



The Tsunami Risk of South-East Tasmania, Australia – the impact of the Puysegur Trench on greater Hobart

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The coastline of South-East Tasmania in Australia has seen various tsunami events over the last couple of centuries, many of them with an ambiguous offspring. None of these tsunamis have caused a significant loss so far. Due to the absence of locally tsunami-triggering earthquake sources, the area of greater Hobart can be considered fairly safe at least in comparison to more exposed regions like New Zealand or Chile. Nevertheless, the Puysegur trench, about 1500 km East of Tasmania is considered to be capable of triggering earthquakes beyond magnitude 8.5. These events are rare yet possible and therefore a detailed study of the likely impact patterns of such earthquake scenarios has been undertaken.

The seismic source characteristics of the Puysegur trench have been reviewed in detail to provide a selection of possible rupture scenarios, considering partial and full rupture of the trench. In addition, these results have been compared to those of other authors. The propagation and inundation patterns of the scenarios are compared to previous studies and the impact of varying seismic slip distribution has been investigated. Inundation is calculated using high-resolution elevation models for various locations in and around Hobart. Furthermore, inundation and average flow velocity data is used to compute the full range of socio-economic losses associated with the event set. This study provides a detailed tsunami risk assessment of South East Tasmania and indicates the hazard and risk variability with respect to varying slip distribution of the earthquake source.