

# Newsletters

Vol. 2 No.3 March 1, 2024

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## **[JWG is joining the ASC GA](#)**

The 15<sup>th</sup> General Assembly of Asian Seismological Commission (ASC) is going to be held on November 03-07, 2024. JWG proposed a session 'Physics-based seismic hazard assessment: recent progress and scientific debate'. In connection to JWG, the focus of the session is on the theoretical, computational, and application aspects of NDSHA, with a discussion of related science and a comparison with other approaches. Colleagues are invited to participate in the JWG and its activities.

According to the arrangements of the organizer, the conveners are Mustafa Koçkar (Türkiye), Ayşegül Askan (Türkiye), Altuğ Erberik (Türkiye), H. Cem Yenidoğan (Türkiye), Mehdi Zare (Iran), Antonella Peresan (Italy), Fabio Romanelli (Italy), Mohamed ElGabry (Egypt), Guoxin Wang (China), Yan Zhang (China), and the session scope is as follow: Earlier earthquake hazard assessments relied on determining the "maximum acceleration" expected in the target zone from the selected "maximum credible earthquake," following standardized procedures based on attenuation laws dependent on earthquake magnitude. This approach, known as force-based seismic design, focused on designing buildings based on estimated earthquake-induced acceleration without considering hazards from long-period ground displacements. However, it is now understood that low-frequency, long-duration seismic surface waves pose significant risks to large structures, especially those with tall footprints, as they can cause resonance effects and amplification, particularly on upper floors. This interaction between ground motion and building attributes ultimately determines seismic performance. Ground motion is influenced by earthquake size, propagation pattern, medium properties, and site effects, with soil amplification beneath the structure's foundation being a critical factor. This section also welcomes research on seismic hazard and risk, encompassing seismology and earthquake engineering, from the perspective of NDSHA methodology.

The key step to reducing seismic losses from earthquakes worldwide is to identify and study hazards, risk, and damage estimation thoroughly. This session welcomes studies including but not limited to a) Regional

seismic hazard, risk, and loss estimation approaches; b) Empirical ground motion models and seismic hazard assessment of recorded ground motions of past events; c) Code-based related research to structural vulnerabilities; d) Simulations of past and scenario earthquakes; e) Effects of local site conditions on hazard and risk levels.

The deadline for abstract submission is 30 July 2024, for early bird registration is 30 September 2024. Those who are planning to attend this meeting, please contact Yan Zhang by March 31, 2024.

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**Follow up about 2024 Noto Peninsula, Japan Mw7.5 earthquake.**

Predicted  $M_{design}=7.4-7.5$  is not so different from the  $M_W7.5$  of the quake occurred on 2024-01-01. In fact, the error in magnitude ( $\sigma_M$ ) at global level is within [0.2-0.3] with central value 1/4 (Båth, 1973; Bormann et al. 2007; Kossobokov, 2007); the uncertainty  $\Delta M_W=1/4$  is consistent with the variation that may affect  $M_0$ , as determined, for the same event, by different agencies and methods (e.g. Panza and Saraò, 2000; Saraò et al., 2001; Guidarelli and Panza, 2006; Kossobokov, 2007; Chu et al., 2009; Rugarli et al. 2019). More severe is the dependence of the error that can be associated to the magnitude,  $M$ , of a single event. As shown in Figure 1, it is evident that the value of the magnitude of a single event depends on the used number of reporting stations and their position relative to the radiation pattern of the source.

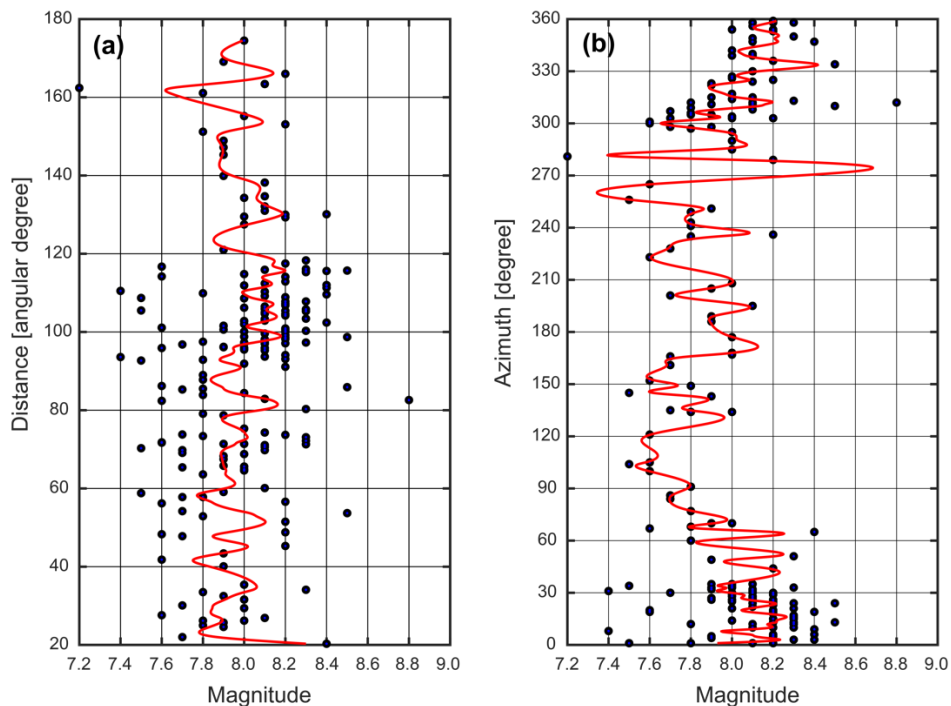


Figure 1. Epicenter station distances (a) and azimuths (b) plotted as a function of station magnitude determined from the LR phase data: the Great Wenchuan earthquake of May 12, 2008 (USGS/NEIC QED generated 2008 MAY 13 at 02:37 UTC). Smoothed moving averages of the two ordinates (red lines) indicate the essential uncertainty of magnitude determination, as well as heterogeneity of distributed worldwide network of seismographs.

## References

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### JWG's affiliated commissions I: the Asian Seismological Commission (ASC)

Asian Seismological Commission (ASC) was established in 1995. The present ASC president is Ruben Tatevossian and the present secretary general is Li Li, for the 4 years term since 2023.

In 2021 in connection to the silver jubilee of ASC, the *Journal of the Geological Society of India (J-GSI)* published its special issue (vol.97, no.12, editors: H. Gupta, Z. Wu, P. Banerjee and L. Li) which includes various aspects of the history of ASC. The story (e.g., doi: 10.1007/s12594-021-1901-1) is also heuristic for our JWG.

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### JWG Library (4)

To facilitate the exchange and discussion within the JWG, our newsletter will be attaching an important paper for the group to study. In this issue, in response to one year of 2023 Turkey events, we attach the paper Achieving intensity distributions of 6 February 2023 Kahramanmaraş (Türkiye) Earthquakes from Peak

Ground Acceleration Records by A. Büyüksaraç et al., published in Sustainability. (2024) 16:599, DOI: 10.3390/su16020599. If you have any paper recommended, please contact us. A. Büyüksaraç has joined JWG-NDSHA in January 2024.

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