

Australian tsunami – an overview from hazard to community risk perception



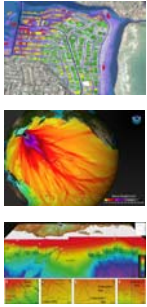

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OUTLINE

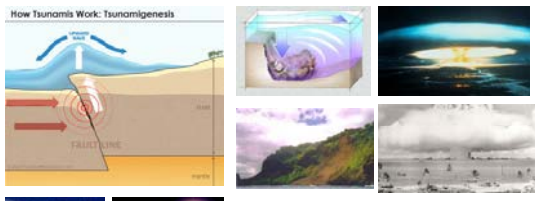
- › Some tsunami basics - tsunamigenesis
- › Australian tsunami – are we at risk? (the history)
- › Tsunami mitigation & management (the ATWS)
- › Community hazard perceptions & behaviour
- › New tsunami risk assessment work at USyd
- › Summary & acknowledgements

Over to you for Questions & Answers


TSUNAMIGENESIS

How Tsunamis Work: Tsunamigenesis



Sediment mass movements Bikini Atoll (50/60s)

Earthquakes, volcanic eruptions, extraterrestrial impacts

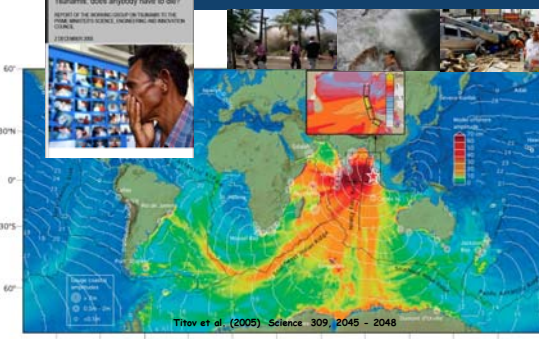


IS AUSTRALIA AT RISK?





2004 – THE PARADIGM SHIFT

Tsunami: does anybody have to die?
Abstract of the workshop on the basis of the 2004 Indian Ocean tsunami, 14-15 November 2004, Canberra, Australia



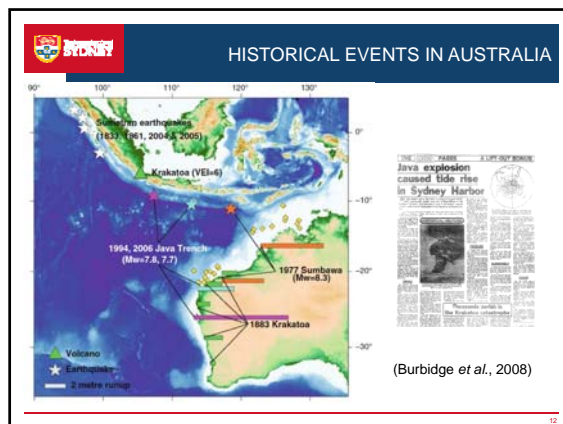
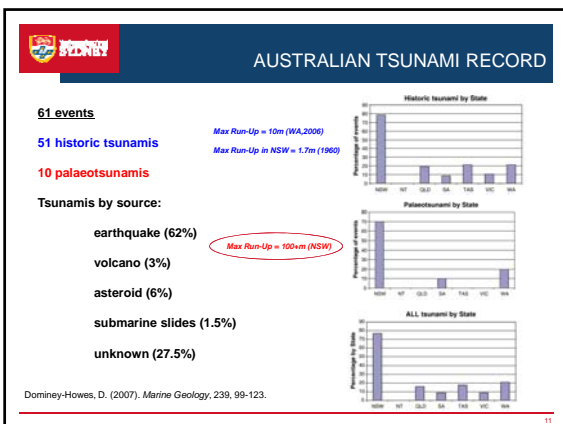
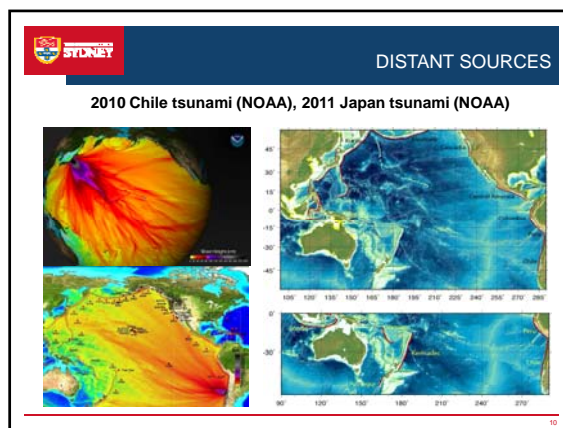
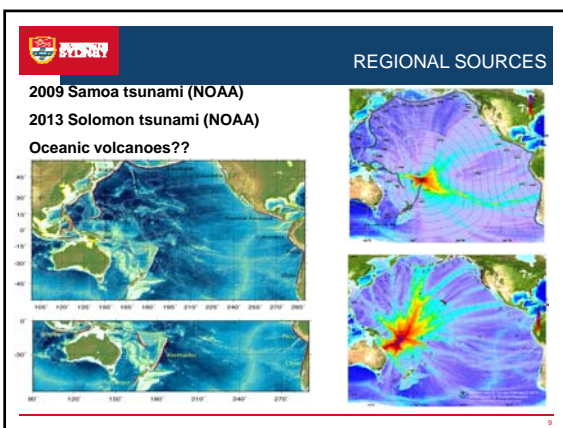
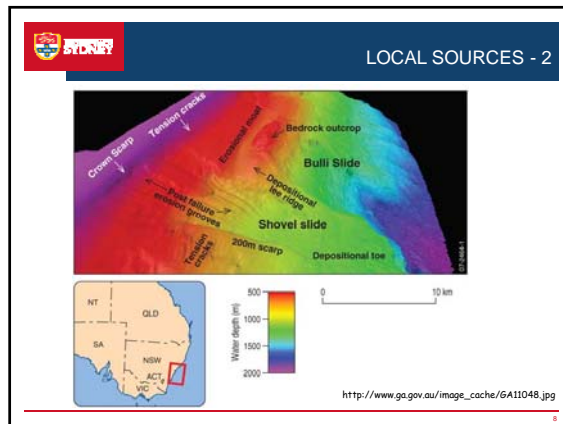
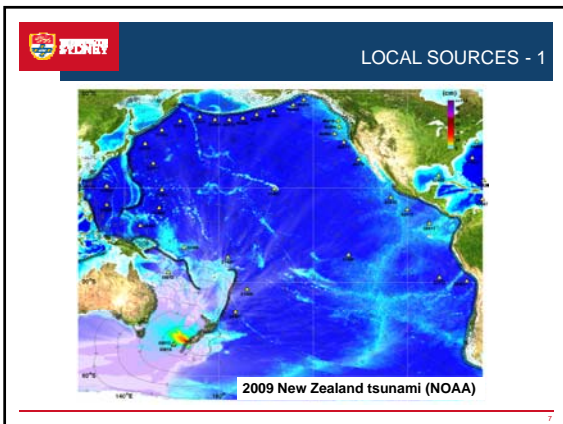
Titov et al. (2005) Science 309, 2045 - 2048

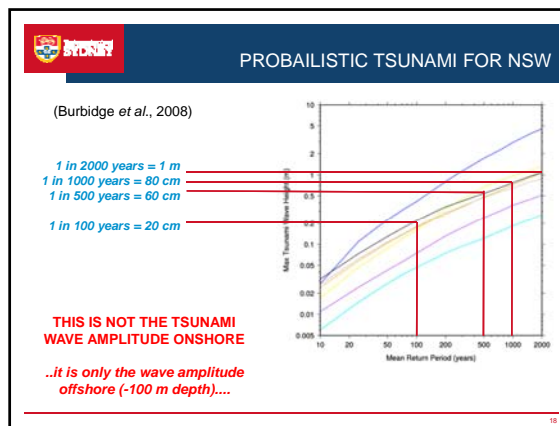
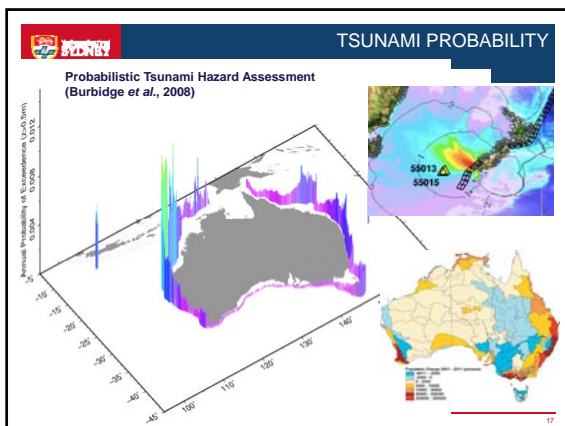
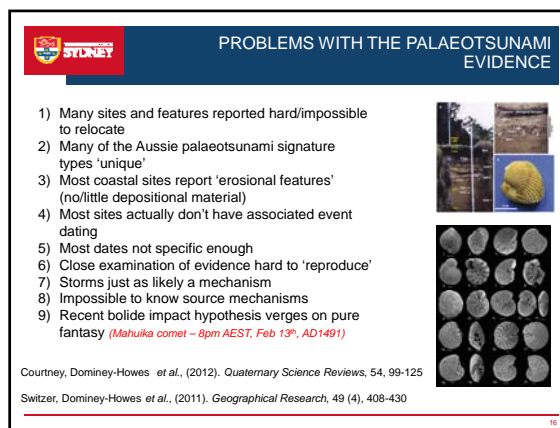
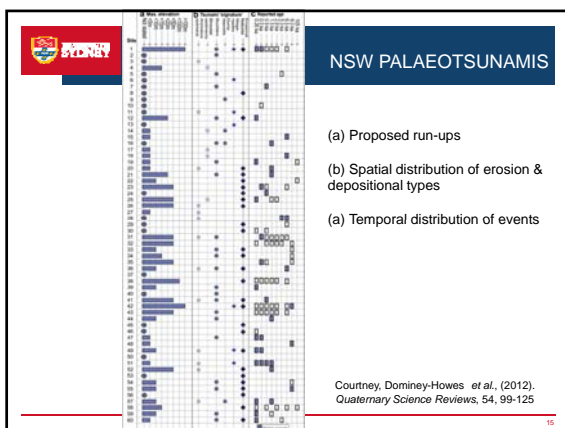
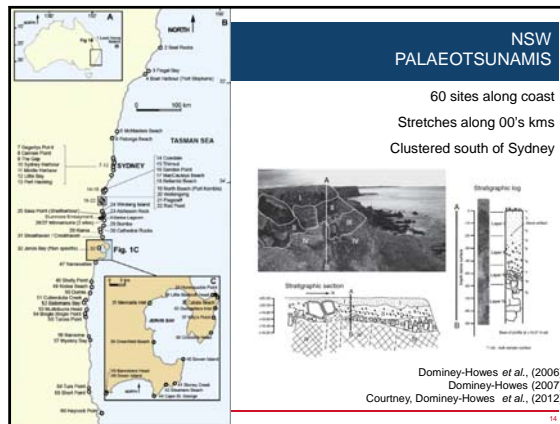
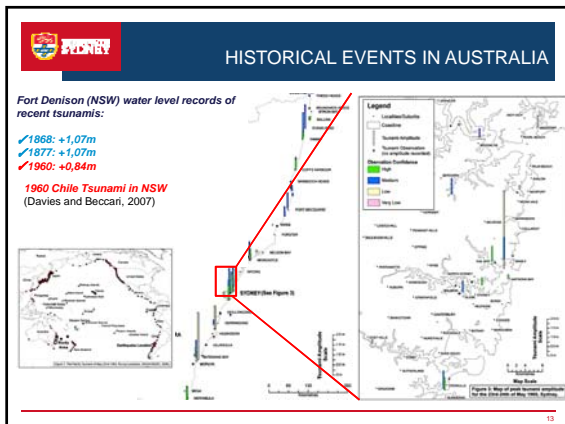


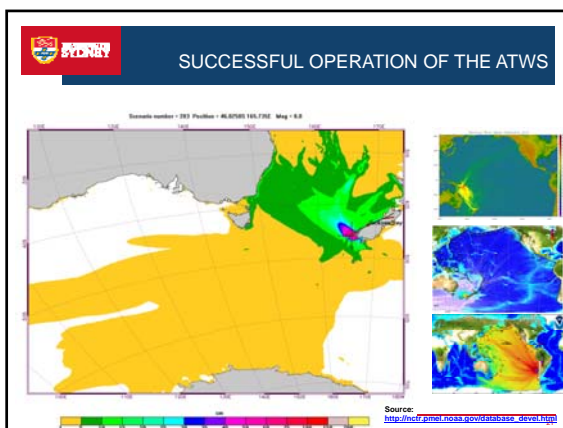
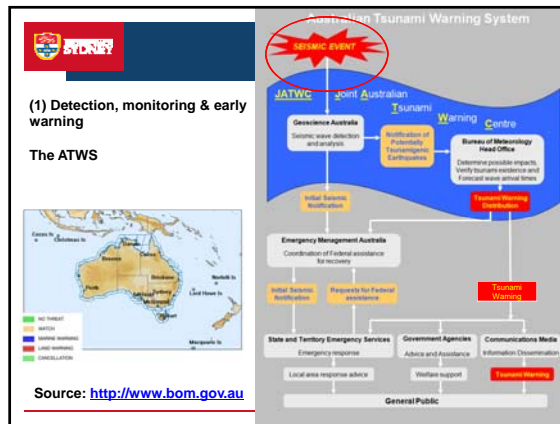
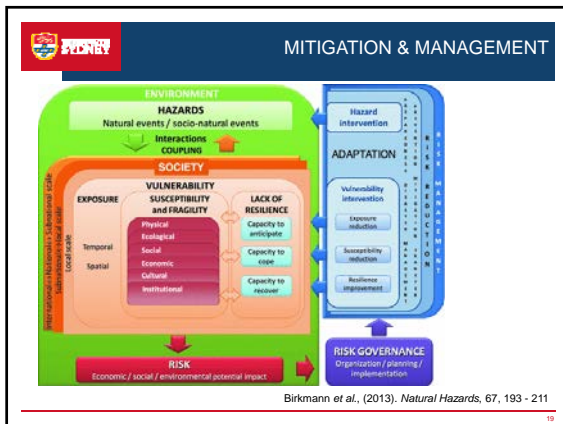
SOURCES CLOSE TO HOME

Global Tsunami Sources 1050 B.C. to A.D. 2008 from Earthquake, Volcano, Landslide, and Other Causes







(2) Public education and hazard awareness

BUT..... CHILE, FEBRUARY 2010

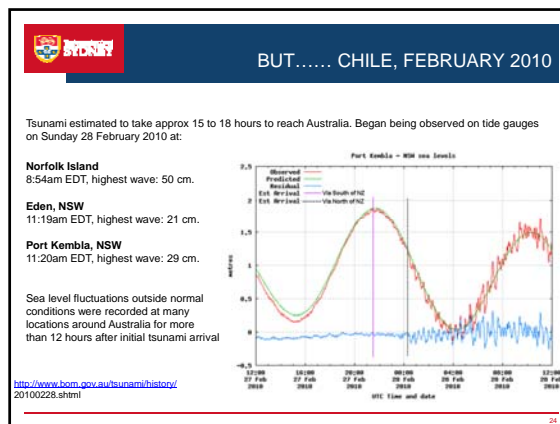
Australia's warning response:

Saturday, 27 February 2010

- 5:51pm EDT: Geoscience Australia releases initial earthquake magnitude assessment of 8.5
- 6:21pm EDT: No Threat Bulletin for Australia issued by Joint Australian Tsunami Warning Centre
- 7:45pm EDT: Tsunami watch issued, based on revised earthquake magnitude assessment of 8.8
- 8:48pm EDT: **Tsunami Marine Threat Warning** issued for Queensland (Point Danger to Double Island Point), New South Wales (Broken Bay to Point Danger), Lord Howe and Norfolk Islands

Sunday, 28 February 2010

- 4:00am EDT: **Tsunami Marine Threat Warning expanded** to cover Australia's East Coast from southern Tasmania (Low Rocky Point to Flinders Island), Victoria (Lakes Entrance to Gabo Island), all of the New South Wales coast, Queensland (Point Danger to St Laurence), as well as Lord Howe and Norfolk Islands



MEDIA, COMMUNICATION & PUBLIC RESPONSE

IMPLICATIONS

"To date, Australia has been lucky because no significant tsunami has affected our shores since the implementation of the ATWS"

If the general public continues to behave as it has done on previous occasions, then despite the best efforts of the government scientists and engineers to develop and deploy the ATWS, it will fail and meaningful disaster risk reduction will not occur"

Dominey-Howes & Goff (2010). *Nature*, v464, p350.
 Dominey-Howes (2013). *Media & Culture*, 16 (1), 1-7.

COMMUNITY RESPONSE

Quotes:

- "Didn't know where to find more information....."
- "Didn't understand the messages....."
- "Messages didn't contain enough information....."
- "Information not available at the local level....."
- "The SES didn't know what we should do....."
- "No idea where to go or if we should evacuate....."
- "Poor English language....."
- "Nothing of any use on the SES or police web sites....."
- "Circular statements between SES and BoM web sites referring you to the other one for latest information....."
- "Can't take my pets....."
- "Boss wouldn't let me go....."

COMMUNITY RESPONSE

In last 2 years, have you received any information about tsunami warning & evacuation?

NO 100%

Do you know the location of your safest evacuation zone?

NO 100%

Has your family ever discussed being affected by a tsunami?

NO 100%

How would you travel to an evacuation zone in an emergency?

CAR 94%


RECOMMENDATIONS

- Own the problem and move beyond the 'official rhetoric'
- Increase funding
- Enhance public understanding through education
- Enhance communication strategies and protocols
- Need for evacuation planning (and notification)
- Tackle issue of pet ownership
- Cross border (States) coordination
- Further empirical research
- Educate Australians who travel to tsunami affected places

Marine geoscience group at USyd investigating continental slope underwater slides that would have triggered tsunami

Evidence for many, LARGE, young events.....


Watch this space..... ©



SUMMARY & ACKNOWLEDGEMENTS

Key "take home messages"

- 1) **Tsunami are catastrophic & Australia is at risk**
- 2) **NSW tsunami risk relatively low (but does NOT consider submarine slope failure sources – which substantially changes the risk profile)**
- 3) **Tsunami warning system good for regional & distant sources but hopeless for local events**
- 4) **Community risk perception and correct behaviour very low**
- 5) **Decision makers may like to consider land use planning, building design and community engagement**



We thank NDRP for funding, SCCG and members for participation, Advisory Board for guidance

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