

# Richiesta di Fornitura (RDF)

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Chiara Scaini

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CIG: ZE83A6193F

Titolo: "The Damage Assessment for Rapid Response (DARR) method and its application to different ground motion levels and building types

Autori: Bojana Petrovic; Chiara Scaini; Stefano Parolai

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41702 / 140

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Totale della fornitura stimato \*

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Questo modulo è stato creato all'interno di Istituto nazionale di oceanografia e di geofisica sperimentale - OGS.

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Masuino, Anna &lt;amasuino@ogs.it&gt;

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## Articolo scientifico SSA : The Damage Assessment for Rapid Response (DARR) method and its application to different ground motion levels and building types

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Scaini, Chiara &lt;cscaini@ogs.it&gt;

10 marzo 2023 alle ore 09:53

A: "Masuino, Anna" &lt;amasuino@ogs.it&gt;

Eccolo, grazie mille!

*Seismic recordings in buildings and on the ground are increasingly available due to the increment and expansion of seismic monitoring networks worldwide. However, most urban strong-motion networks consist of stations installed at the ground or, less frequently, in selected building's basement. It is, therefore, of utmost importance to develop methods that can provide estimates of expected structural damage, starting from earthquake recordings at the ground level. Damage Assessment for Rapid Response (DARR) provides first-level estimates of the expected damage to buildings, based on ground-motion recordings and simple information on buildings' characteristics. In this work, we apply DARR using both weak and strong ground-motion recordings available for different low- and mid-rise building typologies. A total of 9 buildings and 19 earthquake recordings were analyzed. DARR reproduces the shaking at the building's top, and estimates the peak structural relative displacement or average interstory drift. Results show that the method works well for the considered building types and ground-motion levels for the estimation of relative and total displacements using first-order assessments. Comparison with the previously defined thresholds allows the estimation of expected damage. Our results (i.e., no damage for most buildings and events) are consistent with the absence of damaging events in northeastern Italy in the studied period (2019–2021). For a school building in central Italy, which was heavily damaged by the 2016 Central Italian sequence, DARR correctly predicted this fact.*

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