

**Session ID:** SHR-8

**Title**

APPLICATION OF URGENT COMPUTING FACILITIES TO CRITICAL SEISMOLOGICAL APPLICATIONS

**Convenors**

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**Description**

Large, destructive earthquakes can severely impact local populations causing considerable human, social and economic losses, as dramatically pointed out by the recent M7.8 February 6th, 2023 earthquake in Turkey. Mitigation of seismic risk can be pursued by pre-emptive planning, but also by rapid deployment of emergency rescue teams in the aftermath of the event. Referring to the emergency response, the rapid assessment of damages and their spatial distribution is essential. This can be obtained by collecting direct observations (e.g., measurements, reports) or indirectly by numerical modelling of the earthquake impact, or a mixture thereof. However, while the former could be affected by the latency of the data collection, the latter is preferable in the event aftermath, as damage scenarios can be nowadays simulated within seconds using analytical/numerical approaches.

Accuracy of the estimate is nonetheless proportional to the complexity of the simulation model. The availability of large High-Performance Computing (HPC) infrastructures facilitates the simulation of progressively more complex numerical models and, hence, the generation of more realistic scenarios accounting for the specificity of the affected region. However, the required computation resources might not always be readily available during an emergency. In this case, Urgent Computing (UC) priority policies must be endorsed on ad-hoc dedicated infrastructures.

The scope of this technical session is thus to collect cases studies on the effective use of UC facilities for earthquake impact mitigation applications with implication for emergency response of civil protection authorities. This might include, but is not limited to, the generation of almost real-time ground motion and Tsunami scenarios, rapid on-site damage evaluation, numerical early warning systems.

**Invited Speakers**

P.M. Mai <sup>4</sup>, C. Smerzini <sup>3</sup>, C. Scaini <sup>1</sup>, J. De La Puente <sup>5</sup>

**Affiliations**

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