

Session ID: TNM-4

Title

DESIGN AND ASSESSMENT OF STRUCTURES AND INFRASTRUCTURE FOR TSUNAMIS AND CASCADING EVENTS

Convenors

M. Del Zoppo ¹, D. Istrati ², M. Baiguera ³

Description

Recent tsunami (i.e., 2004 Indian Ocean Tsunami, 2011 Tohoku earthquake and tsunami) affected significantly many coastal communities across the world. More recently, many earthquakes triggered tsunami hazard warnings (i.e., 2020 Aegean Sea earthquake, 2023 Turkey-Syria earthquake) highlighting the need for tsunami disaster preparedness strategies to ensure the desired performance of structural and infrastructure systems.

Inspired by the aforementioned need and by the recent design initiatives around the world such as the release of the updated tsunami chapter in ASCE 7-22 and of the AASHTO (2022), and the work of the fib TG2.13-Design and assessment for tsunami loading, this technical session aims to present relevant advances in tsunami engineering. Cascading events (i.e., tsunami triggered by earthquakes, etc) are also of interest because they may result in accumulating damage and progressive collapse of structures, a fact that is not considered in current design standards. Tsunami-related effects on structures, including scour of different typologies and impact of water borne debris on the built environment, which increase the likelihood of structural failure but are still not well understood, are also going to be presented.

Much work has been done in this direction in Italy by the ReLUIS university consortium, which led some of the convenors to propose this technical session. Contributions from research activities as well as consultancy projects focusing on design and assessment of structures and infrastructure for tsunami effects, and fragility and vulnerability assessment of existing assets and networks are also included. The session will host presentations of advanced analytical, experimental and numerical research, as well as methodologies and novel multi-scale or multi-physics frameworks that address critical issues regarding the associated risk, modelling, analysis, design and protection of structures exposed to tsunamis and cascading multi-hazard scenarios.

Invited Speakers

T. Rossetto ⁴, J. Cels ⁴, T. Kabeyasawa ⁵, T. Arikawa ⁶, T. Asai ⁷, I. Buckle ⁸, M. Motley ⁹, M. Ebherard ⁹, I. Nistor ¹⁰

Affiliations

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