ENVIRONMENTAL HAZARDS IN ASIA
THE FIRST INTERNATIONAL CONFERENCE

SUMMARY REPORT

Date : 13-20 August, 2024

Venue: Library of the National University of Mongolia, Ulaanbaatar

Tel: (976)99081266 , (976)95880909

Website: https://environmentalhazardsasia.wordpress.com/

Executive Summary

The first international conference on "Environmental Hazards in Asia" was organized by the Mongolian Academy of Sciences in collaboration with Birkbeck, University of London, the University of Oxford, the University of Cambridge, the Association of Academies and Societies of Sciences in Asia (AASSA), and the National University of Mongolia (NUM). The conference was held from August 13-20, 2024, Ulaanbaatar, Mongolia. The primary objective of the conference was to gather leading academicians, researchers, technocrats, government and intergovernmental agencies, and students to share their experiences, research findings, and solutions to environmental hazards in Asia. It also provided a premier interdisciplinary platform for addressing common hazards and discussing strategies to mitigate the associated risks. This report provides details on the meeting

1. Studies into environmental hazards should not be done in isolation. Every hazard is a multi-hazard, requiring an understanding of the interplays between natural processes, human related impacts and how different hazards impact each other. There are no such thing as natural disasters, rather the impacts of environmental hazards are determined by our vulnerability to them. It means, social sciences working to characterize these vulnerabilities need to coordinate with natural sciences working to understand the hazards themselves. Networking events, such as this conference are key in building resiliance to future hazards.

2. Our ability to provide hazard assessments are only as good as the data underpinning them. In many areas, we are lacking data at the spatial and temporal level required to produce effective hazard assessments. Data collection and analysis must be performed before the disaster, not just in reaction to an event. A funding model to support this, involving national and international organisations is required. It also means sharing data, software, and best practices needs to be as open as possible.

3. Disaster management should be as decentralised as possible. Local communities need to play a central role to ensure the effectiveness of mitigation strategies. Identifying and supporting local actors who can lead change within their communities and help develop pragmatic, effective solutions is essential.

4. Education is the cornerstone of effective disaster risk reduction. Environmental hazards, their interplay and the impacts of a changing climate should be embedded in school curriculum. Education on hazards should start as early as possible and all sectors from early years, through school, university and beyond should cooridntate their approaches to education to reinforce key messages. Training and support is important for researchers and those working in DRR. It encourages groups to work outside their silos and develop interdisciplinary partnerships.

5. The meeting benefited from having a wide cross section of experience, including those working in development, education, policy makers, diplomats and politicians as well as researchers. We benefited from having representatives from Rio Tinto, Oyo Tolgoi, NEMA, the Mongolian Parliament, UNDP and UNICEF. It would be good to include more, including engineers, members of civil society and funding agencies to highlight challenges and obstacles to effective disaster risk reduction.

The conference demonstrated that there is a dedicated community of hazard researchers across Asia and beyond, eager to take action on these recommendations. While funding remains a challenge, regular meetings that bring together researchers and practitioners will help build strong, interdisciplinary relationships, facilitate data sharing, and foster the development of research proposals for future projects. We propose to hold a second international meeting on Environmental Hazards in Asia in Ulaanbaatar in August 2026 and develop this into a regular biannual meeting.

1. Overview

The first international conference on "Environmental Hazards in Asia" was organized by the Mongolian Academy of Sciences in collaboration with Birkbeck, University of London, the University of Oxford, the University of Cambridge, the Association of Academies and Societies of Sciences in Asia (AASSA), and the National University of Mongolia (NUM). The conference was held from August 13 to 20, 2024, in Ulaanbaatar, Mongolia.

The primary objective of the conference was to gather leading academicians, researchers, technocrats, government agencies, and students to share their experiences, research findings, and solutions to environmental hazards in Asia. It also provided a premier interdisciplinary platform for addressing common hazards and discussing strategies to mitigate the associated risks. The event fostered exchange on topics such as earthquakes, floods, landslides, volcanic eruptions, wildfires, urban disasters, and technological solutions for hazard mitigation.

The conference attracted participation from over 100 research scholars, academics, government officials, and students, representing a wide age range from 20 to 60. Notably, 37 researchers from over 20 countries—including the UK, China, Japan, Korea, Russia, Turkey, Mongolia, the Philippines, Nepal, India, Afghanistan, the USA, Sri Lanka, Iran, and Azerbaijan—presented their work. (For a detailed list of attendees, please refer to the Appendix 1.)

Key sponsors included Rio Tinto and Oyu Tolgoi, highlighting the significance of infrastructure in managing environmental hazards. The conference also received support from the Mongolian Society of Economic Geologists, the National Emergency Management Agency (NEMA), the Mongolian Geological Survey, and public health institutions. These organizations provided valuable perspectives and resources, ensuring a comprehensive, cross-disciplinary approach to hazard mitigation in the region.

A small movie was made to document the conference, which you can find here.

2. Scientific Highlights

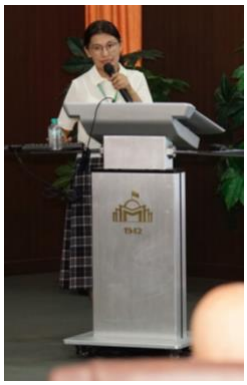
The first international conference on "Environmental Hazards in Asia" successfully highlighted the critical need for international collaboration in hazard mitigation. The discussions and presentations revealed a strong commitment to advancing research, policy-making, and practical solutions to environmental hazards. The participants emphasized the importance of ongoing cooperation to tackle cross-border environmental risks.

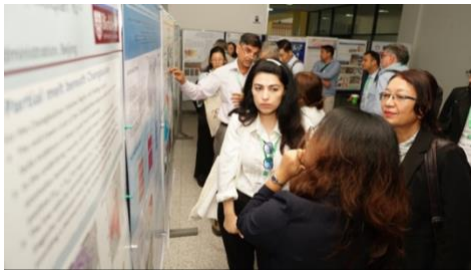
The conference was organized into two phases, with oral and poster presentations scheduled over three days (August 13-15, 2024) at the Library of the National University of Mongolia. Four key sessions were structured around the following themes:

1. Earthquakes and Tectonics and other Environmental Hazards
2. Technological Solutions to Environmental Hazards (satellite data processing, InSAR technology, and machine learning applications)
3. Managing Development in the Context of Environmental Hazards
4. Building Resilience to Environmental Hazards

Each session included keynote lectures, followed by 10 minutes paper presentation and 5-minute Q&A session. In total, 53 presentations were delivered, with 16 contributions from Mongolian researchers and 37 from international participants. All abstracts can be found here.


ENVIRONMENTAL HAZARDS IN ASIA






АСТРОПАРК

Figure 1 (on previous page): Highlights of the conference. Top (left to right): Ms Uyanga Bold (MP for Mongolian Parliament), Academician Demberel Sodnomsanbuu (Director of IAG) and Prof. Ahmet Nuri Yurusev (AASSA President opening the conference). 2nd top (left to right): Keynote speakers: Brigadier General Uuganbayer Batmunkh (Deputy Chief of NEMA), Maral Bayraa (University of Oxford), Dagva Myagmarsuren (Mongolian University of Science and Technology). 3rd top (left to right): Keynote speakers: Dejidmaa Damdindorj (International Centre for Environmental Management), Cengiz Zabci (Istanbul Teknik Universitesi), Meena Bilgi (Natural Resources Management & Livelihoods). Bottom: Poster session. conference dinner and ice breaker at IAG.

A key highlight of the three-day conference was the connection established between influential figures from various sectors, including government agencies, academia, and industry. **Ms. Uyanga Bold**, Member of Parliament of Mongolia, delivered the opening speech, followed by a valedictory address from **Dr. Ahmet Nuri Yurdusev**, President of the Association of Academies and Societies of Sciences in Asia, and **Mr. Munhbileg Namsrai** from the National Geological Survey of Mongolia. Additionally, **Academician Demberel Sodnomsanbuu**, Director of the Institute of Astronomy and Geophysics at the Mongolian Academy of Sciences, provided a special address. We also heard a number of excellent keynote speeches and in total 44 presentations were given. There was also a poster session that ran the length of the conference (Figure 1)

In recognition of outstanding contributions, two Best Presentation Awards were given during the conference: one to MSc. Dejidmaa Damdindorj and another to Dr. Deo Carlo E. Llamas for their exceptional presentations (Figure 2).

Figure 2: Best talk winners Deo Carol E. Llamas (left) and Dejidmaa Damdindorj (right).

On the last day of the conference, participants engaged in collaborative discussions through panel discussion and breakout groups that focused on:

1. Hazards, development and multinational engagement
2. Education & Engaging communities in disaster risk reduction

These discussions allowed for deeper engagement on topics of mutual interest, providing a platform for networking, sharing ideas, and developing actionable solutions.

Cross border hazards, development and multinational engagement

Panel: Dejidmaa Damdindorj (ICEM, Mongolia), Jang Ryol Liu (AASSA, Republic of Korea), Cengiz Zabci (Istanbul Techical University, Turkey), James Hammond (Birkbeck, UK)
Convenor: Maral Bayaraa (Oxford, Mongolia)

Figure 3: The first panel discussion.

In this first discussion, the panel focussed on the issue of cross-border impacts of hazards and how best to build resoliance to these. Cengiz Zabci described his experience responding to the 2023 Turkiye earthquakes, which had clear impacts across the border in Syria. He observed that there is no data sharing across the border, making it hard to determine the impacts. It was also highlighted that the border with Turkey and Armenia is closed, with no data sharing or formal agreements in place, only informal person-person contacts. This makes this region vulnerable to future events.

James Hammond highlighted an example of building cross-border collaboration in difficult circumstances. He described his collaboration with scientists from the Democratic People's Republic of Korea (DPRK) and China on Mount Paektu, a volcano on the border of China and DPRK. This project has been sustained despite significant sanctions being imposed on DPRK and during a time of political instability in the region. He argued that it shows that projects in environmental science, particularly those that are of mutual interest to participant countries offers opprtunity for building engagement. It is important to do this early, before any disaster happens. This is both for scientific reasons, so that any impacts can be minimised, but also as it helps build relationships and connections that can be used to communicate during and after the hazard event has occured.

Jang Ryol Liu, in his role representing the AASSA (The Association of Academies and Scientific Societies in Asia) secretariat focussed on how organisation such as AASSA can play a role to bring people together to share experiences and build new multi-national collaborations, as evidenced by this meeting. He emphasised that hazards don't respect borders and that disasters can actually bring people together and offer opportunities to share information, technology and best practices. However, it is best to do this before the event to have maximum impact.

Dejidmaa Damindorj gave perspectives from her recent projects working as a GIS specialists with the Mongolian National Emergency Management Agency (NEMA), developing new hazard maps for public and policy maker use. From her work, she highlighted that technolgical approaches and datasets exist in some, but not all countries that allow communication to be done effectively. This frames the question of how we can make this available more widely. She questioned about how scientists can make best use of their information and knowedge to support policy makers or local communities during disaster response or building prepardness.

During questions to the panel, it was highlighted that multi-national engagement can be difficult. Collaboration is often only possible when priorities of two countries align, and in areas of tension, such as a shared resource (e.g., water), conflicting policies can make collaboration harder. It also relies on a strong relationship between partner countries, particularly when it comes to funding for larger research projects and in many cases, where one country may be more developed in terms of skills, equipment and resources, it can create an unequal partnership. It shows that even disaster research is affected by the national interests of the countries involved. Border areas are often sensitive, meaning access both geographically and to data can be hard. However, there are some examples of successes. The Wenchen earthquake in China was highlighted as a disaster that facilitated multi-national collaboration, some of which continues today between earthquake prone countries (China-New Zealand-Japan), although data sharing continues to be an issue. It was also noted that these longer term projects are rare, with focus on research often spiking after a disaster, and is much harder to maintain over longer times – a problem when dealing with geological hazards that may have long recurrance times.


Figure 4: Breakout group discussions

Following the panel discussion, all participants split into four groups to discuss the opprtunities, challanges and policy recommendations based on their own experiences. Some commen themes highlighted by the breakout groups included:

- The importance of having these meetings to share experiences, both positive and negative, especially when regarding policy ideas so that we can learn from each other.
- It is easier to build new collaborations, especially across borders when they are focussed on areas of mutual interest and conversely, when interests are not aligned it can present a very significant challenge to collaboration.
- Disasters themselves can create opportunities for engagement, and so taking advantage of these should be encouraged, but there should be a focus on maintaining this after the initial rush of interest/funding.
- It is important for cross-border engagement to be focussed on more than scientists. It should include civil societies, communities, policy makers.
- Different power balances, political structures, financial realities and languages can create challenges, meaning it can be hard to import one set of plans from one location to another.

- The importance of open data, not just between scientists, but to the public as well and developing effective ways to share this information with communities, including an understanding of what technology may be available to local communities, so they can respond in a positive way.
- Development of effective mitigation strageties to protect infrastructure against multiple hazards, not just focussing on a single hazard in isolation.
- Scientists should seek opportunities to communicate the importance of disaster research and multi-national collaboration to policy makers. This will improve chances of placing the topic as a national priority, thus facilitating the projects that can help build resiliance.

Education & Engaging communities in disaster risk reduction

Panel: Dagva Myagmarsuren (MUST, Mongolia), Meena Bilgi (Natural Resources Management & Livelihoods, India), Robin Goodwin (Warwick, UK), Yasin Janjua (UNDP, Mongolia), Nomin Orgodol (UNICEF, Mongolia), Bolor-Erdene Battsengel (SpaceX), Richard Walker (University of Oxford, UK), Bayasgalan Amgalan (IAG, Mongolia)
Convenor: Maral Bayaraa (Oxford)

Figure 5: The second panel discussion.

In the second, larger panel (Figure 5) the theme of education and communities was discussed. Robin Goodwin began the panel discussion with a focus on the different definitions of community, from familes, towns, religions, online and many more. He highlighted the different scales of these and the different ways the communicate information, suggesting that maybe online communities are becoming more important in disasters (What's app, Facebook etc). A question was how are these communities trusted and how trusted are they to deliver reliable information. Do they contain the most vulnerable people in society and how effective are they at reaching beyond their immediate communities. Also, communities can change over time and may even fracture in the event of a disaster, so thought must be made in to how to sustain these communities through stressful times.

Meena Bilgi carried on the discussion of communities. A key question Meena framed was about how to bring synergies between scientists and communities. Leaning on community based projects in India, Meena highlighted that understanding local practices and knowledge was essential to develop practical solutions. It shows the bringing in community insights during the development stage, both of research projects and building innovative solutions is really important.

Yasin Janjua provided a different experience, bringing a perspective from UNDP (United Nations Development Program). He focused on flooding and how it impacts the herder community in Mongolia. He described the pressures that one disaster (flooding) imposes on other areas, such as cities and how

this increases vulnerability for future hazards. Building resiliance, rather than a reactive response is needed to avoid this. He highlighted how effective communication, in a language familiar to local communities is important to allow information, such as weather forecasts to be received and acted on by local communities. Yasin emphasized the importance of traditional knowledge but noted that it may be necessary to change behaviours when current practices do not effectively protect communities. To achieve this, communities, especially the youth must be involved in the process and empowered to make these changes.

Nomin Orgodol presented the work that UNICEF are doing on education in Mongolia. Nomin highlighted that they take a long term approach, focussed on the basic abilities within communities, such as reading and writing. Accessibility is a big issue due to lack of local facilities and difficulty in travelling. Supporting road clearing, fuel and accomodation has been targeted to remove these barriers. Early-years learning is often missed and distance learning tools can help address this and can support classroom learning for older children. UNICEF try to collect evidence of the impact on these programs, that can be used to highlight to policy makers.

Figure 6: Bolor-Erdene Battsengel discussing the Girls Code Program in Mongolia.

Bolor-Erdene Battsengel discussed her experiences developing the Girls Code program (Figure 6), aiming to provide Mongolian girls in the countryside, disabled and excluded communities opportunities to build skills, while also helping to address the gender gap in the technology sector. In relation to disasters, technology in the hands of local people means new tools can be built that will be most effective for their own community. Also, severe disasters can cause significant lifestyle changes, but education and building skills can offer options that provide resiliance to these changes – allowing people to be less reliant on a single source of income.

Dagva Myagmarsuren built on his keynote talk, which highlighted the new geotechnical programs at the Mongolian University of Science and Technology (Figure 7). He highlighted that it is important for higher education teaching to not be siloed into technical subjects, but to recognise links between technical subjects and more practical or social sciences within disaster management. He suggested that, with suitable funding MUST could become a new hub for future research that could include research on the interplay between large infrastructure projects, such as mining and future environmental hazards.

Figure 7: Dagva Myagmarsuren discussing the new geotechnical degrees offered at MUST.

Richard Walker started by highlighting the challenges of communicating the importance of hazards that people are vulnerable to but may not have personally experienced (e.g., earthquakes). Developing

effective education in this context, maybe through scenario based teaching is an effective way of making abstract subjects more relatable. Doing this in a sensative way, such as in cartoon books can be effective, especially as children often take the knowledge and can train their elders. Education can also be an effective tool to build links between scientists, practitioners, policy makers and everything in between.

Bayasgalan Amgalan finished the panel discussion by highlighting that, even within our own specialist scientific community, we often find it hard to understand each other. Widening this out to include natural and social scientists and those working in Government, development agencies and others presents more challenges and shows we need to continue education ourselves. Technological solutions, such as the GIS maps introduced by Dejidmaa Damdindorj for NEMA offers a way to bring data together in a digestible way. Understanding how we can bring other forms of data, especially from social sciences into these resources would be advantageous. He finished by highlighting the importance of having students within these discussions, to enthuse young people to develop the solutions going forward.
Following the panel discussion 4 groups were formed to further discuss the challenges and opportunities in education and engaging communities. Some common themes raised in these discussions were:

- It is important to create opportunities for a variety of livelihoods within communities to prevent migration to cities following disasters and subsequent social and environmental problems this can cause.
- Local communities should understand the variety of risks they are exposed to, as well as the impacts a changing climate may have on their local surroundings.
- Mental health is not well considered when it comes to the impact of and response to disasters.
- Behavioural changes are important, but require local actors to drive this change as they are more likely to be trusted sources within their communities.
- There are challenges in implementing policy and legislation into practical actions.
- Embedding education activities at school level is arguably the most effecient way of developing resiliance as it will then grow through society.
- Communication is really important for effective multi-sector engagement. This is both in disaster response, but also in terms of udnerstanding each others terminology and language in teh prepardness or receovery stage.
- 95% of prepardness comes before the disaster and so this should be where efforts and funding is focussed, to provide education, training and build resiliance.
- Rebuilding from disasters offers an opportunity to build back better, to build on new partnerships (across countries) and to take advantage of raised awareness across communities.
- Recent disasters offer opportunities for education, both public but also scientists, policy makers and other stakeholders.
- There are challenges in communicating with local communities. It requires an understanding of multiple factors, such as members of the community's psychological preparedness, their risk perception, the tools of communication within a community and cultural backgrounds among other factors.

- Communication between scientists and decision makers is also important. The message needs to be clear and understandable by the message recipient at all times.
- Technology, in the form of apps, or online tools can enhance education in DRR.
- The internet provides opportunities, but also challenges. Disinformation can harm efforts to build resiliance.
- We need a steady pipeline of young specialists, including scientists, planners, disaster risk reduction etc. These should have an awareness of key issues outside their specialism and conferences such as this one, or summer schools can facilitate this.
- Maintaining enthusiasm for training, especially when hazards happen rarely can be challenging.
- Placing education in real life or simulated scenarios can be an effective way of training and bringing DRR to life.
- Better mental health provision should be provided to support the most vulnerable in communities and to help people deal with the psychologocial impacts of diasasters.

3. Policy recommendations

Sharing Experiences: The meeting has created a community of disaster researchers across Asia. It has brough natural and social scientists, policy makers, development agencies and others together to discuss disaster risk reduction. To develop this further, allow it to grow we propose this meeting should be a regular event. The meeting could facilitate the following activities:

- It presents opportunities for sharing experiences (both positive and negative) for all stakeholders related to disaster research and management.
- Future meetings should try to include affected communities, civil societies, engineers as well as policy makers and scientists.
- People working on education at all ages, not just higher education could be involved.
- Field trips are important, but should cover aspects of natural science, social science and disaster management.

Data before Disasters: It is imperative that this data collection and research must be done before disasters happen, not just in the immediate aftermath of a disaster. A longer term approach to funding is required to support this. One idea is that a small amount of infrastructure budget from National Governments or development banks could be focussed on disaster research to better protect the infrastructure from future damage. This is likely to save funds in the long term. Any data collected should be shared as openly as possible to allow effective research to be conducted.

Community based solutions: Disaster management should be decentralised, so that it is as close to the communities impacted as possible. This gives ownership to local communities, while also promoting community based, pragmatic solutions based on local knowledge and practice. These workable solutions can help projects maintain their impact beyond the length of any project. Equally, investing in local economies and local education can help develop resiliance to future natural hazards. This is key to stop migration following a disaster and knock on impacts this generates, as it gives wider opportunities to local communities, avoiding a single point of failure, such as a loss of livestock in a flood.

Education: Education is a cornerstone of effective disaster risk reduction. Environmental hazards, their interplay and the impacts a changing climate may have should be embedded in school curriculum. Education on hazards should start as early as possible and all sectors from early years, through school, university and beyond should cooridntate their approaches to education to reinforce key messages.

4. Fieldtrip

After the conference sessions concluded, a field study was conducted from August 16 to 20, 2024, covering the Mogod Fault and Tulee Mountain Fault in Mogod sum (Bulgan aimag) and the Khorgo Volcano in Tariat sum (Arkhangai aimag) (Figure 8). This study enabled participants to observe the geological features of these areas, providing valuable field data for ongoing research projects. It also offered the chance for conference participants to carry on discussions in an informal setting.

Figure 8: Lava flows from the Chuluut river canyon in Undur-Ulaan soum, Arkhangai aimag (left) and the Mogo Fault rupture (right)

The fieldtrip focussed on a number of environmental hazards facing Mongolia. In particular, earthquakes; volcanism, depositional environments; paleoenvironmental and paleoclimatic changes. The full schedule for the fieldtrip can be found in Appendix 3.

The first highlight of the trip was a visit to the Mogod Fault Rupture, the site of a magnitude 7 earthquake that occurred in 1967. It provided an excellent insight into the scale of these large earthquakes and the challenges in identifying large faults, which may only rupture every few thousand years.

The second main locality was the Khorgo Volcano (Figure 8) and surrounding area, the site of the most recent volcanism in Mongolia. It should how hazards surrounding the volcano are driven by interaction from the eruption and the surrounding geomorphology, which can control emplacement of lava flows and other erupted material.

5. Media coverage and publicity

The conference was widely publicized through official organizing institutions' websites, social media platforms, and national broadcast channels, including MNB, MONTSAME, and MNB Radio. News reports covered key highlights from the event, and a documentary film on the conference was produced and expected to be broadcasted by MNB. This media exposure greatly contributed to raising awareness about the importance of addressing environmental hazards in Asia.

Broadcasting channel news on the conference (Figure 9):

1. Mongolian National Broadcaster (MNB) - "Tsagiin Khurd" news program (https://www.facebook.com/share/v/vGA8b19ZnagUUWUk/?mibextid=WC7FNe)
2. Mongolian National Broadcaster(MNB) - Morning news
3. Mongolian National Broadcaster(MNB) – Daily news
4. Mongolian national news agency - MONTSAME

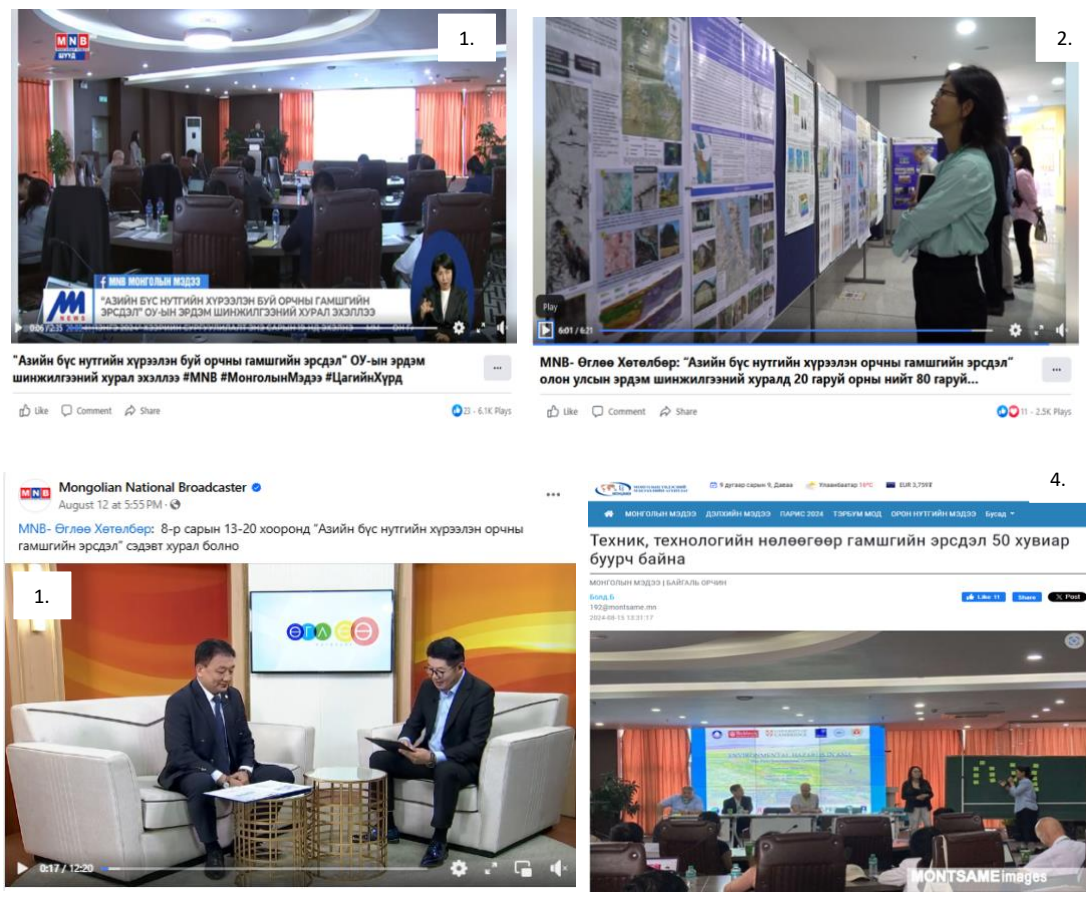


Figure 9: Examples of media coverrage of the conference. 1. The 'Tsagiin Khurd' news program broadcast on August 15, 2024, at 20:00. 2. MBN morning news at 8am on August 14th 2024. 3. On August 14, 2024, at 14:00, during the guest interview segment of the 'Daily' news program, academician S. Demberel, Director of the Institute of Astronomy and Geophysics of the Mongolian Academy of Sciences, participated and provided information about the international conference. 4. The news published on the www.montsame.mn website on August 15, 2024, at 13:31:17

Articles written about the conference on news websites:

1. "Erdes Bayalgiin Toim" - a magazine of the mining sector (Figure 10). The next issue of the magazine, containing the news is scheduled to be released in October 2024. https://www.facebook.com/photo/?fbid=1060893556042899&set=a.500961888702738

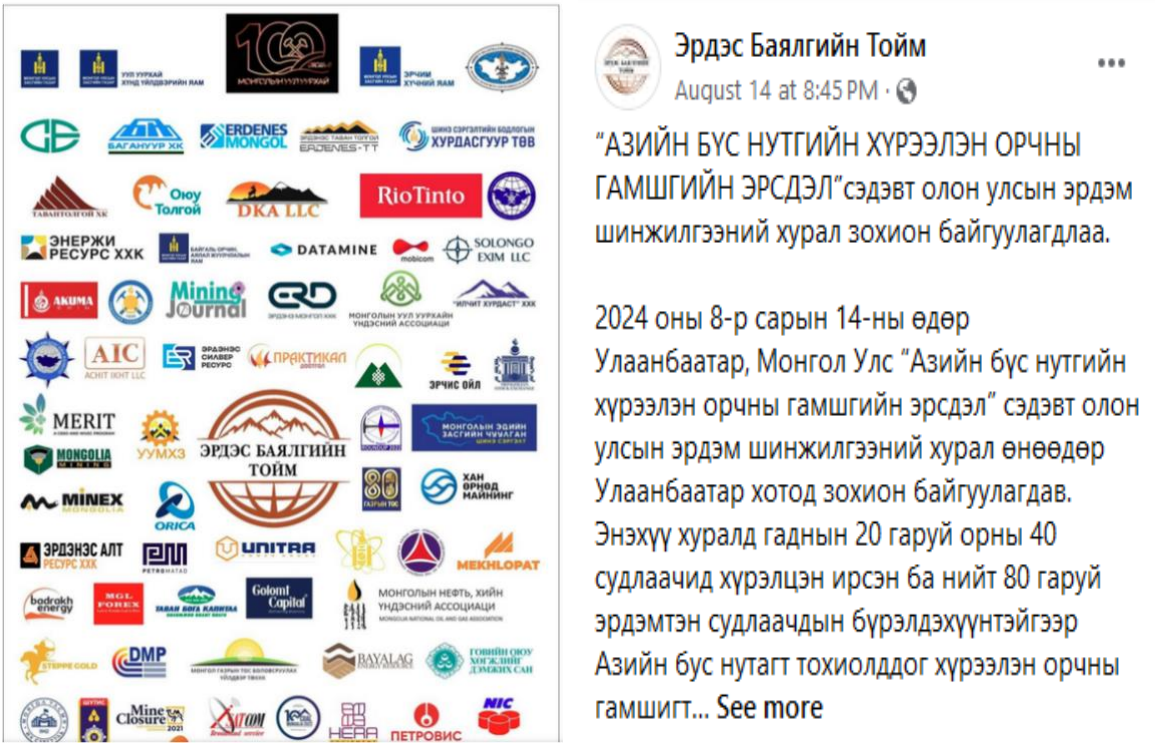


Figure 10: Article published on Facebook page of "Erdes bayalgiin toim" magazine

1. Article published in "ТӨР.МН" website (https://tur.mn/t/s/16920)
2. Article published in "Zogii.mn" website
3. Article published in "Newpress.mn" website

Figure 11: Screenshot of article about conference published in ТӨР.МН (left), Zogii.mn (middle) and (Newpress.mn) *websites*

4. National Emergency Management Agency official website (https://nema.gov.mn/post/157860)

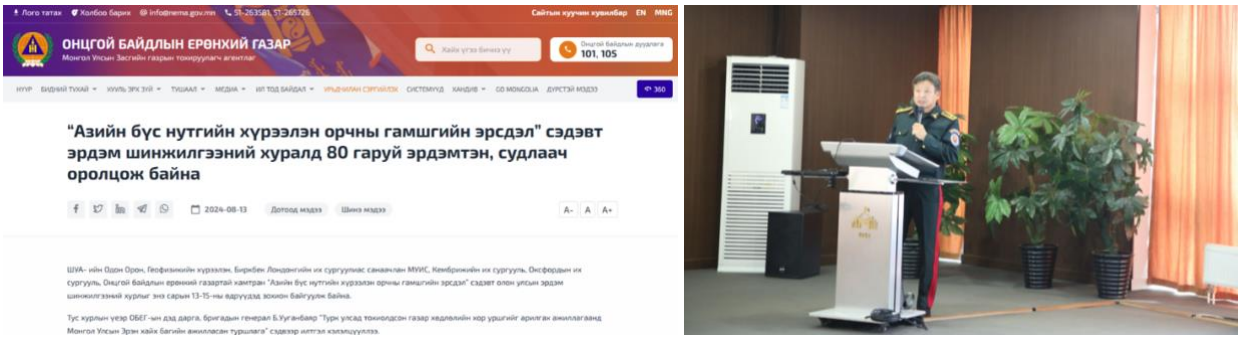


Figure 12: Publication about the conference and participation from NEMA on their official website (left) and Brigadier General B. Uuganbayar, Deputy Director of the Emergency Management Agency delivering a presentation on the topic "Rescue Operation Experience in Turkiye" (right).

Social Media coverage about the conference:

1. National Emergency Management Agency (NEMA) official Facebook page
2. Mongolian Academy of Sciences (MAS) – Small Assembly of MAS and specialsed Academies (АЗИЙН БҮС НУТГИЙН ХҮРЭЭЛЭН ОРЧНЫ ГАМШГИЙН ЭРСДЭЛ - Search Results | Facebook)

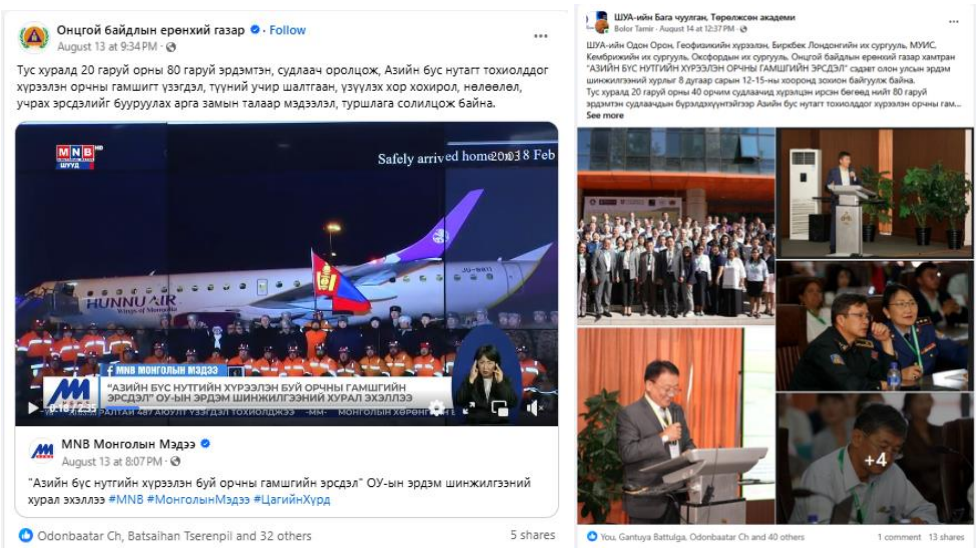


Figure 13: Posts on the conference on the NEMA (left) and MAS (right) official Facebook pages

3. Uyanga Bold, Member of Parliament, posted about the conference on her official facebook page

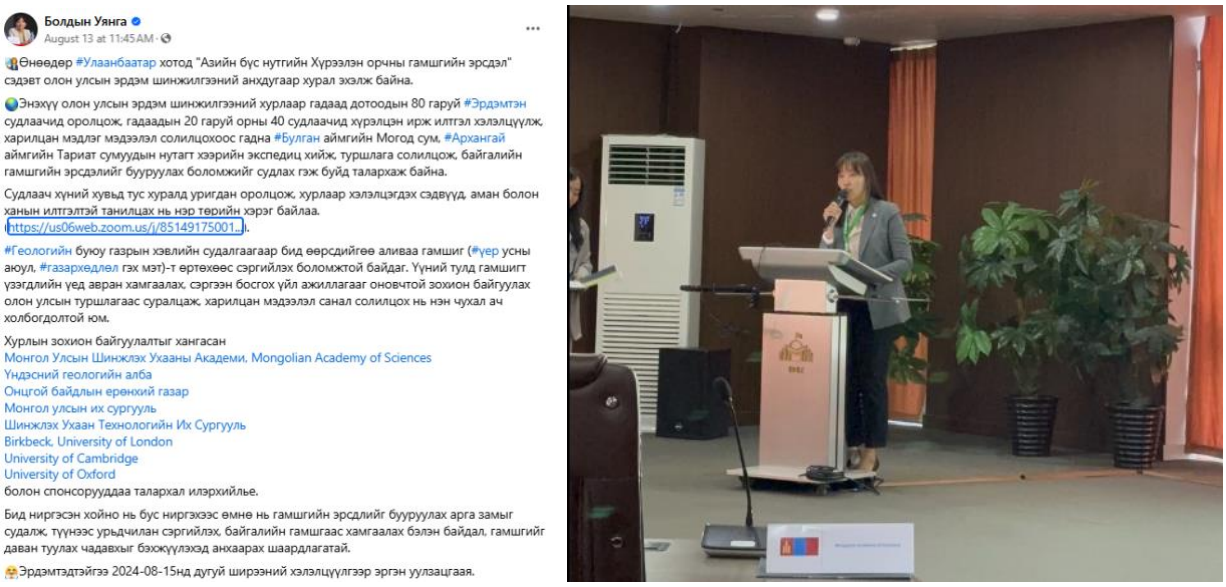


Figure 14: Uyanga Bold's (MP) facebook post (left) about the conference and Member of the Mongolian Parliament, B. Uyanga, participated in the opening ceremony of the international conference.

4. Uuganbayar Batmunkh, Deputy chief of National Emergency Management Agency, posted about the conference on his official facebook page

Figure 15: Uuganbayar Batmunkh, Deputy chief of National Emergency Management Agency Facebook post about the conference.

Appendix 1. List of all participants of the first international conference "Environmental Hazard in Asia"

1. James Hammond, UK, Birkbeck, University of London

2. Matt Kimberley , UK, Birkbeck, University of London

3. Richard Walker, UK, University of Oxford

4. Emma Greenough, UK, University of Oxford

5. Robin Goodwin, UK, Warwick University

6. Matthew Kimberley , UK, Birkbeck, University of London

7. Maximillian Van Wyk de Vries, UK, University of Cambridge

8. Richard Stone, USA, Howard Hughes Medical Insitute/AASSA

9. Jang Ryol Liu, Korea, Director of AASSA Secretariat

10. Hanseul Kim, Korea, The AASSA Secretariat

11. Gi Bom Kim, Korea, Pusan National Univeristy

12. Geunyoung Kim, Korea, Korea Institute of Geoscience and Mineral Resources

13. Kwabgwu Kim, Korea, Korea Institute of Geoscience and Mineral Resources

14. Kim Jungrack , Korea, Future Inc, Korea

15. Ahmed Nuri Yurdusev, Turkey, Acting president of AASSA

16. Cengiz Zabcı , Turkey, Istanbul Technical Uniuversity

17. Ken XS Hao , Japan, National Research Institute for Earth Science and Disaster Resilience

18. Hiroyuki Fujiwara, Japan, National Research Institute for Earth Science and Disaster Resilience

19. Nobuyuki Morikawa, Japan, National Research Institute for Earth Science and Disaster Prevention

20. Anna Dobrynina, Russia, Institute of the Earths crust of Siberian branch of Russian Academy of Sciences

21. V.A. Sankov, Russia, Institute of the Earths crust of Siberian branch of Russian Academy of Sciences

22. Tumen Chimitdorzhiev, Russia, Institute of Physical Materials Science of the Siberian Branch of the Russian Academy of Sciences

23. Namzhil Chimitdorzhiev (Son), Russia, Participants from Russia

24. Zhongwei Zhao, China, China Academy of Sciences

25. Tejpal Singh, India, CSIR – Central Scientific Instruments Organisation

26. Meena Bilgi, India, Specialist (Gender, Natural Resources Management & Livelihoods) and Visiting Faculty

27. Anjana Singh, Nepal, Central Department of Microbiology Tribhuvan University Kathmandu

28. Sarmila Paudyal , Nepal, National Society for Earthquake Technology-Nepal (NSET)

29. Nawa Raj Dhakal , Nepal, National Society for Earthquake Technology-Nepal (NSET)

30. Jeffrey S. Perez, Philippine, Department of Science and Technology - Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS)

31. Deo Carlo E.Llamas , Philippine, Philippine Institute of Volcanology and Seismology

32. Arge Louise Joy S. Esquivel, Philippine, University of the Philippines Resilience Institute

33. Hafiza Imanova, Azerbaijan, Azerbaijan National Academy of Sciences

34. Obaidullah Muhammad , Afghanistan, Academy of Sciences of Afghanistan (ASA)

35. Chao-Yo Cheng, Taiwan, Birkbeck, University of London

36. Krzysztof Gaidzik, Poland, University of Silesia in Katowice

37. Mousa maleki, Iran, Isfahan University of Techology, Iran

38. Dissanayake Mudiyanselage, Sri Lanka, Rajarata University of Sri Lanka

39. Hiran Tilakaratne, Sri Lanka, Disaster Management Center (DMC), Sri Lanka

40. Uyanga Bold, Mongolia, Member of the State Great Hural (Parliament) of Mongolia

41. Br. Gen. Uuganbayar Batmunkh, Mongolia, Deputy Chief of the National Emergency Management Agency of Mongolia (NEMA)

42. Demberel Sodnomsambuu, Mongolia, Director of Institute of Astronomy and Geophysics, MAS

43. Nomin Orgodol, Mongolia, UNICEF representative in Mongolia

44. Munkhbileg Namsrai, Mongolia, National Geological survey, Mongolia

45. Bolor-Erdene Battsengel, Mongolia, Strategic engagement advisor SpaceX, Mongolia

46. Balt Suvdantsetseg, Mongolia, Head of administration planning and International cooperation department, MAS

47. Nomin Orgodol, Mongolia, UNICIEF

48. Byambasuren.J, Mongolia, Mongolian academy of science

49. Ana Maria Hagan/Tsegmid Sambuu, Mongolia, National center for Public health Mongolia

50. Boldmaa Jargalsaikhan, Mongolia, University College London, Department of Risk and Disaster Reduction, Mongolia

51. Javkhlanbold Dorjsuren , Mongolia, Chief Geologist at Mintores LLC Mongolia

52. Maral Bayaraa , Mongolia, University of Oxford, Satellite Applications Catapult

53. Davaadorj Davaasuren, Mongolia, Department of Geography, School of Art & Science, National University of Mongolia

54. Amarsaikhan Damdinsuren, Mongolia, Institute of Geography and Geoecology, MAS (academician)

55. Telmen Erdenebileg, Mongolia, Head of Exploration, Accelerator lab United nations development Programme, Mongolia

56. Bayasgalan Amagalan, Mongolia, Institute of Astronomy and Geophysics of MAS

57. Dagva Myagmarsuren, Mongolia, School of Geology and Mining, MUST

58. Dejidmaa Damdindorj, Mongolia, ICEM – International Centre for Environmental Management

59. Byambakhuu Gantumur, Mongolia, Department of Geography, School of Art and Science, National University of Mongolia

60. Bazarragchaa Duudgai, Mongolia, Head of Disaster Risk Management and Assessment Division, NEMA, Mongolia

61. Soyolmaa Sukhbat, Mongolia, Institute of philosophy of Mongolian Academy of Sciences

62. Tsegmid Sambuu, Mongolia, National center for Public health Mongolia

63. Mendbayar Otgonbayar, Mongolia, National Center for Public Health, Mongolia

64. Jugderdemid Gurragchaa, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

65. Ulziibat Munkhuu, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

66. Damdin Batmunkh, Mongolia, Institute of philosophy of Mongolian Academy of Sciences

67. Chimed Bayarsaikhan, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

68. Bayanjargal.G, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

69. Zagdsuren Sainbayar , Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

70. Amarjalgal Bat-erdene , Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

71. Munkhsaikhan Adiya, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

72. Odonbaatar Chimed, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

73. Batsaikhan.Ts, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

74. Dembereldulam.M, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

75. Nominerdene.E, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

76. Mungunsuren.D, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

77. Dorjdavaa.M', Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

78. Mungunshagai.M, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

79. Munkhsiakhan.Am, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

80. Narantungalag.G, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

81. Khishigdelger.U, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

82. Oyunerdene.M, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

83. Baigalmaa.G, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

84. Dagzinmaa.D, Mongolia, Institute of Astronomy and Geophysics, Mongolian Academy of Sciences

85. Tseedulam Khuut, Mongolia, Mongolian University of Science and Technology(MUST)

86. Enkhbayar Dandar, Mongolia, Mongolian University of Science and Technology(MUST)

87. Ichinkhorloo Bayanmunkh, Mongolia, Mongolian University of Science and Technology(MUST)

88. Orkhon , Mongolia, Mongolian University of Science and Technology(MUST)

89. Binderiya Dondov, Mongolia, Premier Consulting

90. Ganzorig Munkhjargal, Mongolia, CE coordinator, Mongolian anti tb coalition

91. Javkhlan Enkhbold, Mongolia, ??

92. Damiran Enkh-Amgalan, Mongolia, Scientific Secretary of affiliated academies, Department for Research and Planning Mongolian Academy of Sciences

93. Sainjargal Bat-Erdene, Mongolia, Geo information center, National Geological Survey of Mongolia

94. Turjargal Choijsuren, Mongolia, Geo information center, National Geological Survey of Mongolia

95. Dugarnavag Ulziitogtokh, Mongolia, Geo information center, National Geological Survey of Mongolia

96. Batsaikhan Vanchindorj, Mongolia, Head of Risk Management Department, NEMA

97. Nominchimeg Davaanyam, Mongolia, For Better Education NGO

98. Bilguunmaa Myagmardulam, Mongolia, Toyama Pref.University, Japan

99. M.Dulamjav, Mongolia, Geologist

100. Ts.Ganchimeg, Mongolia, University of Internal affairs

101. Delgersaikhan Nyamdorj, Mongolia, Emergency department of the capital

102. Enkhsuvd Enkhbaatar, Mongolia, Emercom of Mongolia

103. Lkhagvasuren, Mongolia, National institute of disaster research Mongolia

104. Batbold Oyunbat, Mongolia, National emergency management agency , Mongolia

105. Ganhuyag.Ch, Mongolia, Mongol geo-test Co.Ltd

106. Tsolmon.A, Mongolia, Geologist, private sector

107. Altangerel.D, Mongolia, Geologist, , private sector

108. Altanbold Enkhbold, Mongolia, Department of Geography, School of Art and Science, National University of Mongolia

109. Khorolsuren, Mongolia, Sudalt-Mana Co.ltd

110. Tsend, Mongolia, National emergency management agency , Mongolia

111. Myagmarsukh, Mongolia, National emergency management agency , Mongolia

112. Mungunsarnai, Mongolia, National emergency management agency , Mongolia

113. Odgerel, Mongolia, National emergency management agency , Mongolia

114. Belgutei, Mongolia, National emergency management agency , Mongolia

115. Delgerzaya, Mongolia, National emergency management agency , Mongolia

116. Altantuya, Mongolia, National emergency management agency , Mongolia

117. Nyamdorj, Mongolia, Ulaanbaatar city government

118. Munkhorgol, Mongolia, National emergency management agency , Mongolia

119. Batbold, Mongolia, National emergency management agency , Mongolia

120. Enkhsuvd, Mongolia, National emergency management agency , Mongolia

121. Enhjin, Mongolia, Rio- Tinto

122. Dashdorj, Mongolia, Oyu-Tolgoi

123. Enkhbayar, Mongolia, Mongolian University of Science and Technology(MUST)

124. Davaasuren, Mongolia, Rio- Tinto

125. Jargalan, Mongolia, Mongolian University of Science and Technology(MUST)

126. Narangarav Tumur-Uyal, Mongolia, School of Arts and Sciences, National University of Mongolia

127. Daariimaa Badarch, Mongolia, School of Arts and Sciences, National University of Mongolia

128. Batkhuyag, Mongolia, NEMA

129. Oyubold, Mongolia, Brokers

130. Munkhtulga, Mongolia, Mionrec Co.ltd

131. Bayarsuren, Mongolia, Student, Oxford university

132. Andy Battson, UK, British Embassy

133. Solongo Ayush, Mongolia, British Embassy

134. Martha Popadopolou, UK, University of Leicester

135. Solmaz Mohadjer, Germany, University of Tubingen

136. Sirimal Premakumara, Sri Lanka, University of Colombo

Appendix 2. Conference program at the NUM

Tuesday, 13th August 2024				
#	Time	Name	Affiliation	Topic
	08.15 - 9.00	Arrival & Registration & Coffee		
Opening session: Announcer Mr.Khongor Rentsensambuu & Ms. Nomin-Erdene Erdenetsogt				
1	09.00 - 09.05	Mr. Amarsaikhan Sainbuyan	Deputy Prime Minister of Mongolia	
2	09.05 - 09.10	Ms. Uyanga Bold	Member of the Parliament of Mongolia	
3	09.10 - 09.15	Mr. Ahmet Nuri Yurdusev	Acting President of Association of Academies and Societies of Sciences in Asia	
4	09.15 - 09.20	Mr. Munhbileg Namsrai	National Geological Survey of Mongolia	
5	09.20 - 09.30	Mr. Demberel Sodnomsambuu	Academician, Director of Institute of Astronomy and Geophysics, Mongolian Academy of Sciences	
	09.30 - 09.45	Group Photo (All participants) / Organizing committee/		
Session 1: Earthquakes & Tectonics Session Chairs: Dr. Cengiz Zabcı & Dr.Richard Walker				
6	9.45 - 10.00	Brigadier General, Mr. Uuganbayar Batmunkh	Deputy Chief of the National Emergency Management Agency of Mongolia (NEMA), Mongolia	Experiences of Mongolian Search and Rescue Team Mission in the Türkiye Earthquake (2023)
7	10.00 - 10.30	Mr. Cengiz Zabcı (Keynote Speaker)	İstanbul Teknik Üniversitesi, Turkey	6 February 2023 Kahramanmaraş Earthquake Sequence (Türkiye): State of knowledge before and after
	10.30 -11.00	Coffee break		
8	11.00 - 11.15	Mr. Richard Walker	University of Oxford, United Kingdom	Earthquake hazards and risks in Asia
9	11.15 - 11.30	Mr. Krzysztof Gaidzik	University of Silesia in Katowice, Poland	Historical earthquakes along the Silk Roads – challenges and perspectives for archaeoseismology in Samarkand, Uzbekistan
10	11.30 - 11.45	Ms. Dobrynina Anna A.	Institute of the Earth's Crust of Siberian Branch of Russian Academy of Sciences, Russia	Integrated monitoring of hazardous geological processes in the territory of the Baikal rift
11	11.45 - 12.00	Mr. Chimitdorzhiyev Tumen N.	Institute of Physical Materials Science of Siberian Branch of Russian Academy of Science, Russia	Application of Stacking-InSar and satellite Gravimetric Data for estimation of earthquakes in Marocco (M 6.8), Afganistan (Herāt, M 6.3), China (Aykol, M 7.0).
12	12.00 - 12.15	Mr. Deo Carlo E. Llamas	Philippine Institute of Volcanology and Seismology, Republic of the Philippines	Recent Earthquake Ruptures Along the Philippine Fault: Insights into Its Seismic Behavior
13	12.15 - 12.30	Mr. Vladimir A. Sankov	Institute of the Earth's Crust of Siberian Branch of Russian Academy of Sciences, Russia	Style of crustal deformation and active faults kinematics in the weakly seismic Central Mongolia
	12.30 - 13.30	Lunch		
14	13.30 - 13.45	Mr. Odonbaatar Chimed	Institute of Astronomy and Geophysics of Mongolian Academy of Sciences, Mongolia	Seismic Hazard Study in Mongolia
15	13.45 - 14.00	Mr. Nawa Raj Dhakal	National Society for Earthquake Technology-Nepal (NSET), Nepal	Seismic Site Effects Assessment of Chitwan Dun Valley
16	14.00 - 14.15	Mr. Nobuyuki Morikawa	National Research Institute for Earth Science and Disaster Resilience, Japan	Strong-motion Evaluation near Surface Fault Rupture
Session 2: Other Environmental Hazards Session Chairs: Dr. Odonbaatar Chimed & Ms.Nomin-Erdene Erdenetsogt				
17	14.15 - 14.30	Mr. Maximillian Van Wyk de Vries	University of Cambridge, United Kingdom	Mapping and monitoring slow-moving landslides for multihazard risk assessment
18	14.30 - 14.45	Mr. Obaidullah Muhammad	Academy of Sciences of Afghanistan, Afghanistan	Slope Movement Hazards in Afghanistan: Causes and Vulnerability Assessment
19	14.45 - 15.00	Ms. Sarmila Paudyal	National Society for Earthquake Technology-Nepal (NSET), Nepal	Landslide Hazard, Vulnerability, and Risk Assessment (HVRA), Tamakoshi Rural Municipality, Dolakha, Nepal
20	15.00 -15.15	Mr. Zhongwei Zhaong	Chinese Academy of Sciences, China	Post-eruptive coastal erosion of volcanic oceanic islands formed by historical eruptions
	15.15 -15.45	Coffee break		
21	15.45 - 16.00	Ms. Martha Papadopoulou	University of Leicester, United Kingdom	Volcanism in Mongolia and its evolution through space and time
22	16.00 - 16.15	Mr. Gi-Bom Kim	Pusan National University, Korea	Dualistic Bubble Formation during 946 CE Plinian Eruption at Baekdusan volcano
23	16.15 - 16.30	Mr. Richard Stone	Howard Hughes Medical Institute/AAAS	The Sacred Volcano: Science Diplomacy with the DPRK
24	16.30 - 16.45	Mr. Gantumur Byambakhuu	National University of Mongolia, Mongolia	Wildfire Significance and Hazard Assessment in Eastern Mongolia
25	16.45 - 17.00	Mr. Dissanayake Mudiyanselage	Rajarata University of Sri Lanka, Sri Lanka	Land-Use Changes and Urban Heat Island Effect as an Urban Disaster: Insights from City of Kandy, Sri Lanka
	17.00 - 18.00	Poster Sessions		

Wednesday, 14th August 2024				
#	Time	Name	Affiliation	Topic
	08.30 - 09.00	**Arrival & Coffee**		
Session 3: Technological Solutions to Environmental Hazards Session Chairs: Ms.Maral Bayaraa & Dr.Bayasgalan Amgalan				
26	09.00 - 09.30	Ms. Maral Bayaraa (Keynote Speaker)	University of Oxford, Satellite Applications Catapult, United Kingdom	Building disaster risk resilience with satellites and AI
27	09.30 - 09.45	Mr. Mousa Maleki	Isfahan University of Technology, Iran	Technological Innovations for Flash Flood Prediction and Response in Asia
28	09.45 - 10.00	Mr. Jungrack Kim	Future Vision Inc, Korea	Monitoring Aeolian Dust Generation from Surface Coal Mines in the Mongolian Gobi Using Remote Sensing data analyses
29	10.00 - 10.15	Mr. Amarsaikhan Damdinsuren	Institute of Geography and Geoecology, Mongolian Academy of Sciences, Mongolia	Environmental Studies of Mongolia Using Advanced Remote Sensing Techniques
30	10.15 - 10.30	Mr. James Hammond	Birkbeck, University of London, United Kingdom	Seismic velocity changes observed on a dense array of nodal seismometers reveal soil moisture changes in the Critical Zone
	10.30 - 12.00	**Coffee break & Poster Sessions**		
	12.00 - 13.00	**Lunch**		
Session 4: Managing development and environmental hazards Session Chairs: MSc. Dejidmaa Damdindorj & Dr. Geunyoung Kim				
31	13.00 - 13.30	Ms. Dejidmaa Damdindorj (Keynote Speaker)	International Centre for Environmental Management, Australia	National Disaster Risk Assessment of Mongolia
32	13.30 - 13.45	Ms. Hafiza Imanova	Azerbaijan National Academy of Sciences, İnstitute of Philosophy and Sociology, Azerbaijan	The comparative analysis of climate change impact on environment of Mongolia and Azerbaijan
33	13.45 -14.00	Ms. Anjana Singh	Central Department of Microbiology, Tribhuvan University, Nepal	Waste Water Hazards in Nepal
34	14.00 - 14.15	Mr. Davaadorj Davaasuren	Department of Geography, School of Art & Science, National University of Mongolia, Mongolia	Human health and ecological risk assessment from heavy metal concentrations in some centre of the provinces of Mongolia
35	14.15 - 14.30	Mr. Geunyoung Kim	Korea Institute of Geoscience and Mineral Resources, Korea	Geophysical Observation of Mining Hazards in southern Korean Peninsula
36	14.30 - 14.45	Mr. Sirimal Premakumara	University of Colombo, Sri Lanka	Experience in management of an Organic Zone in central highlands in Sri Lanka
37	14.45 - 15.15	Mr. Dagva Myagmarsuren (Keynote Speaker)	Senior Lecturer, School of Geology and Mining, Mongolian University of Science and Technology, Mongolia	Geotechnical research and training at MUST
	15.15 - 15.30	**Coffee break**		
Session 5: Building resilience to Environmental Hazards Session Chairs: Dr. Meena Bilgi & Prof. James Hammond				
38	15.30 – 16.00	Ms. Meena Bilgi (Keynote Speaker)	Gender, Natural Resources Management & Livelihoods and Visiting Faculty, India	Local Hazard Mapping for Disaster Risk Reduction Plans and Action – Experiences from Farming Communities in Natural Resources Management and Livelihood Promotion Projects, India
39	16.00 - 16.15	Mr. Chao-Yo Cheng	Birkbeck, University of London, United Kingdom	Local Decentralization, Ethnic Empowerment and Environmental Governance in Postsocialist China
40	16.15 - 16.30	Mr. Robin Goodwin	University of Warwick, United Kingdom	Building resilience to hazards: a psychological perspective
41	16.30 - 16.45	Ms. Soyolmaa Sukhbat	Institute of Philosophy of Mongolian Academy of Sciences, Mongolia	To the problems of the religious beliefs of Mongolians about environment: modernity and tradition
42	16.45 – 17.00	Mr. Hiran Tillekaratne	Disaster Management Center (DMC), Sri Lanka	Geographical Community Network, a missing link for the efficient Disaster Response Process Case Study: Community First Responder system in Japan and Sri Lanka
43	17.00 – 17.15	Ms. Bazarragchaa Duudgai	Head of Disaster Risk Management and Assessment Division, NEMA, Mongolia	A Study of Urban Community Preparedness for Earthquake in Mongolia
44	17.15 - 17.30	Ms. Solmaz Mohadjer	University of Tübingen	How to enhance natural hazard scientists' contribution to disaster risk reduction
	18.00 - 21.00	**Conference Dinner – Modern Nomads restaurant**		

Thursday, 15th August 2024				
#	Time	Name	Affiliation	Topic
	08.30 - 09.00	Arrival & Coffee		
Session 6: Building New Collaborations				
	09.00 - 10.45	Breakout Group 1	Hazards and Development Moderator: Ms. Maral Bayaraa Panelist: Ms. Dejidmaa Damdindorj, Ms. Uyanga Bold (MP), Mr. Telmen Erdenebileg (UNDP)	
	09.00 - 10.45	Breakout Group 2	Cross-border hazards & multi-national engagement Moderator: Prof. Richard Walker Panelist: Prof. James Hammond, Dr Jang Ryol Liu, Dr. Cengiz Zabci	
	10.45 - 11.00	Coffee break		
	11.00 - 12.45	Breakout Group 3	Engaging communities in DRR Moderator: Prof. James Hammond Panelist: Dr. Meena Bilgi, Dr. Robin Goodwin, Mr. Telmen Erdenebileg (UNDP)	
	11.00 - 12.45	Breakout Group 4	Education as a tool to build resilience Moderator: Dr. Bayasgalan Amgalan Panelist: Ms. Bolor-Erdene Battsengel (SpaceX), Dr. Dagva Myagmursen	
	12.45 - 14.00	Lunch		
	14.00 - 15.00	Report back on breakout group discussions		
	15.00 - 15.30	Closing Remarks & Close Mr Evariste Komlan (UNICEF), Academician Demberel Sodnomsambuu & Professor James Hammond		

Appendix 3 – Fieldtrip Details

The 2024 Conference Fieldtrip will be held in Bulgan and Arkhangai provinces, Mongolia, during August 16-20, 2024, organized by the team under supervision of the Conference Organizing Committee.

The **focal themes** for the 2024 Fieldtrip are as follows (see the Fig. 1):

Environmental hazards: Quaternary geology, geomorphology and environmental changes; earthquakes; volcanism, depositional environments; paleoenvironmental and paleoclimatic changes. Objectives: Mogod fault rupture (Stop 1), Chuluut river canyon (Stop 2), Tariat volcanism (stops 3-5).

General schedule

August 16

7.30-8 am, go to Bulgan province (by vehicles from UB),

August 17

Field trip in Mogod. Quaternary geology, geomorphology and environmental changes; earthquakes. Stop 1 (supervisor Prof. Amgalan Bayasgalan).

August 18

7.30-8 am, go to Arkhangai province through Kharkhorin, ancient capital of Mongolia. On the way: Stop 2. Volcanism, depositional environments (supervisors Prof. Amgalan Bayasgalan and Dr. Altanbold Enkhbold).

August 19

Field trip in Tariat Depression. Volcanism, depositional environments; paleoenvironmental and paleoclimatic changes. Stops 3-5 (supervisor Dr. Altanbold Enkhbold).

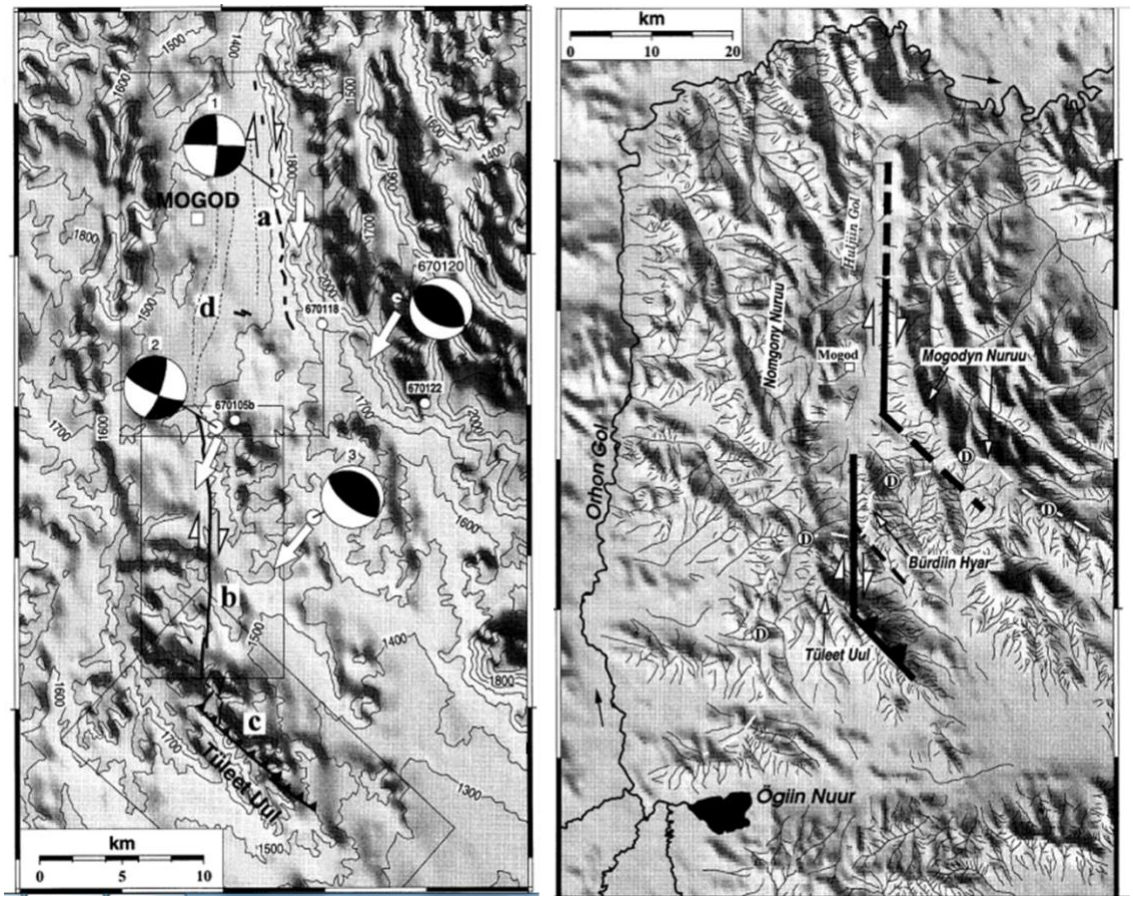
August 20

Return to UB.

BRIEF INTRODUCTION TO THE LOCALITIES AND OBJECTIVES

Fig.1. Location of stops.

Stop 1. Mogod fault rupture. The Mogod fault is one of the active faults in Mongolia, being the site of the 1967 Mogod earthquake. The Mogod fault has two N-S right-lateral strike-slip segments, which end in thrusts in a NW-SE fault at the southern end of the strike-slip fault.



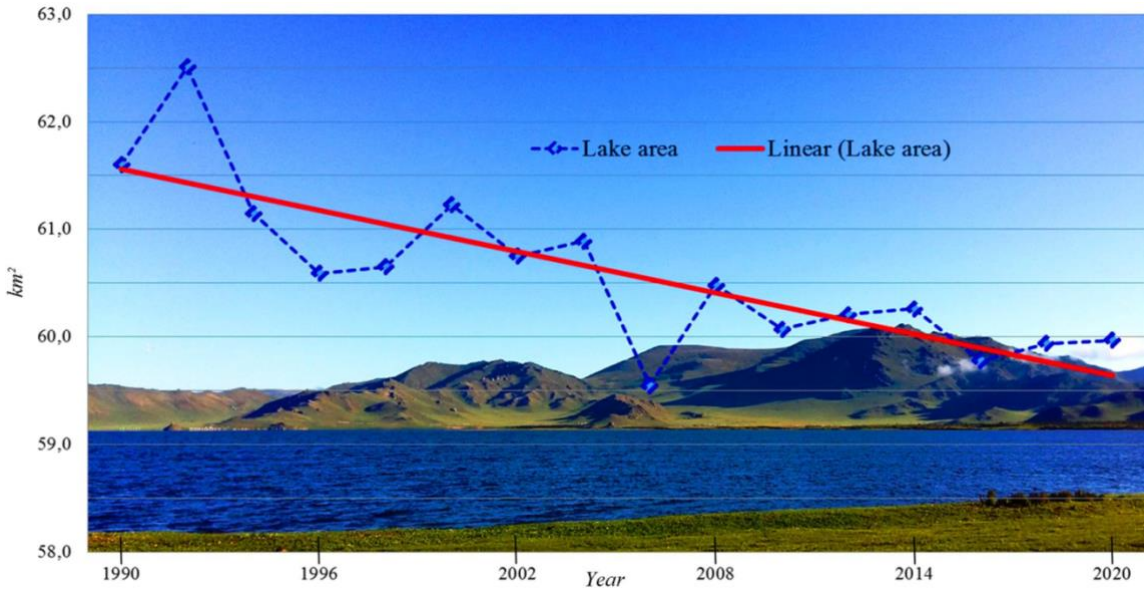
(Bayasgalan and Jackson, 1999)

Stop 2. Chuluut canyon: Chuluut river canyon through 20-50m steep canyon of basaltic rock and the rocky canyon continues about 100 km. Late Cenozoic volcanism occurred in the region as eruptions of highly mobile sub-alkaline basalt and basanite lavas, which spread over tens of kilometers as horizontal lava fields or extended valley flows. Based on existing geochronological data, several stages of volcanic activity with different structural positions and morphology of lava flows are recognized during the last 10 Ma. The Late Miocene–Pliocene stage (10–2 Ma) was characterized by several volcanic episodes. They also occurred at the lower reaches of the Chuluut River near the eastern termination of the Tariat Graben and produced a large (24 × 15 km) lava plateau in this area.

Stop 3. Khorgo Volcano: The Khorgo Volcano is a dormant volcano located on the eastern shore of Terkhiin Tsagaan Lake in the Tariat volcanic field (N48°11’11’’, E99°51’25’’, 2240 m a.s.l.) in Tariat soum in Arkhangai aimag (province), Mongolia. The Khorgo lava flow has phonolithic tephrite to alkali basalt-basanite composition and contains olivine-bearing mantle xenoliths and metacysts of anorthoclase. The active Khorgo Volcano formed along the Khorgo Fault.

Stop 4. Lava flow: Based on high-resolution satellite maps and field morphometric estimation is 22.1-51.2 m in thickness. The surface of the lava plateau is wavy, with traces of flow, and is covered with pyroclastic material on the east side. The lava bomb varies up to 1 m in size. However, the bedrock near the lake is highly porous and fragile due to water and physical weathering.

Stop 5. Terkhiin Tsagaan Lake: The freshwater Terkhiin Tsagaan Lake is located near the Khorgo volcano (N48°10’15’’, E99°43’20’’, 2054 m a.s.l.). The area of the lake is 60-62 km², with a length of 16 km, a maximum width of 4.5 km, an average depth of about 6 m and a maximum depth of 19.3 m. Upon formation of the volcano, the valley of the Terkh River was dammed by lava flows. The lake water outflows via the Suman River. The flow of basalt was pushed into Suman River which is believed to be the origin of the Terkhiin Tsagaan Lake. The base lava overflowing from the Khorgo volcano formed a large lava platform, closing the river valley and forming the Terkhiin Tsagaan Lake.



(Enkhbold et al., 2022)