RIC 2006
Session W4F
Current Seismic Issues & Associated Research
March 8, 2006

Insights Into Tsunami Hazards

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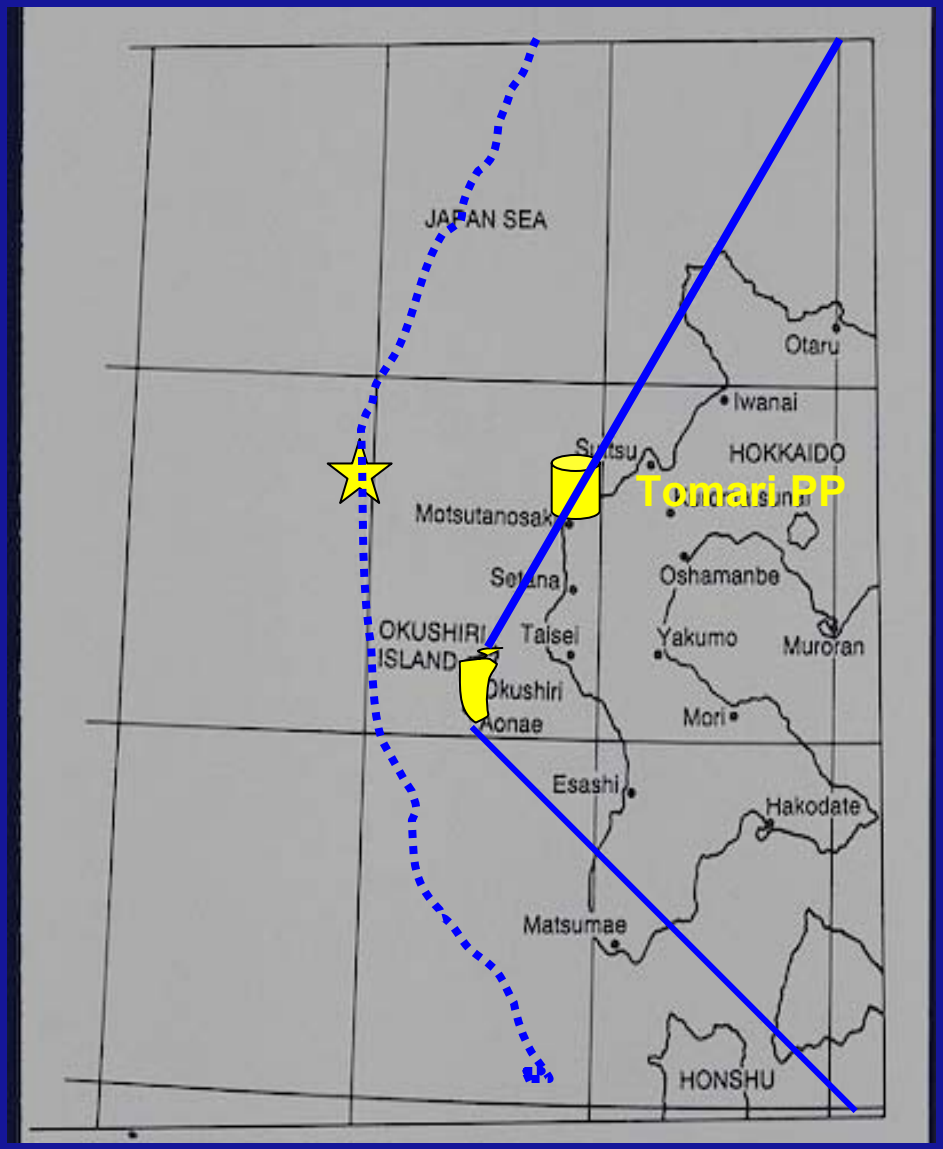
Discussion Topics

- Experience from three case studies
- Tsunami Sources
  - Hokkaido-Nansei-Oki, Japan Near-Source 1993 M_W 7.8
  - Aceh, Sumatra Near-Source 2004 M_W 9.2
  - Madras, India Distant Tele-Tsunami 2004 M_W 9.2

OKUSHIRE ISLAND



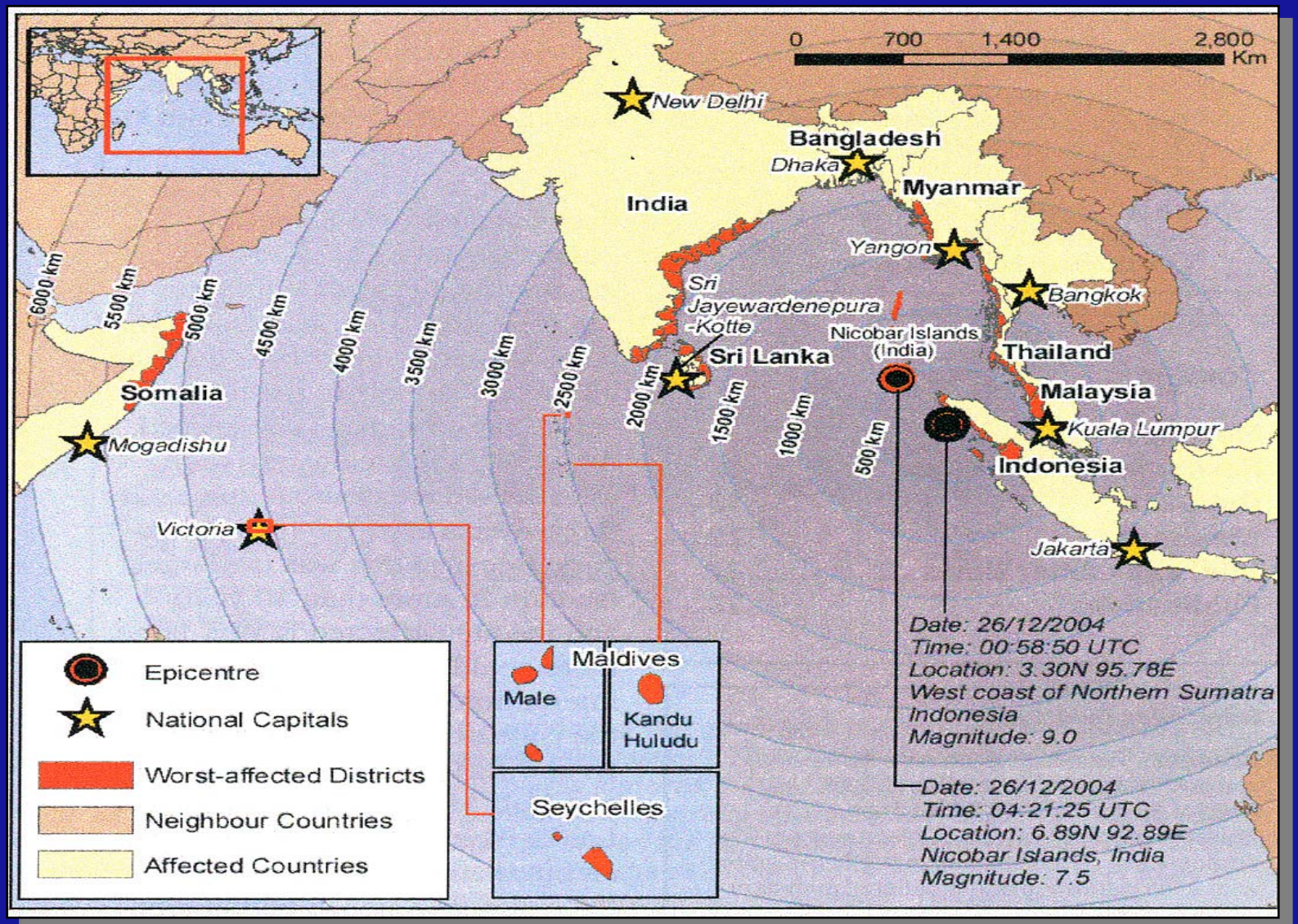
OKUSHIRE ISLAND

Tomari Power Plant - Hokkaido , Japan
July 12, 1993 M 7.8 Tsunami Impact

Stream Channel Focused Tsunami Run-up 35.5 M

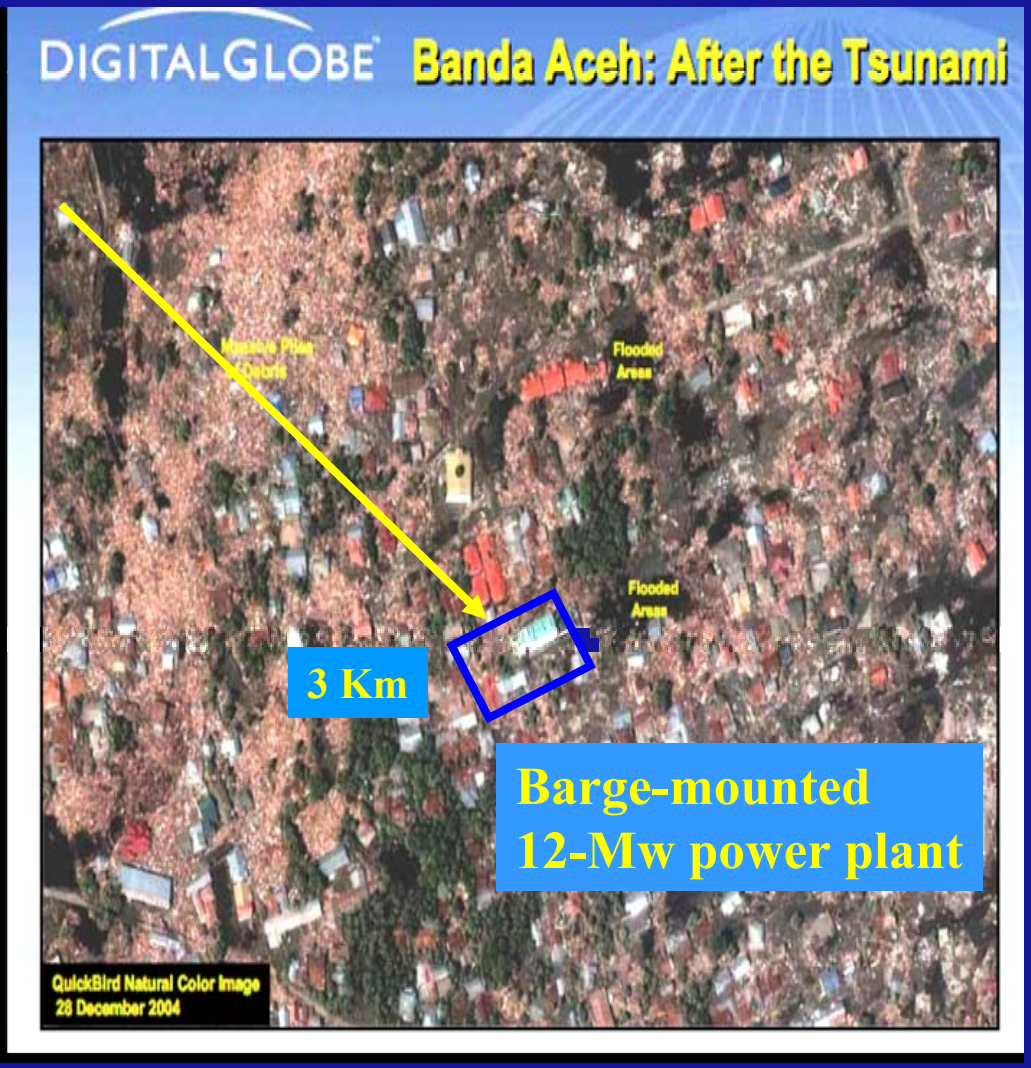
Sumatra Tsunami Impact

Areas Affected by the Tsunami of December 26, 2004

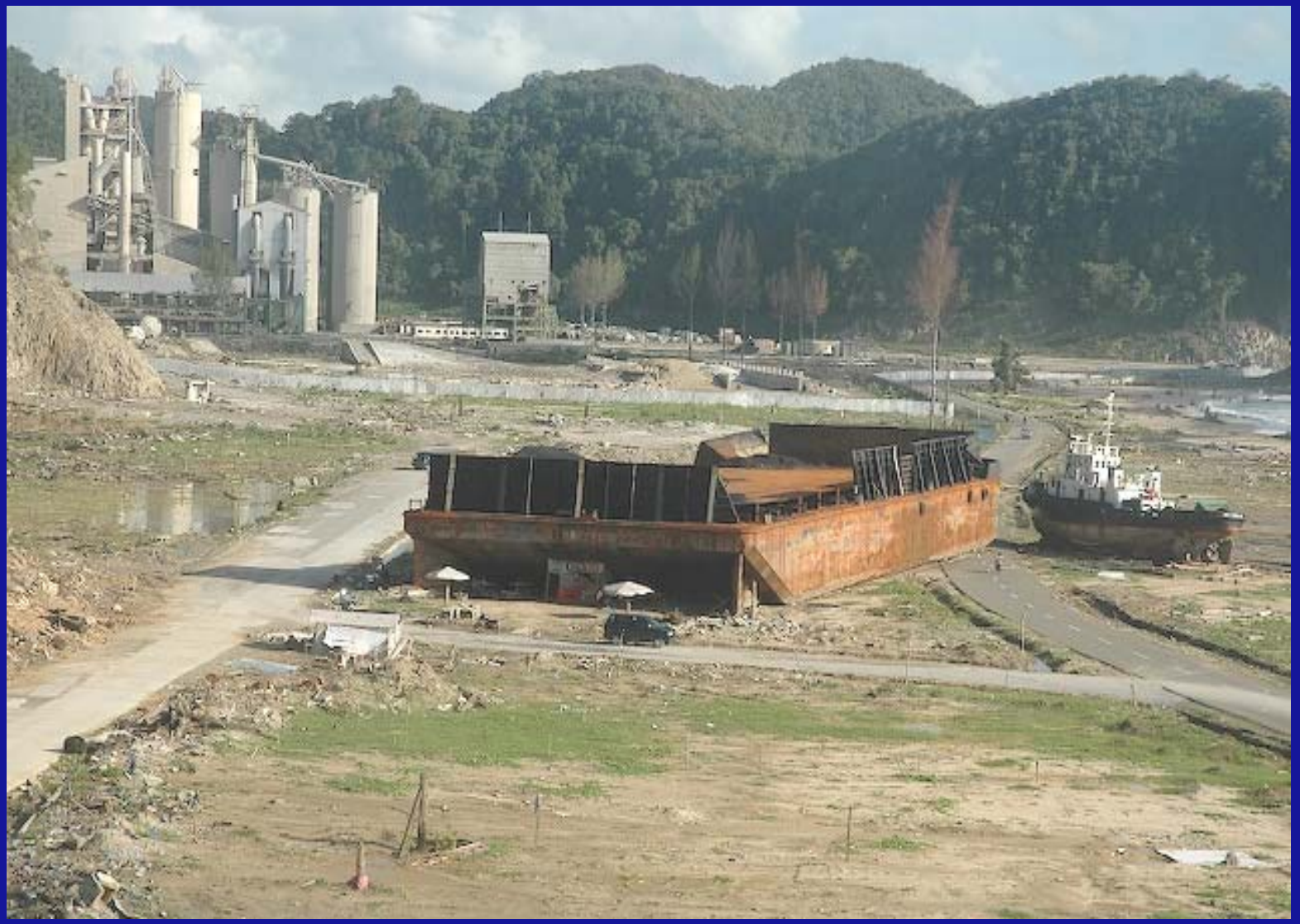


Banda Aceh Tsunami Impact

Tsunami Flow Height


DIGITALGLOBE
Banda Aceh: After the Tsunami
Flooded Areas
Flooded Areas
3 Km
Barge-mounted
12-Mw power plant
QuickBird Natural Color Image
28 December 2004

La Farge Cement Plant



La Farge Cement Plant

Petroleum Storage Facilities

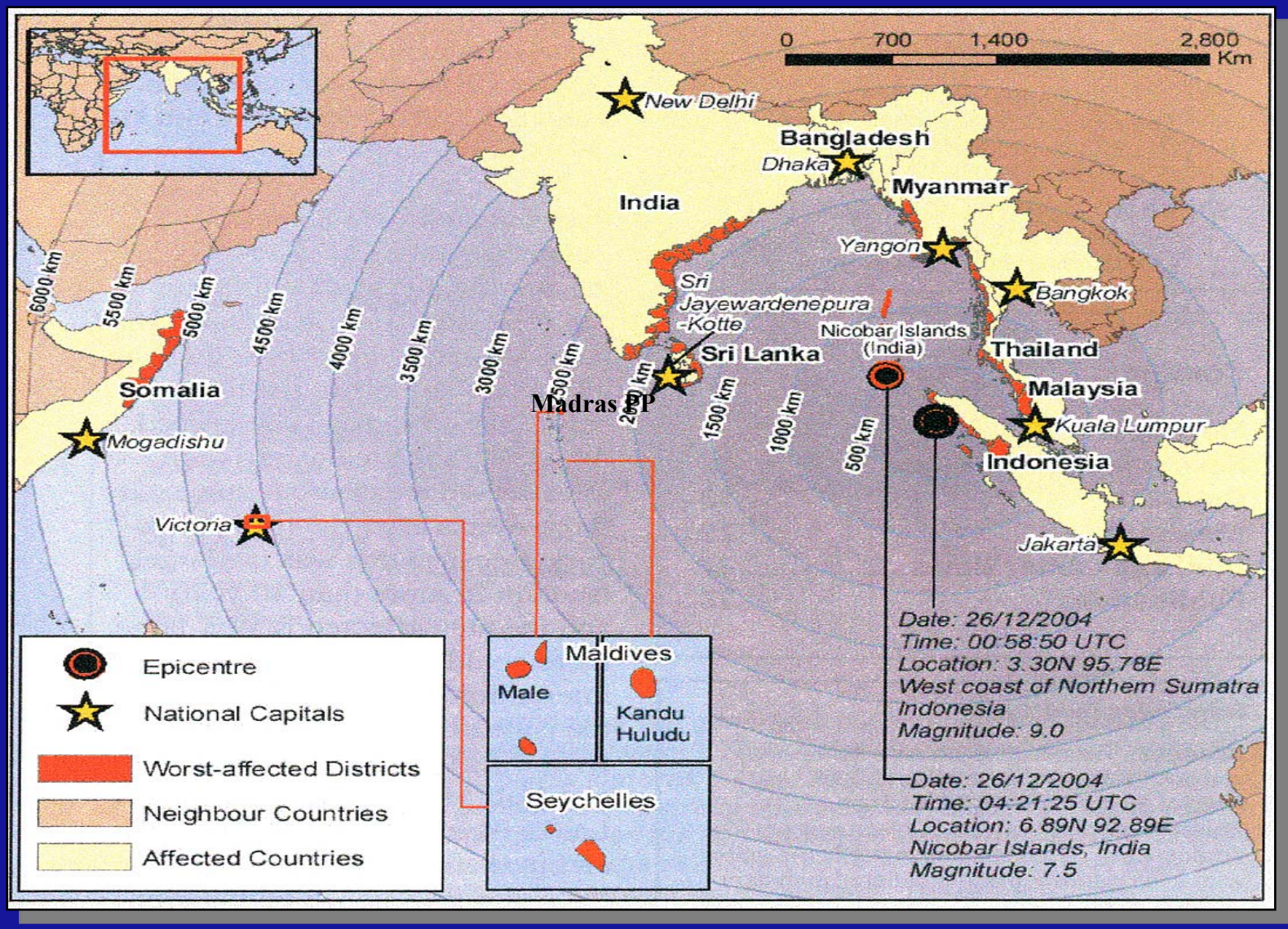
Well Designed Buildings Survived

Steel-Frame Structures Survived with out Structural Damage
Tsunami 35 M high

General Summary of Tsunami Impacts in Sumatra

- Tsunami impacts to Sumatra were devastating
- Almost all routinely constructed houses and buildings destroyed (obliterated) by tsunami impacts
- Almost all well designed and constructed houses, buildings, and industrial facilities survived tsunami impacts with only minor structural damage
- Flooding of all houses, buildings, and industrial facilities caused minor to severe damage
- Almost all people not able to escape tsunami impact perished (180,000 plus in Sumatra) some miraculously escaped with minor injuries

Areas Affected by the Tsunami of December 26, 2004



Tsunami Hazard Assessment
Scope of Activities and Research Needs

- Tsunami Sources
  - Tele-Tsunami
  - Regional
  - Local
- Bathymetry
- Landslide Sources
- Tsunami Wave Height and Run-Up Modeling
- Empirical Data