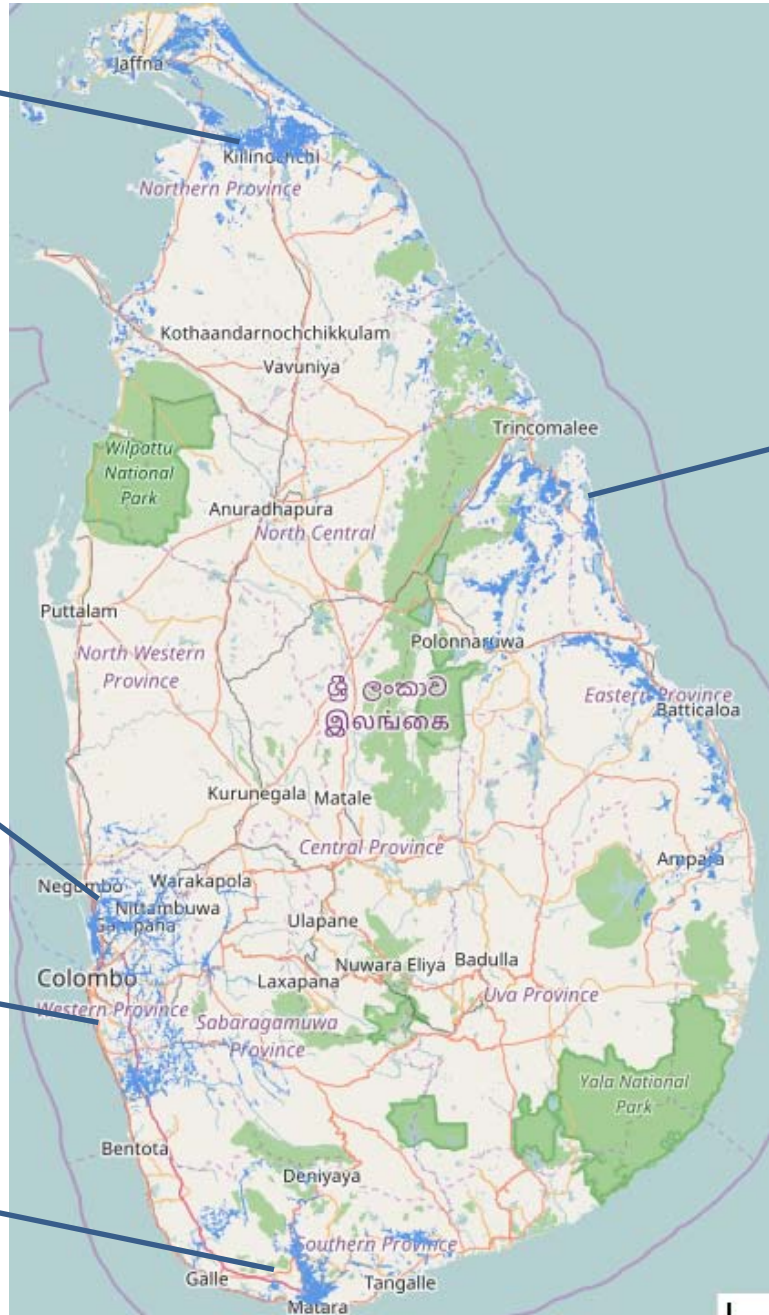
2008

2011 & 2014

2010

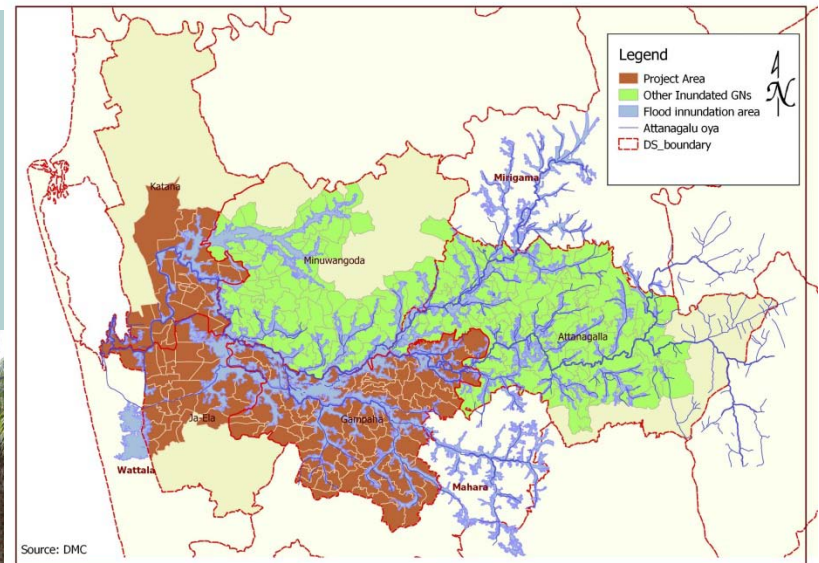
2008

2015

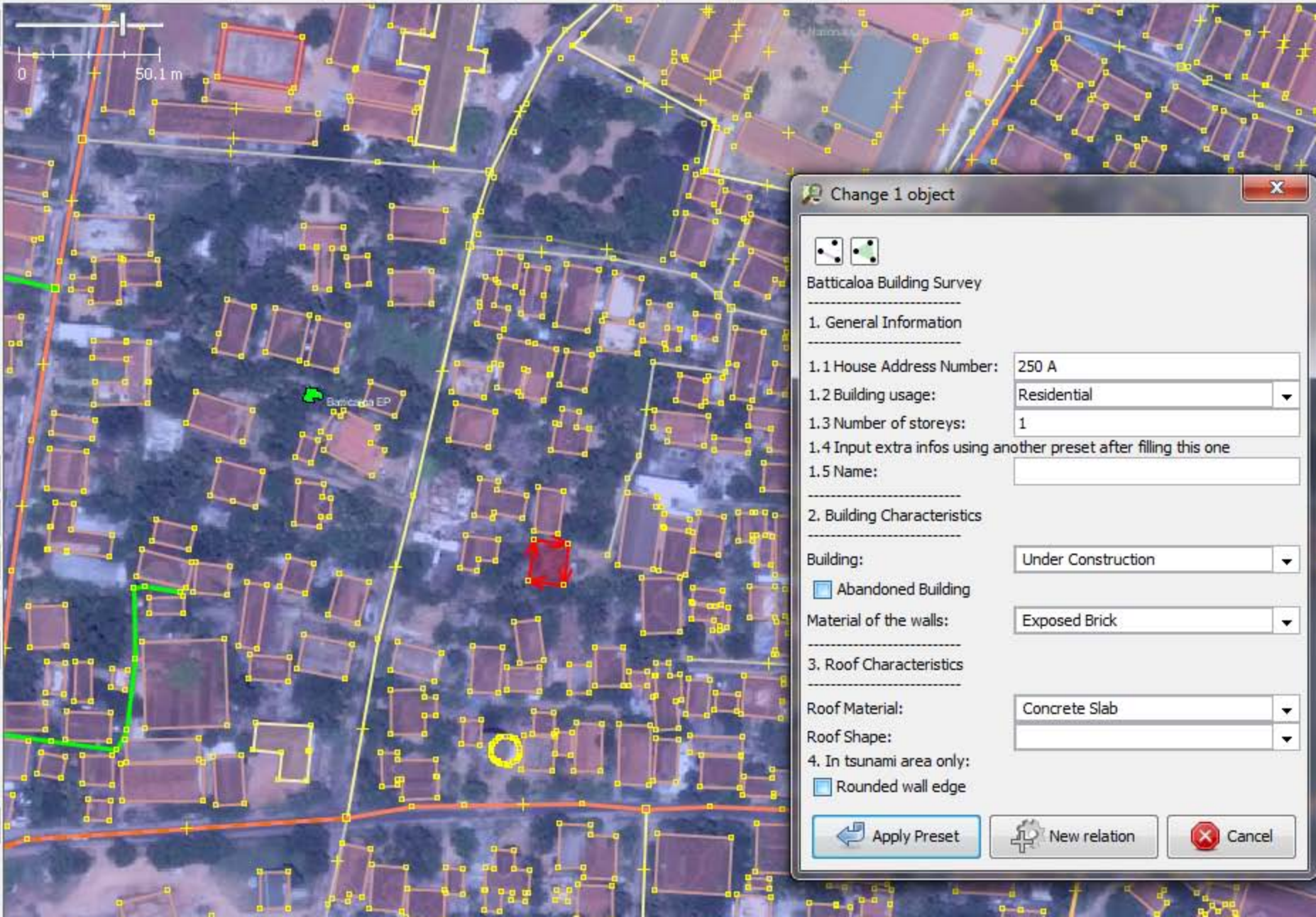


Simple hazard maps
combined by different
scenario
(Instead of hazard models)

EXPOSURE MAPPING



Over 150,000 buildings
with attributes



Change 1 object



Batticaloa Building Survey

1. General Information

- 1.1 House Address Number: 250 A
1.2 Building usage: Residential
1.3 Number of storeys: 1
1.4 Input extra infos using another preset after filling this one
1.5 Name:

2. Building Characteristics

- Building: Under Construction
☐ Abandoned Building
Material of the walls: Exposed Brick

3. Roof Characteristics

- Roof Material: Concrete Slab
Roof Shape:

4. In tsunami area only:

- ☐ Rounded wall edge



Apply Preset

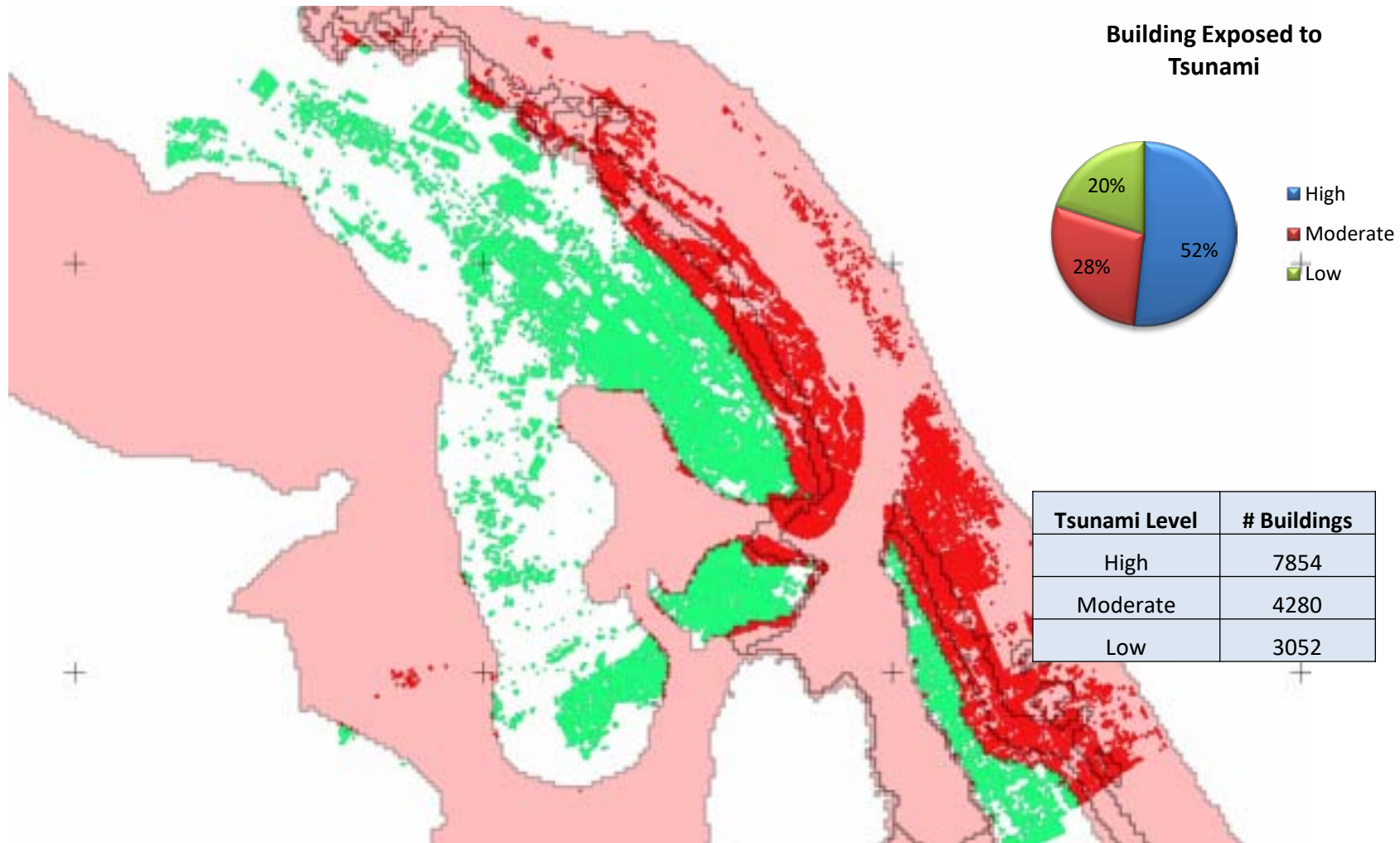


New relation



Cancel

Understanding Risk - Tsunami



Total buildings – 32,000

Total tsunami affected buildings – 15,000

Risk Level	Number of Buildings
High Risk	4569
Moderate Risk	5563
Low Risk	5054

Understanding Risk (Tsunami)



GP STAR USER NEEDS

- Baseline Survey – To understand “who is doing what and where” related to initiatives, technology, tools etc to minimize the duplication
- Share Resources - Place to share of best practices, tools, methodology and capacity building of national organizations
- Develop guidelines, methodology to conduct space based exposure and vulnerability mapping
 - Eg- population / building density manual and automatic extraction
- Hazard Mapping – To facilitate to prepare historical disaster mapping
- More focused to implement **SFDRR Priority 01** (Understanding Risk) and **Priority 04** (Early Warning)
- Should focus DRR phase than Response Phase

Thank You

Srimal Samansiri
srimal@dmc.gov.lk