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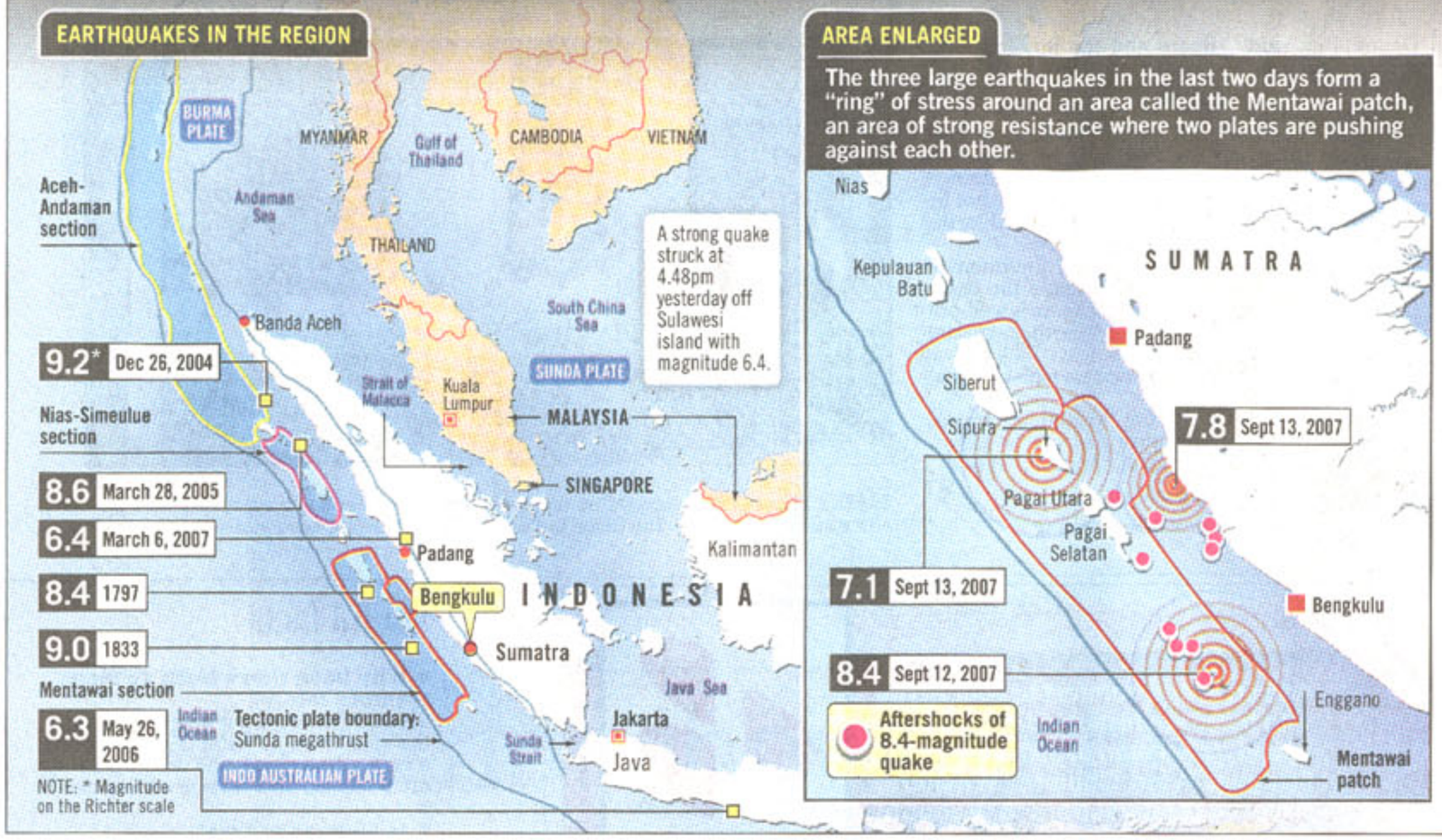
Building up to the next big one

Strain is building up where the Indo-Australian and Sunda tectonic plates are pushing against each other. This could lead to a big disaster.



Security personnel search for documents under a collapsed car showroom building, caused by an earthquake in Padang.

Sources: US GEOLOGICAL SURVEY and TECTONICS OBSERVATORY CALTECH, USA

PHOTO: AFP ST GRAPHICS

Monster quake could hit soon: Geologist

Sumatran quakes ring a stress patch that could cause quake of magnitude 9 or worse

By Arti Mulchand

THE earthquakes off Sumatra which have shaken the region could portend a monster quake – and it could hit soon, a top geologist has warned.

The three big quakes and dozens of aftershocks over the last two days form a "ring" of stress around an area called the Mentawai patch, an area of strong resistance just south-west of Indonesia's provincial capital Padang, where the quakes hit hardest.

If this area formed by two "plates" of the earth's crust fails under the stress, it could produce an extremely powerful earthquake upwards of magnitude 9 in the 10-point Richter scale, said California Institute of Technology professor Kerry Sieh.

"We are very concerned. It is close to no longer being able to withstand the strain," said the geologist who predicted the Nias quake in North Sumatra in 2005.

Prof Sieh likens the situation to "little dogs nipping at the heels of a horse".

He added that it could happen any time between now and the next three decades, although the action seen over the last few days made it more likely that it would be "sooner rather than later".

The failure of the patch – between the Indo-Australian and Sunda tectonic plates – could cause a massive earthquake and tsunami, putting Padang under serious threat, he said.

This could "easily" cause more than 100,000 deaths. "It's like a train wreck waiting to happen."

The December 2004 earthquake was similarly caused when an area – the Acheh-Andaman patch – failed. The land seizures and resulting tidal waves killed 90,000 people in Indonesia's Bandar Aceh and wrought massive destruction in the region.

Three months later, pressure which concentrated in the Nias-Simeulue patch – sandwiched between the Mentawai and Aceh-Andaman patches – caused another quake.

All three areas lie along the Sunda megathrust – a 2,000-km stretch under the Indian Ocean. This is where the Indian Oceanic and Australian plates are pushing into and under the Sunda plate under Sumatra, making it the world's most active seismic region of late.

Supporting Prof Sieh and his team's predictions are historical data, a US$1 million (S$1.5 million) data-gathering scheme using global positioning systems and data from Sumatra's coral reefs.

Each year, those islands are pulled downwards slightly as the Indo-Australian plate moves, but when a massive quake strikes and pressure is released, the islands – and corals – pop back up. This kills the corals but provides a marker for dating the quakes.

Prof Sieh placed the last two massive quakes at 1797 and 1833.

"So, we know every 200 to 230 years there's a big one. We can also measure the strain on the plate, and we're right near the breaking point," he warned.

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