

Title:

Findings and lessons from recent worldwide tsunami and storm field surveys

Mohammad Heidarzadeh, PhD, CEng, MICE, C.WEM, MCIWEM
Associate Professor, Department of Civil Engineering, University of Bath, UK

Abstract: Recent tsunamis and storms worldwide have been responsible for significant damage and fatalities. In order to document the damage and analyse the failure mechanisms of coastal structures, post-event field surveys are of utmost importance. This is essential for mitigating the destructive impacts of future tsunamis. Such field surveys systematically started mostly from 1992 when the 2nd September 1992 M_w 7.7 Nicaragua earthquake and subsequent tsunami killed more than 160 people (Liu et al. 2005; Synolakis and Okal 2005). The authors and his team have conducted several post-event field surveys of worldwide tsunami and storm events and documented the damage. Here, we present the results of post-event field surveys following the January 2024 Noto tsunami (Japan) (Heidarzadeh et al. 2024), the December 2018 Anak Krakatau tsunami (Indonesia) (Heidarzadeh et al. 2020), and 2017 Hurricane Maria in Dominica (Heidarzadeh et al. 2018). For each event, the results of tsunami runup and height measurements are presented, and the damage mechanisms are discussed.

References:

- Heidarzadeh, M., Ishibe, T., Gusman, A.R., Miyazaki, H. (2024). Ocean Engineering, 307, 118140. <https://doi.org/10.1016/j.oceaneng.2024.118140>.
- Heidarzadeh, M., Putra, P.S., Nugroho, H.S., Rashid, D.B.Z. (2020). Pure and Applied Geophysics, 177, 4577–4595. <https://doi.org/10.1007/s00024-020-02587-w>.
- Heidarzadeh, M., Teeuw, R., Day, S., Solana, C. (2018). Coastal Engineering Journal, 60 (3), 371–384. <https://doi.org/10.1080/21664250.2018.1546269>.
- Liu, P. L. F., Lynett, P., Fernando, H., Jaffe, B. E., Fritz, H., Higman, B., Synolakis, C. (2005). Science, 308, 1595-1595.
- Synolakis, C. E., & Okal, E. A. (2005). 1992–2002: perspective on a decade of post-tsunami surveys. In Tsunamis: Case studies and recent developments.