On the 26th December 2004, the Indian Ocean Tsunami devastated large parts of the Andaman coast of Thailand and the countries around Indian Ocean. In late 2011 mega-flooding occurred in Thailand and caused billions of dollars of economic loss especially in the in the industrial zones of the central plain. In this presentation, we show how these two major disasters form the back drop to progress geo-hazard research in Thailand focusing on coastal hazards and flooding. We also examine some of the remaining challenges.

Since 2004, sedimentological studies of the Indian Ocean Tsunami have been carried out by local geo-scientists (e.g. Choowong et al., 2007). These studies include the search for paleo-tsunami deposits. Major goals for these workers include documenting evidence for pre-historical tsunami and using paleo-tempestology to distinguish these events from records of storm events (e.g. Phantuwongraj and Choowong 2012). In Thailand, analyses of geological proxies for tsunamis and storm events have been successful in developing a greater understanding of the mechanical processes involved and the frequency of such events. However, there is a need to extend the scope of these studies to the other coastal zones of Southeast Asian mainland, such as Cambodia (the South China Sea) and Vietnam (the Pacific Ocean).

In 2011, mega-flooding occurred throughout Thailand. Its root cause was natural and due to a series of heavy rainfalls. However, there was also undoubtedly a failure to provide sufficient protection for the industrial and economic zones due to both an under-estimation of the volume of water that needed to be considered and insufficient water management. It is notable that most analyses of this mega-flood event do not take into account the geomorphological and geological background, despite the clear need to incorporate information provided by these fundamental sciences. To help address this imbalance, since 2012 we have been undertaking a detailed investigation of the flooding in the Chao Phraya River Basin. We found that parts of all rivers in this area have undergone a rapid decrease of water storage capacity and an increase of sand bar areas in river embayments. The reduction of sediment supply led to non-equilibrium in the deltaic zone of the upper Gulf of Thailand. Our findings highlight the need for continued geomorphological and sedimentological research in Thailand and the need of geological studies to help respond to societal needs to mitigate such natural disasters on local and global scales.

References