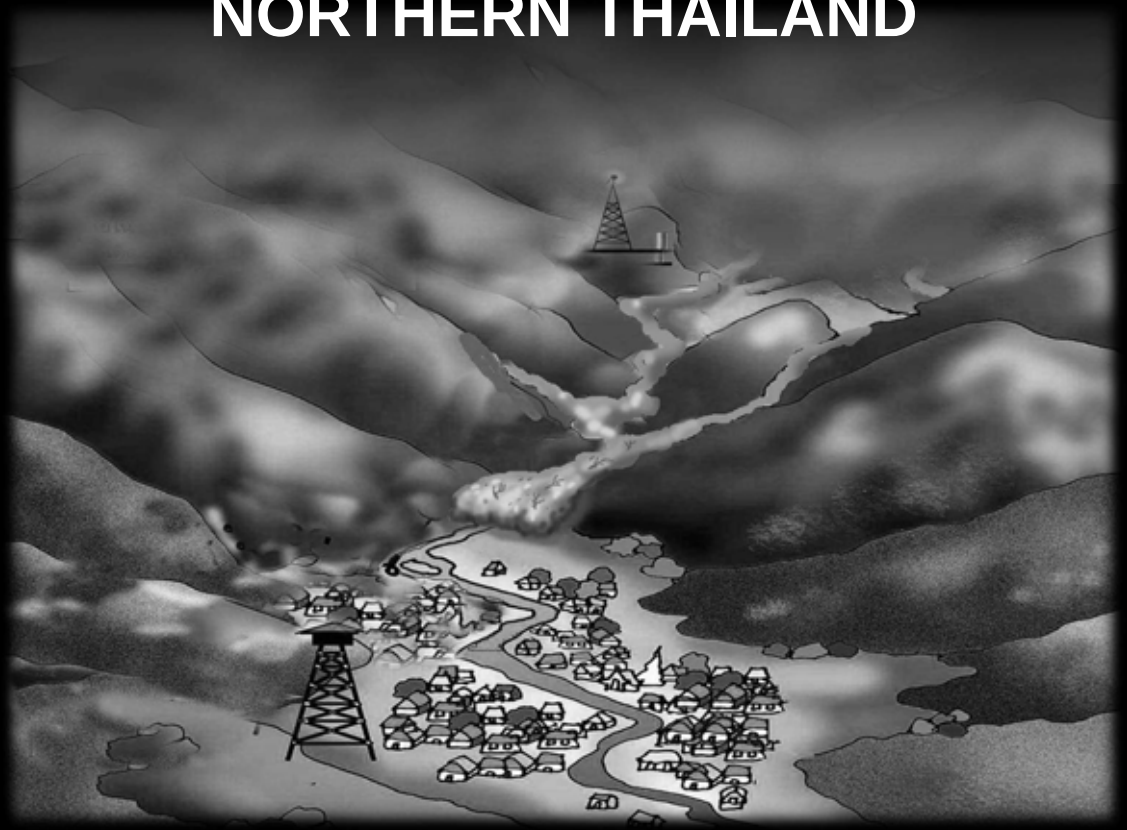
GEOSS/AWCI

RECENT SIGNS OF WATER-RELATED DISASTERS

NORTHERN THAILAND



Thada Sukhapunnaphan

5 February 2009 Kyoto ,Japan

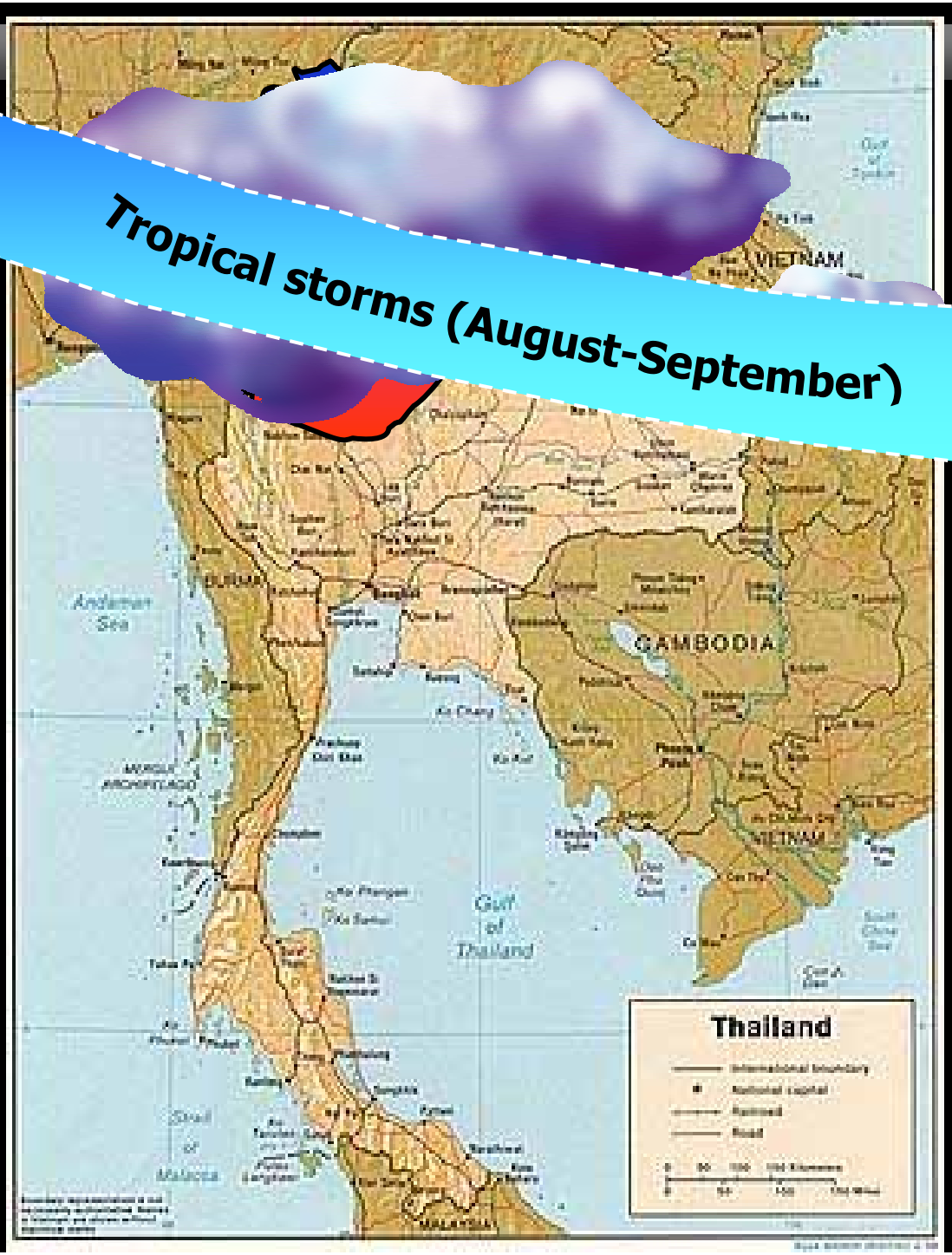
CONTENT

1. Introduction
2. Types of Flood in Northern Thailand
3. Causes and factors of flood and debris flow
4. Trend of flood disaster **increasing**
5. Conclusion

Main factors of flood in Northern Thailand.

Flash flood and overbank flow inundation trend to occur mostly in the wet season from May to October

Brings heavy rain by southwest monsoon from Indian Ocean, tropical storm from South China Sea, low pressure trough or frontal encounter of different pressure air masses.



2. Types of Flood in Northern Thailand

2.1 Overbank flow inundation

2.2 Flash flood

2.1 Overbank flow inundation

Flood in Chiang Mai city 2005

2.2 Flash flood
and debris flow








3. Causes and factors of flood and debris flow

NATURAL FACTORS

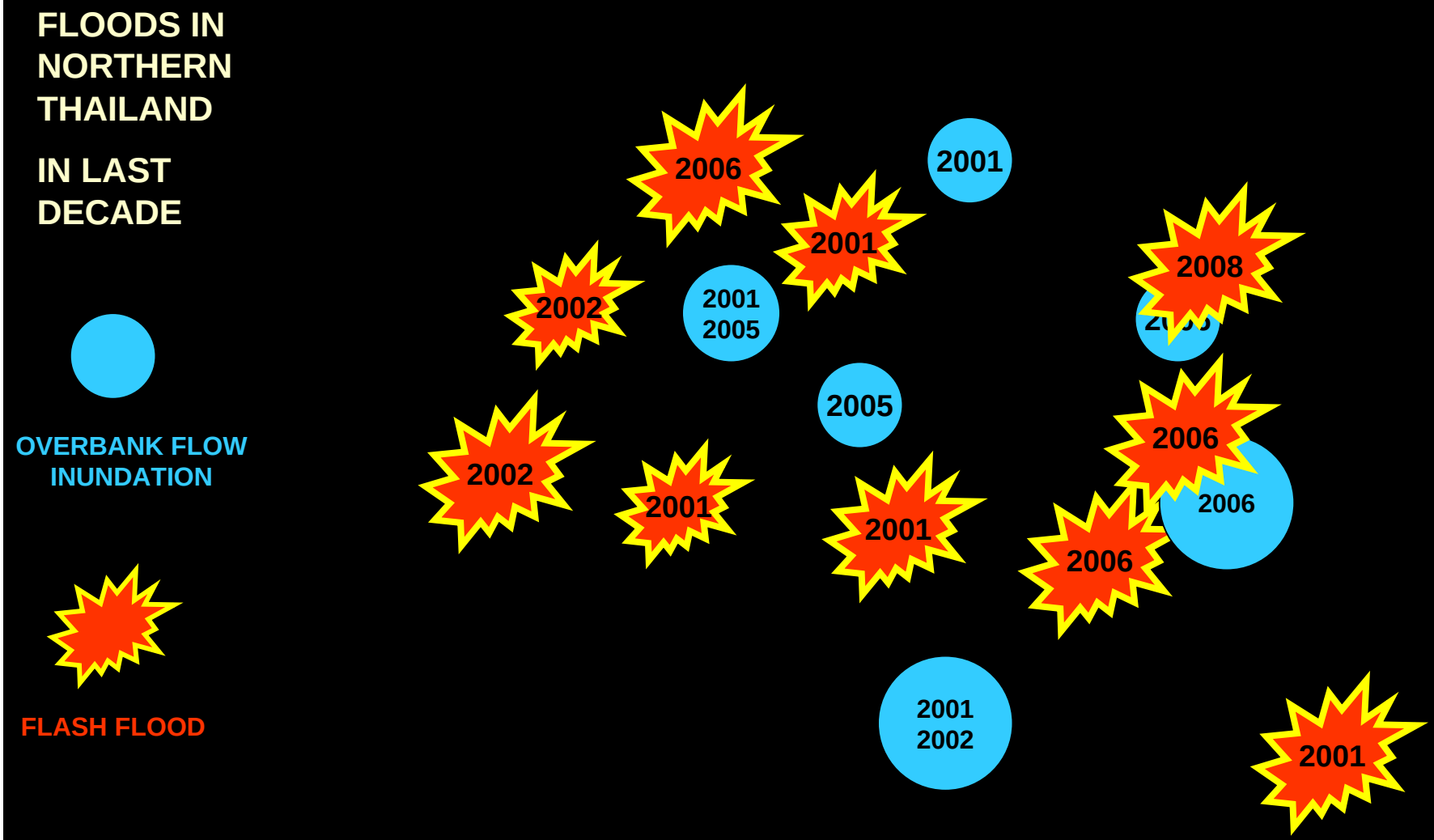
- HEAVY RAIN
- TOPOGRAPHIC CHARACTERISTICS
- SOIL EROSION

HUMAN FACTORS

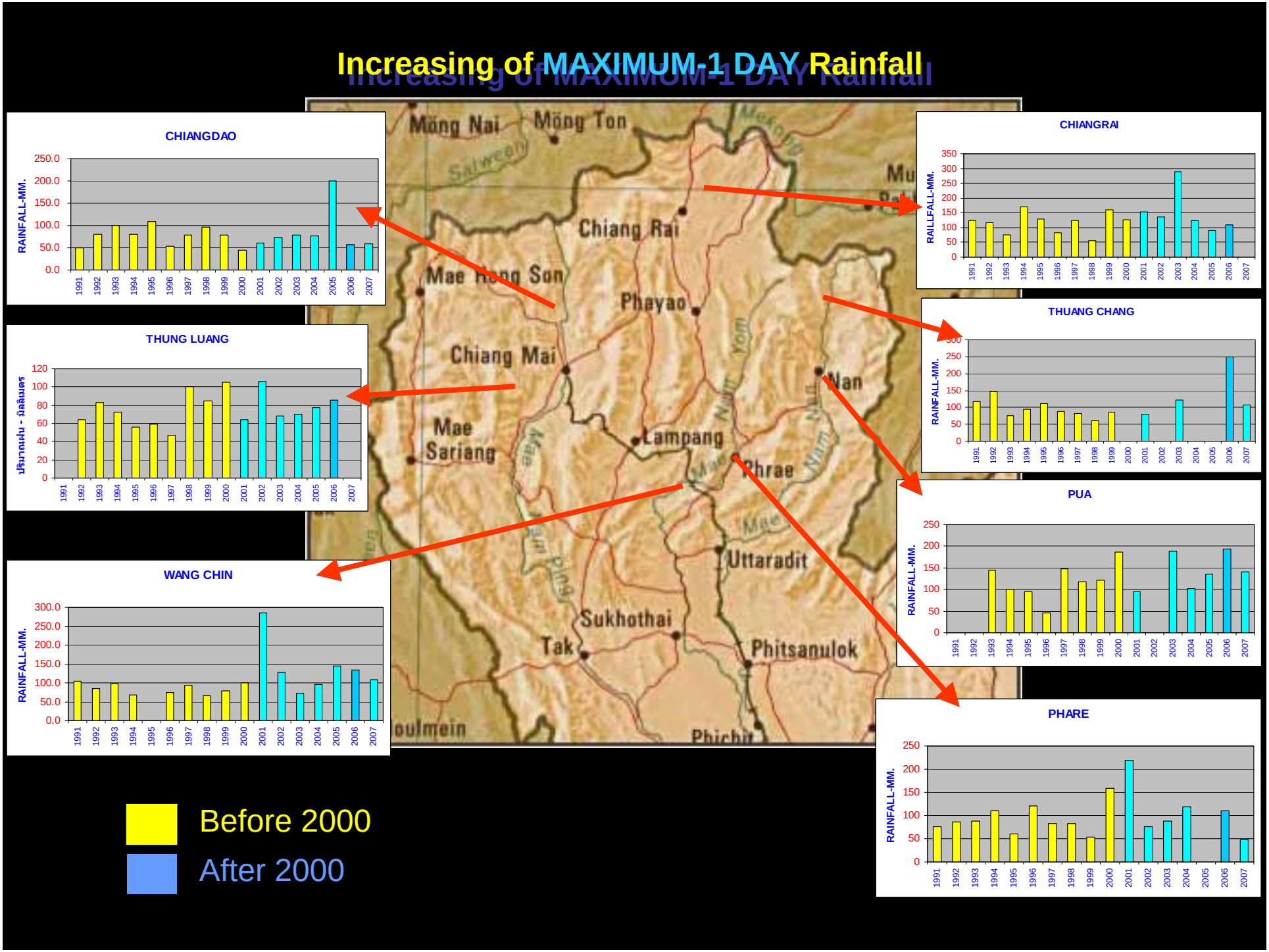
- LAND USE CHANGE
  - DEFORESTATION
  - SINGLE CROPS
- INFRASTRUCTURE CONSTRUCTIONS
- VULNERABLE AREA SETTLEMENT

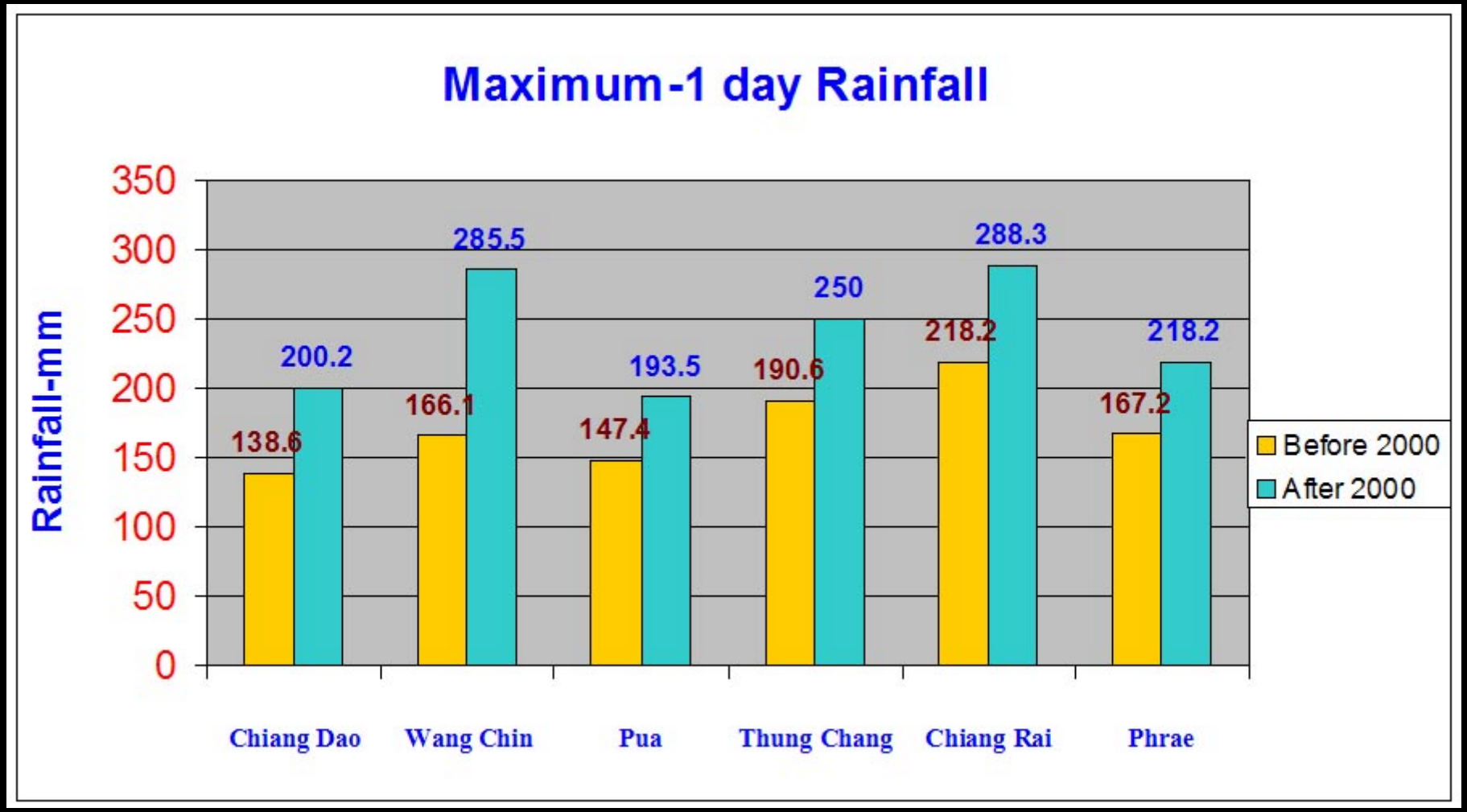
3. Causes and factors of flood and debris flow

4. Trend of flood disaster increasing



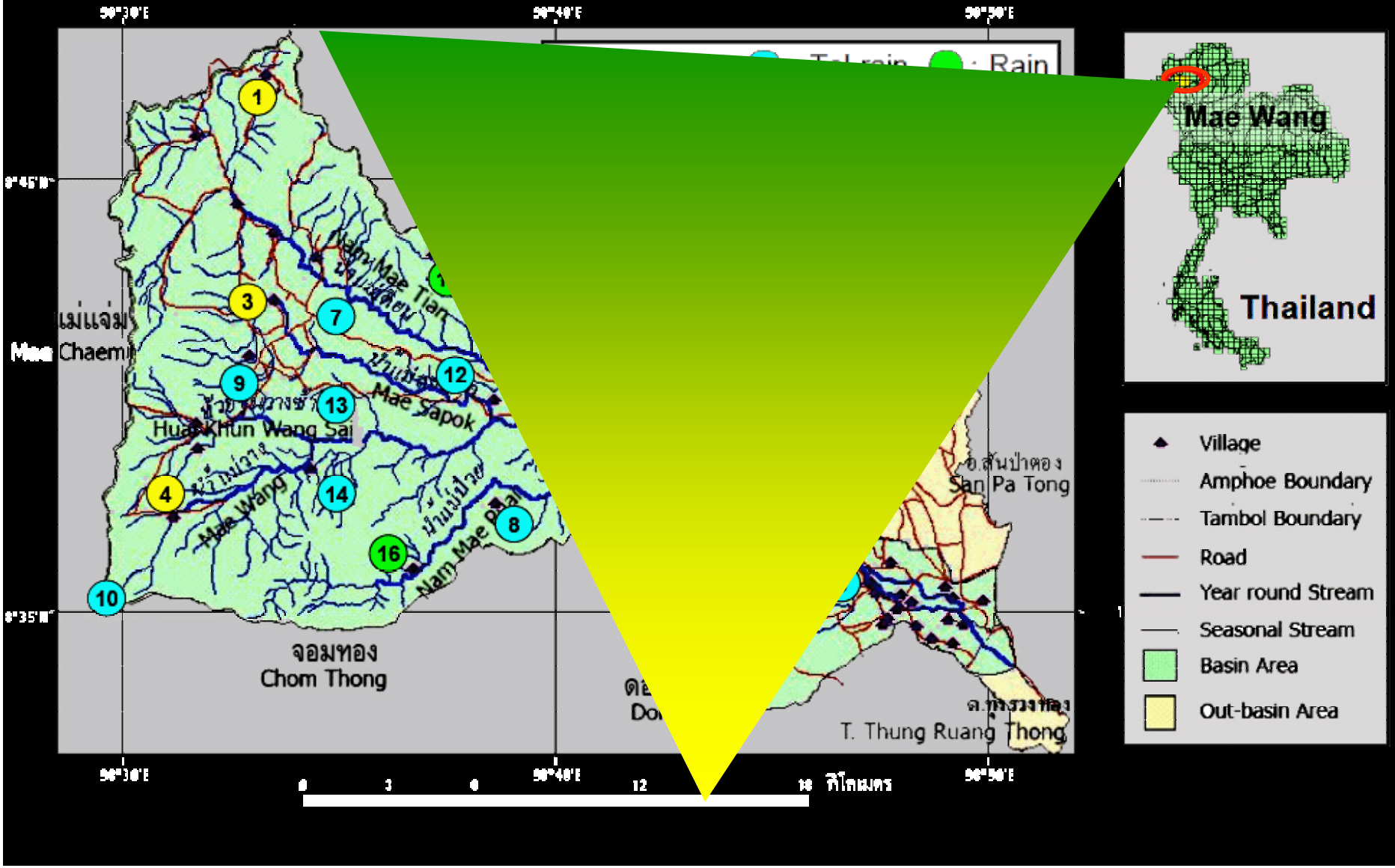
Increasing of MAXIMUM-1 DAY Rainfall



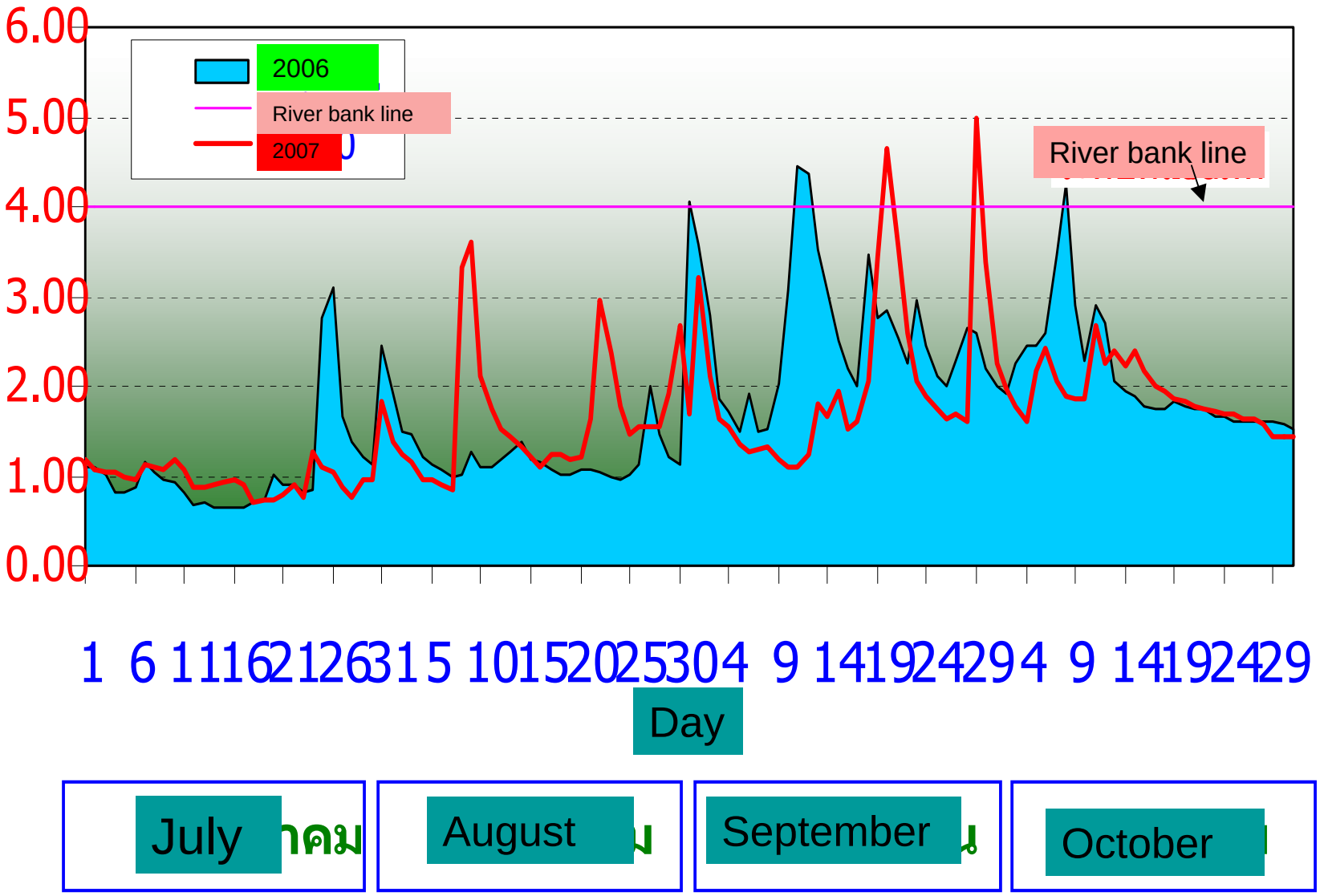

Maximum-1 day Rainfall
Rainfall-mm
350
300
250
200
150
100
50
0
138.6
200.2
166.1
285.5
147.4
193.5
190.6
250
218.2
288.3
167.2
218.2
Chiang Dao
Wang Chin
Pua
Thung Chang
Chiang Rai
Phrae
Before 2000
After 2000

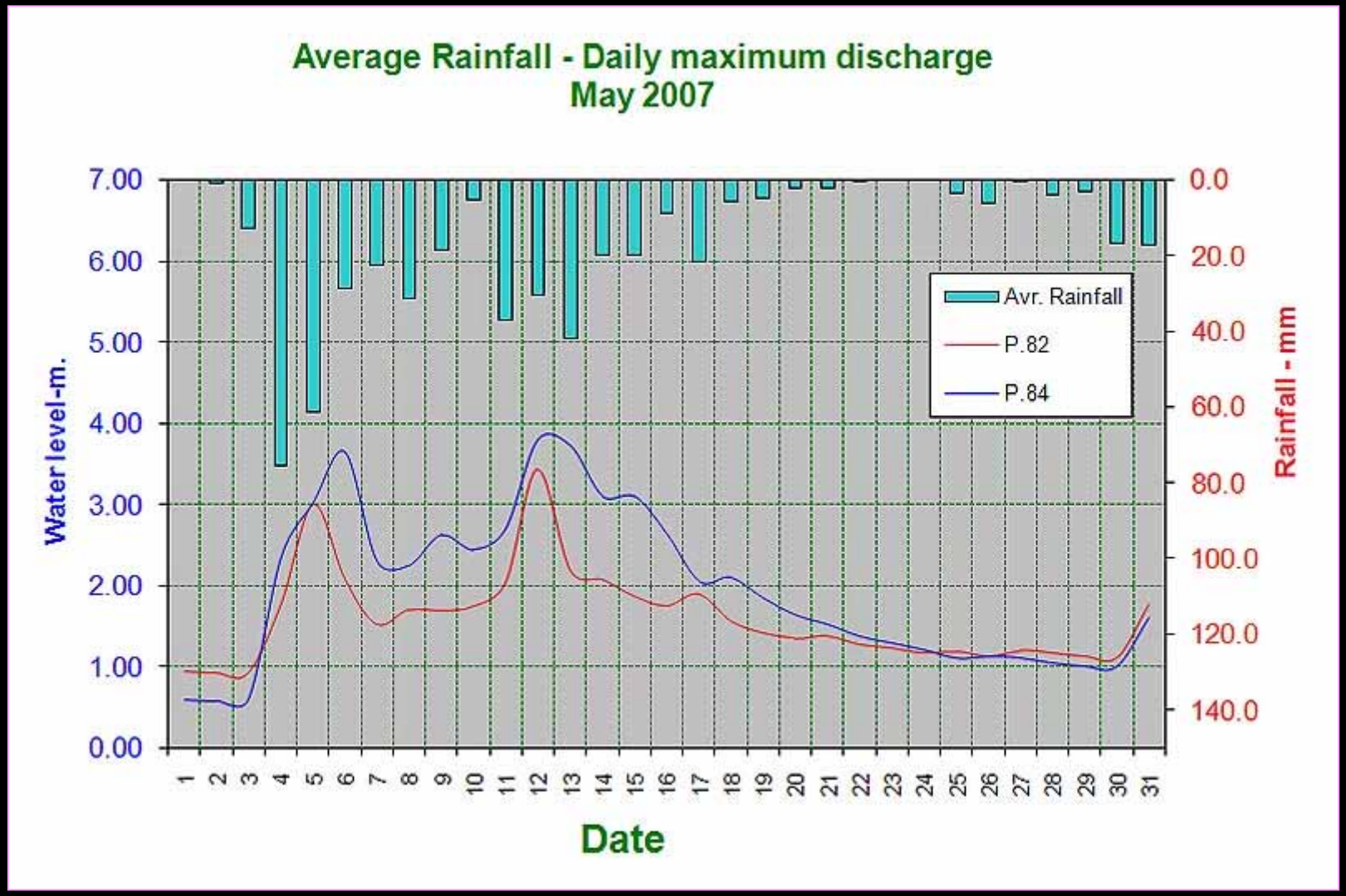
STATIONS	BEFORE 2000	AFTER 2000
CHIANG DAO	138.6	200.2
WANGCHIN	166.1	285.5
PUA	147.4	193.5
THUNG CHANG	190.6	250
CHIANG RAI	210.2	288.3
PHRAE	167.2	218.2

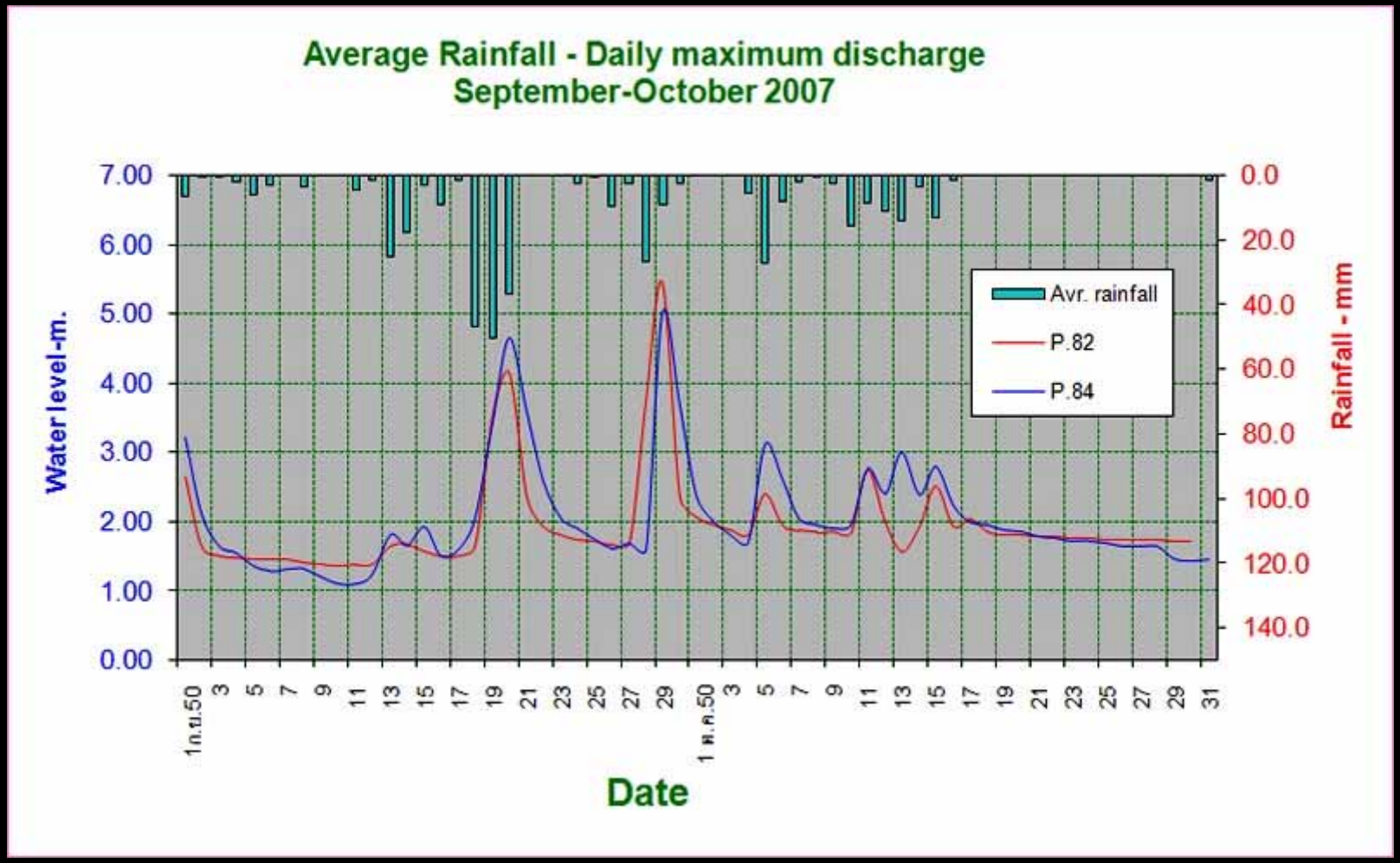
Pilot project GEOSS telemetry in Mae Wang Basin by the cooperation of Hydrology and Water Management Center and the University of Tokyo



Maximum of daily water level at Mae Wang

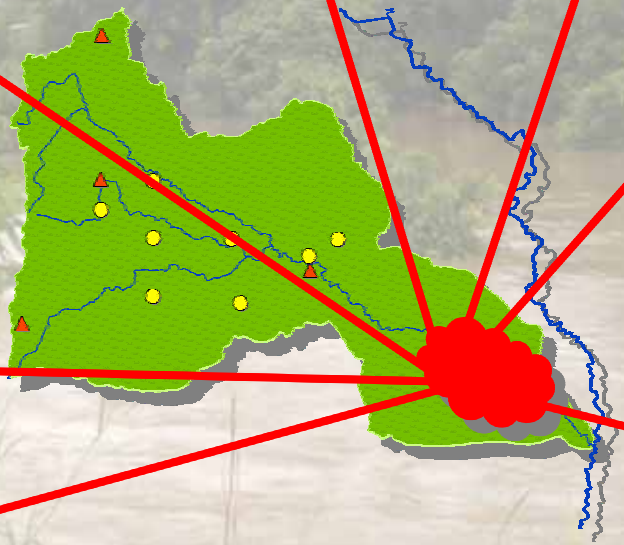



Average Rainfall - Daily maximum discharge
May 2007
Water level-m.
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Rainfall - mm
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
Avr. Rainfall
P.82
P.84
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Date


Average Rainfall - Daily maximum discharge
September-October 2007
Water level-m.
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Rainfall - mm
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
Avr. rainfall
P.82
P.84
1 ก.ย.50
1 ต.ค.50
Date

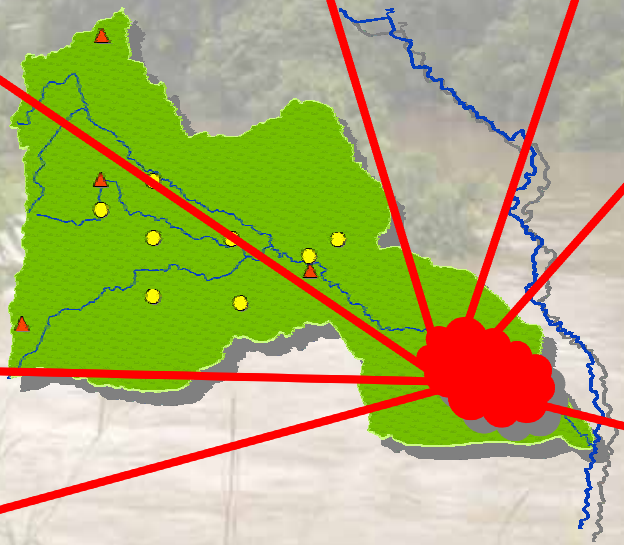
Flooding at Mae Wang basin

11 September 2006



Flooding at Mae Wang basin

20 November 2007



Flooding at Mae Wang basin

3 November 2008

CONCLUSION

Statistical comparison of data shown the signs of water-related disasters increasing especially floods, landslide and debris flows during the recent years in the scales of :

1. **Increasing of Rainfall intensity :** there are much more of high maximum-1 day rainfall 200, 300 mm/day as new record.

2. **Increasing of flood locations** : flood locations were wide spread over region.


Thank you for
your attention