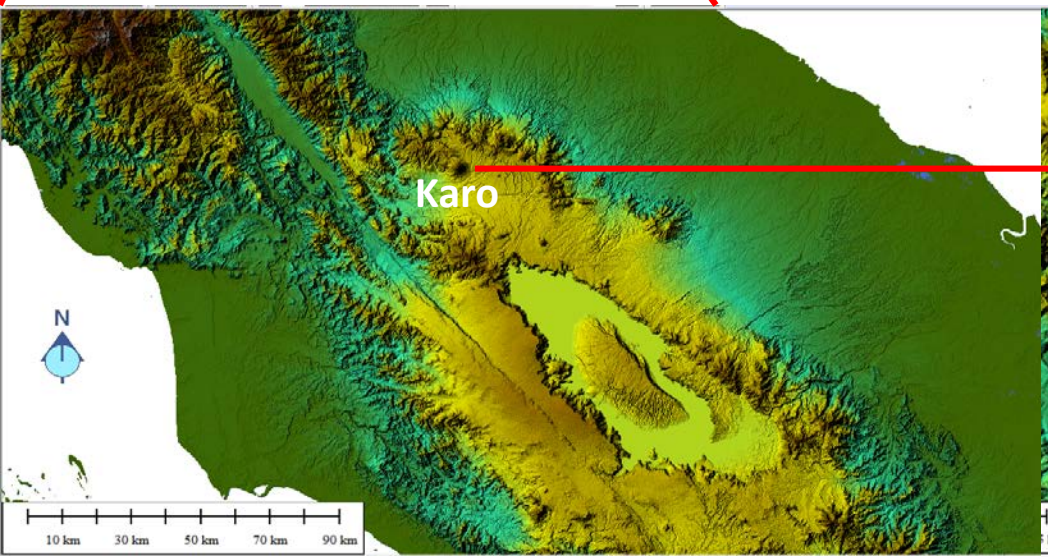
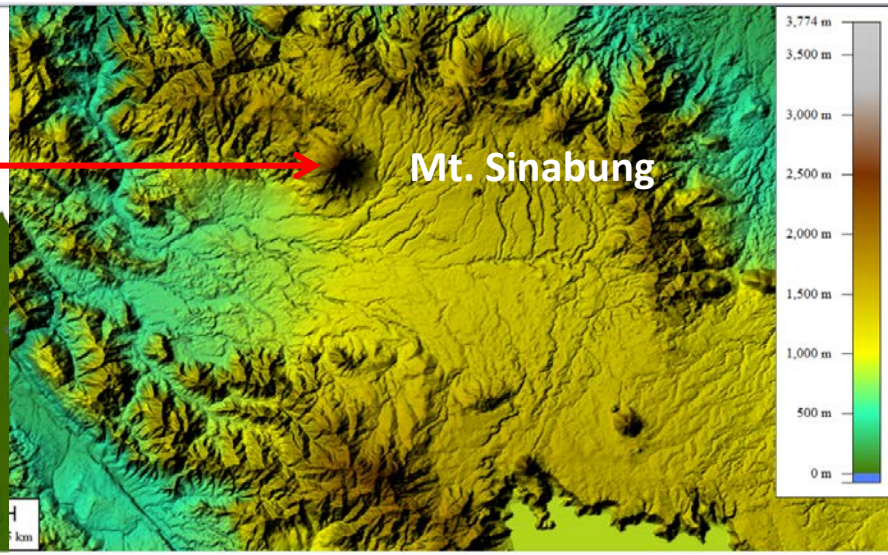
# Geomorphological Approach for Disaster Risk Reduction of Sinabung Eruption in Karo Highland, North Sumatra, Indonesia

**By:**
**Dwi Wahyuni Nurwihastuti**
**Darwin**

**Universitas Negeri Medan/State University of Medan, North Sumatra Indonesia**

# Reasearch Location

# Research gap

Sinabung was dormant during 400 years

Sinabung erupt 2010 & 2013 until now

- People death, relocated & evacuated
- Agriculture land, settlement, and infrastructure destroyed

It is very harmful for people living around the Sinabung

There are no disaster risk reduction (DRR) of Sinabung eruption that well done

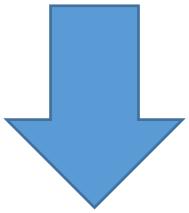
There are no historical data of Sinabung eruption before August 29, 2010

It is difficult to formulate the DRR model of Sinabung eruption based on historical eruption

**Geomorphological approach can be help to analyze the physical pattern of Sinabung eruption in the past as a basis to formulate the DRR model of Sinabung eruption**

# Research Aim

- **to reduce disaster risk of Sinabung Eruption based on geomorphological approach**



**8 research objectives**

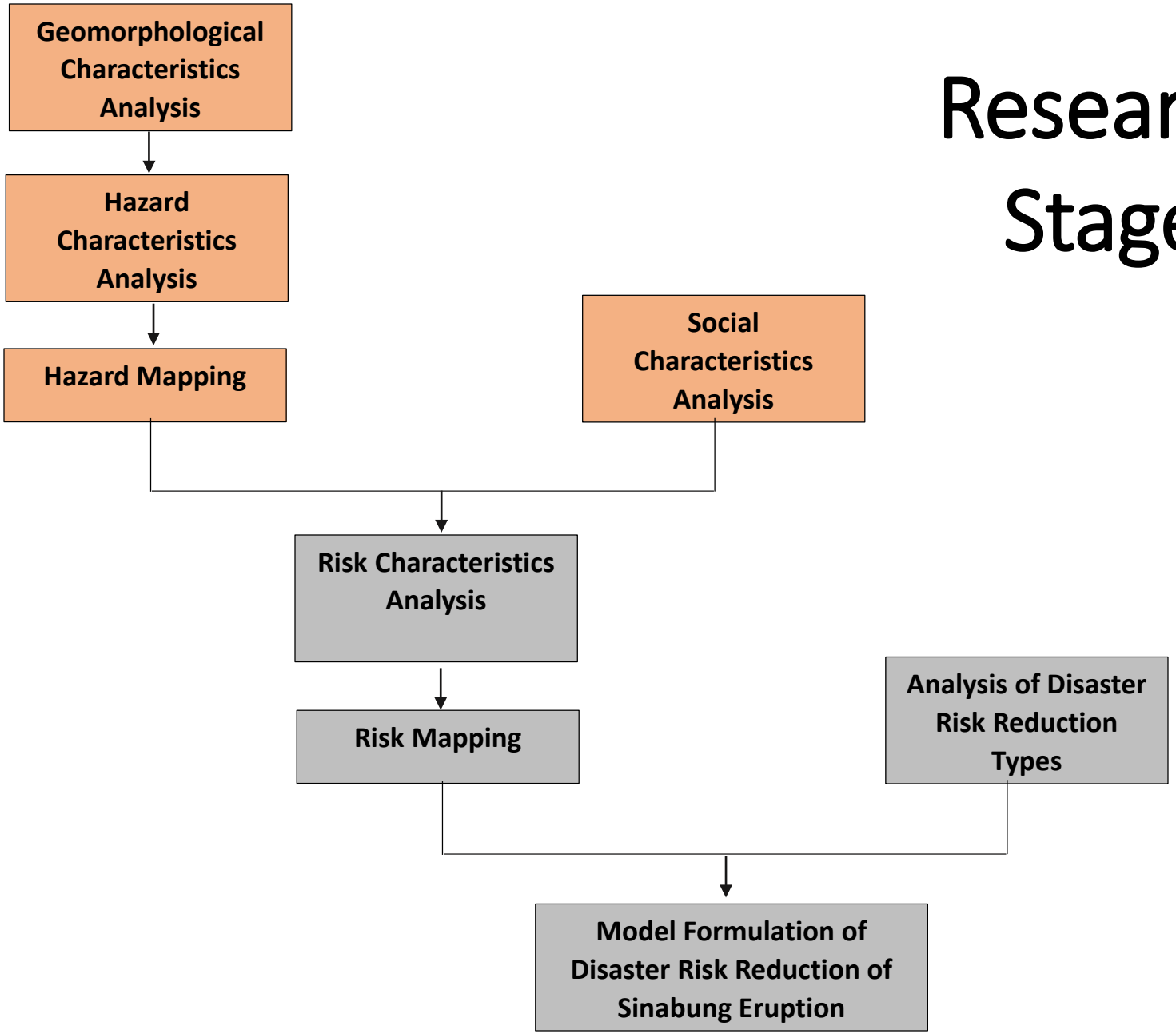
# Objectives & Methods

| Nb. | Objectives | Methods |
|---|---|---|
| 1 | To analyze the physical phenomena in order to obtain the geomorphological characteristic of Sinabung Volcano | • interpretation of remote sensing imageries<br>• interpretation of maps<br>• analysis of secondary data<br>• field observation |
| 2 | To analyze the geomorphological characteristic in order to obtain the hazard characteristic of Sinabung Eruption | |
| 3 | To map the hazard of Sinabung Eruption in order to obtain the hazard map | • Geographic Information System (GIS) analysis |
| 4 | To analyze the social phenomena in order to obtain the social economic characteristic of people who live in surrounding of Sinabung Volcano | • analysis of secondary data<br>• field observation<br>• interview<br>• focus group discussion |

# Objectives & Methods

| Nb. | Objectives | Methods |
|---|---|---|
| 5 | To analyze the risk due to Sinabung Eruption in order to obtain the risk characteristic | • analysis of hazard map<br>• analysis of the social economic characteristic of people who live in surrounding of Sinabung Volcano |
| 6 | To map the risk of Sinabung Eruption in order to obtain the risk map | • Geographic Information System (GIS) analysis |
| 7 | To know the type of disaster risk reduction that have been done related to Sinabung Eruption | • field observation<br>• interview<br>• focus group discussion |
| 8 | To make a model of disaster risk reduction of Sinabung Eruption based on geomorphological approach | • Geographic Information System (GIS) analysis |

# Research Stage



# Relevance

**Scientific:**

- Development of geomorphological approach for disaster risk reduction of volcanic eruption

**Practical:**

- The research results can be used as a basis for making disaster risk reduction policies of volcanic eruption in Indonesia
- The research results can be applied for reducing the impact of the Sinabung eruption that still going on today and not yet certain when it will stop

The research strongly support the priority programs of Indonesia government in disaster management

# Thank you