

Annual Report 2023

1. SHORT INTRODUCTION

- Origin

At January 24, 2022, Prof. G. F. Panza was invited to write an editorial in the BRI Newsletter (Vol.2, No.1) 'NDSHA along the B&R region: a research initiative'. Based on that Newsletter and suggestions from Prof. Wu, Prof. Panza proposed to set up the Joint Working Group on Neo-deterministic Seismic Hazard Assessment (JWG-NDSHA), and obtained active response in the Joint General Assembly of ASC and AfSC held in Kairo, Egypt. In July, a Preparatory meeting of JWG-NDSHA held online. In the following days, JWG member firstly took part in the meeting of AfSC held on July 15. Prof. Michelle Grobbelaar, secretary general of AfSC, replied to JWG with encouraging message. And then reported in the ASC EC meeting held on July 17, with the endorsement of Prof. Li Li, secretary general of ASC.

- Scope

As a joint working group of the ASC and the AfSC, JWG devotes its endeavor to the internationally cooperative research on the fundamental physical problems associated with seismic hazard assessment (SHA), promoting the implementation and improvements of neo-deterministic SHA (NDSHA) in Asia and Africa and related comparative studies. In a long-term JWG is working towards an interactive toolbox for NDSHA, an open access database of NDSHA, and a unified regional/global NDSHA, as well as related international standards. JWG promotes the contribution of seismic disaster reduction towards integration of NDSHA in standard procedures of seismic risk assessment (Hazard x Vulnerability x Exposure) through communication with end users such as insurance companies and governmental agencies.

- Slogan

More reliable physics in seismic hazard assessment (SHA) for disaster risk reduction (DRR)
(More reliable physics in SHA for DRR)

2. ADMINISTRATION

- Scientific/Technology Advisory Board (open) -

- Vladimir G. Kossobokov
- Mustapha Meghraoui
- Giuliano F. Panza
- Fabio Romanelli
- Franco Vaccari
- Zhongliang Wu

- Members (open)

- Amel Benali

- Alexander Gorshkov
- Ahmed Ksentini
- Anna Berezina
- Atalay Ayele
- Djillali Benouar
- Dimas S. J. Sianipar
- Farhana Sarwar
- Georges Mavonga Tuluka
- Gladys Kianji
- Guoxin Wang
- Hany Hassan
- Imtiyaz A. Parvez
- Irwandi Nurdin
- James Bela
- Jiawei Li
- Junbo Jia
- Johannes Schweitzer
- Mohamed El Gabry
- Medhi Zare
- Mehdi Rastgoo
- Mimoun Chourak
- Muhammad Waseem
- Nada Ahmed
- Okubo Makoto
- Olga Novikova
- Pallabee Choudhury
- Paolo Rugarli
- Paramesh Banerjee
- Paulina Amponsah
- Philip B. Stark
- Qian Wang
- Ruben Tatevossian
- Sandeep Kumar Gupta
- Sarantsetseg Lkhagvaswze
- Sima Ghosh
- Tahmeed M. Al-Hussaini
- Wenjun Tian
- Yan Zhang

- Secretaries

Yan Zhang (Asian side) and M. El Gabry (African side).

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3. ACTIVITIES

- Participation in ASC EC meeting in Berlin

In the IUGG General Assembly in Berlin, the Asian Seismological Commission (ASC) held its executive committee meeting on July 17, 2023. JWG NDSHA report to the meeting the proposal and on-going work, presented by Dr. Yan Zhang, the secretary of JWG (Asian side). Prof. G. F. Panza was invited to attend the meeting and gave a 20 minutes explanatory talk. The agenda of this ASC meeting included nomination for new EC, discussion on the venue of 15th ASC GA in 2024, and other miscellaneous issues. 'Recent progress of the AfSC-ASC Joint WG on Neo-Deterministic Seismic Hazard Assessment' was an important agenda in this meeting. ASC preliminarily decided that the 15th GA is to be held the next year in Turkey.

- Participation in AfSC meeting in Berlin

On July 16, 2023, JWG members attended the meeting of AfSC. Prof. G. F. Panza, Prof. M. El Gabry, Prof. A. Peresan, and Dr. Yan Zhang participated in the meeting. Attendees of the meeting included leaders of the AfSC and IASPEI, e.g., Prof. Johannes Schweitzer, secretary general of IASPEI, and Prof. Michelle Grobbelaar, president elected of IASPEI and secretary general of AfSC. Dr. Yan Zhang presented the background of the proposed joint ASC and AfSC working group on Neo-Deterministic Seismic Hazard Assessment (JWG-NDSHA). It was agreed that the next step would be to share the information with the AfSC Execom and engage with the ASC Execom to discuss how to take the proposal further. It was also announced that the next AfSC GA is planned to be held with the Southern African Geophysical Association (SAGA) in 2024.

- Newsletters

On August 1, September 1, October 1, November 1, and December 1, the 1~5 issue of JWG newsletter have been distributed and obtain active responses.

- pJWG NDSHA lands ASC website

To make pJWG more transparent and available to all interested people, all materials about pJWG, including its background, related literatures, and newsletters, are updated in the official website of Asia Seismological Commission (ASC). Anyone could download materials of pJWG by clicking the link. More details could be found in <https://asc-iaspei.org/task-groups/>. It is remaining updated.

- pJWG NDSHA held a special webinar as a response to 2023 Morocco earthquake

In response to the September 8, 2023, M_s 6.8 earthquake in Marrakesh, Morocco, pJWG organized a Webinar on November 29, 2023, with participation of the AfSC leader Prof. Paulina Amponsah. Secretary general of ASC Prof. Li Li who was in the field work sent her warm words to the Webinar. Attendees of the Webinar include: Alexander Gorshkov, Antonella Peresan, Djillali Benouar, Giuliano Panza, Imtiyaz Parvez, Irwandi Nurdin, Paulina Amponsah, Vladimir Kossobokov, Yan Zhang.

4. PLANNED FUTURE ACTIVITIES/ ANNOUNCEMENTS

- pJWG NDSHA negotiates with statseis 13 for co-sponsorship

Statistical seismology international conference series (StatSei 13) is going to be held in Shenzhen, China, from March 16 to 24, 2024. Starting in 1998, the meeting was held in China (1998 and 2013), New Zealand (2001 and 2017), Mexico (2003), Japan (2006 and 2019), Italy (2007), the United States of America (2009), Greece (2011), Germany (2015) and France (2022). Sessions include: 1. Development of statistical models

and methodologies for seismicity analysis; 2. Earthquake physics; 3. Earthquake forecasts and testing, ground shaking simulation, disaster mitigation; 4. Extending statistical seismology beyond seismicity, such as seismic inversion, tremor, slow earthquakes, icequakes, etc.; 5. Recent developments of Bayesian and machine learning methodologies in seismology; 6. Recent advances of China Seismic Experiment Site (CSES) and Collaboratory for the Study of Earthquake Predictability (CSEP). The scope of the JWG fits well with StatSei Session 3, while other sessions are connected to varying degrees. JWG is invited to negotiate with the organizational committee of this meeting for co-sponsorship.

- Set up a session, Physics-based Seismic Hazard Assessment, in ASC 2024 Turkey meeting

The 15th General Assembly of Asian Seismological Commission (ASC) is going to be held the next year, with its sessions in preparation. JWG is planning to propose a session 'Physics-based seismic hazard assessment: recent progress and scientific debate'. Since recent years physics-based seismic hazard assessment has attracted wide spreading attention in seismological and engineering communities. The developments of neo-deterministic seismic hazard assessment (NDSHA) as a new generation of deterministic seismic hazard assessment well captures the tensor nature of strong ground motion based on the up-to-date seismology, data science, and computational technology, and has been applied to several places. This led to the necessity of comparative studies, testing of the results by earthquake cases with data intensive observations, and communicating with engineering and emergency management communities for its application. The research and its application play an important role in the endeavor of disaster risk reduction (DRR). The proposed session includes but is not limited to the theoretical, computational, and application aspects of NDSHA (for a recent review see Earthquakes and Sustainable Infrastructure Neo-deterministic (NDSHA) Approach Guarantees Prevention Rather Than Cure, 1st Edition - May 21, 2021, Editors: Giuliano Panza, Vladimir G. Kossobokov, Efraim Laor, Benedetto DeVivo), with comparison with other approaches, and related scientific discussion.