Evaluating Potential Tsunami Sources in the South China Sea: Are We Finished?

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Tsunami hazard modeling in the South China Sea (SCS) has been primarily concerned with potential large earthquakes in the Manila trench region [1,2,3]. This approach may have lead some coastal communities to assume that the relative risk of tsunami is low particularly in the western South China Sea [1]. This paper investigates other potentially tsunamigenic phenomena in the region and discusses the implications of a few different key scenarios that demonstrate there is much more to be done to protect the coasts of the South China Sea. The Sissano Lagoon tsunami of 1998 in Papua New Guinea provided a graphic example of the potential hazards posed by the combined interaction of a small earthquake and submarine landslide. Such a risk clearly exists on the margins of the SCS. One example is the Vietnamese coast where 18m run-ups have been reported but no tsunamigenic source capable of generating run-ups that high have been identified [4,5]. Potential tsunamigenic scenarios in the SCS include submarine landslides on continental slopes, terrestrial landslides, gas hydrate release or failure in the large deltas and the unlikely but potentially catastrophic bolide impact. The existence of such alternative tsunami sources indicates that much work remains to be done before meaningful risk management assessments can be provided to regional governments.

Keywords: Tsunami, Submarine landslides, bolide impacts, gas hydrate release, Risk management, tsunami simulations

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