



**MONGOLIAN ACADEMY
OF SCIENCES**



RioTinto



**“ENVIRONMENTAL HAZARDS IN ASIA”
CONFERENCE FIELDTRIP**

August 16-20, 2024

Mogod-Chuluut-Tariat

MONGOLIA



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, drive to Mogod town, epicenter of 1967 January 5 M7 earthquake. Camp at Mogod.

August 17

Observation of co-seismic fault ruptures – strike slip and reverse faulting. Quaternary geology, geomorphology and environmental changes; earthquakes. Led by Dr Amgalan Bayasgalan.

August 18

7.30-8 am, drive to the Tariat town and stay at Horgo camp. On the way we will stop to observe Volcanism, depositional and glaciation environments. Led by Dr 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.

The fee for the field trip is \$200 USD. Included: accommodation and food/drinks in the field (5 days/4 nights), local transportation, handout materials (papers, maps etc.).

August is probably best season in Mongolia in terms of weather, with mild day temperatures at around +25°C. However, evening and night temperatures will fall down and a warm sweater is advised. Although Mongolia is a sunny country, we may experience occasional rains. Thus, a rain coat or water proof jacket is essential, as well as proper hiking boots.

Please register before July 12, 2024 through nominerdene@iag.ac.mn and nomin5556@gmail.com.

BRIEF INTRODUCTION TO THE LOCALITIES AND OBJECTIVES

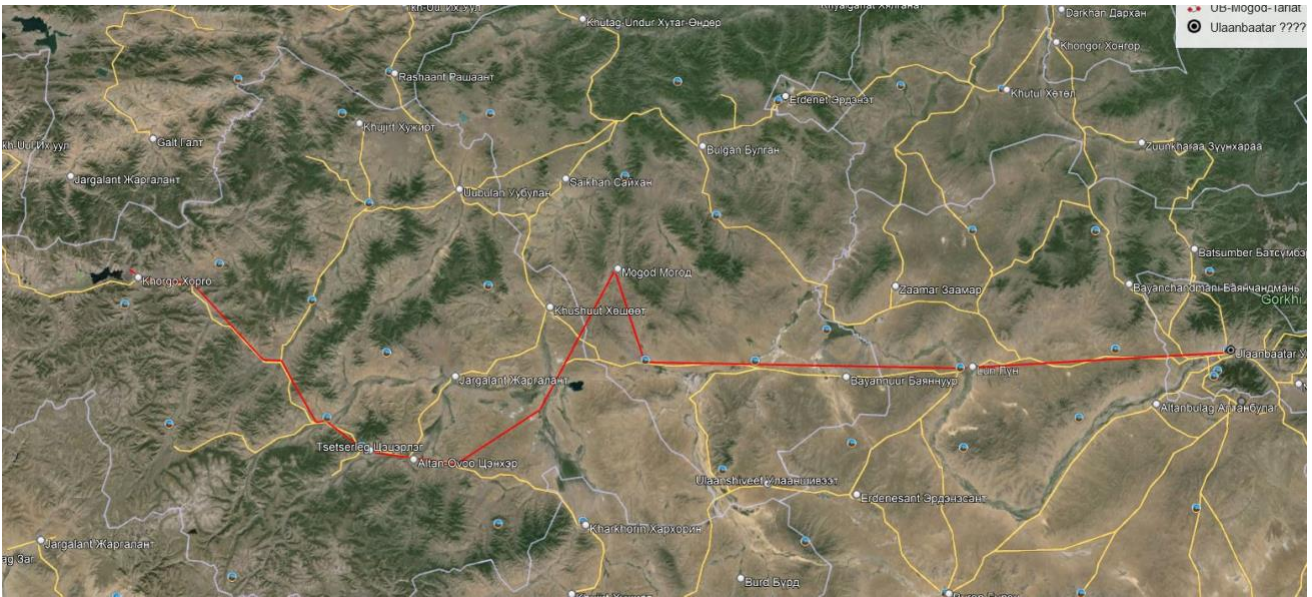
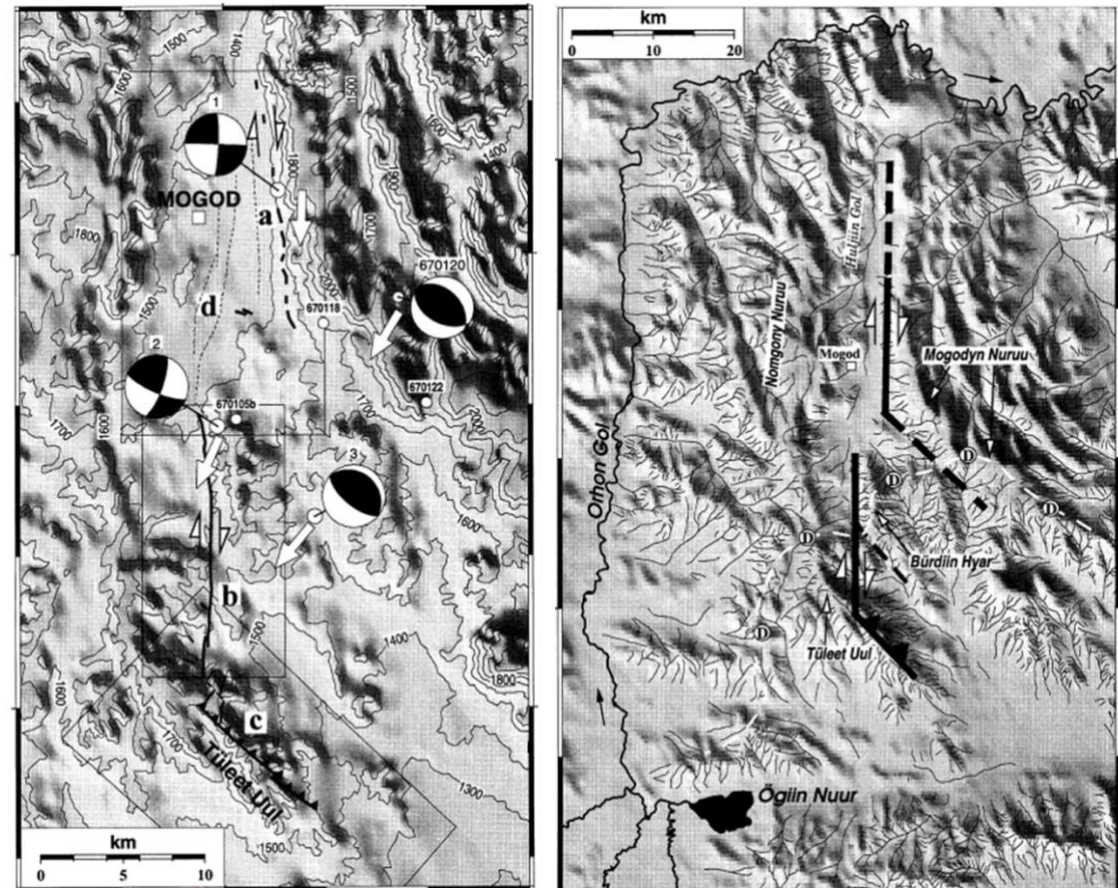


Fig.1. Route map Ulaanbaatar - Mogod - Tariat

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.



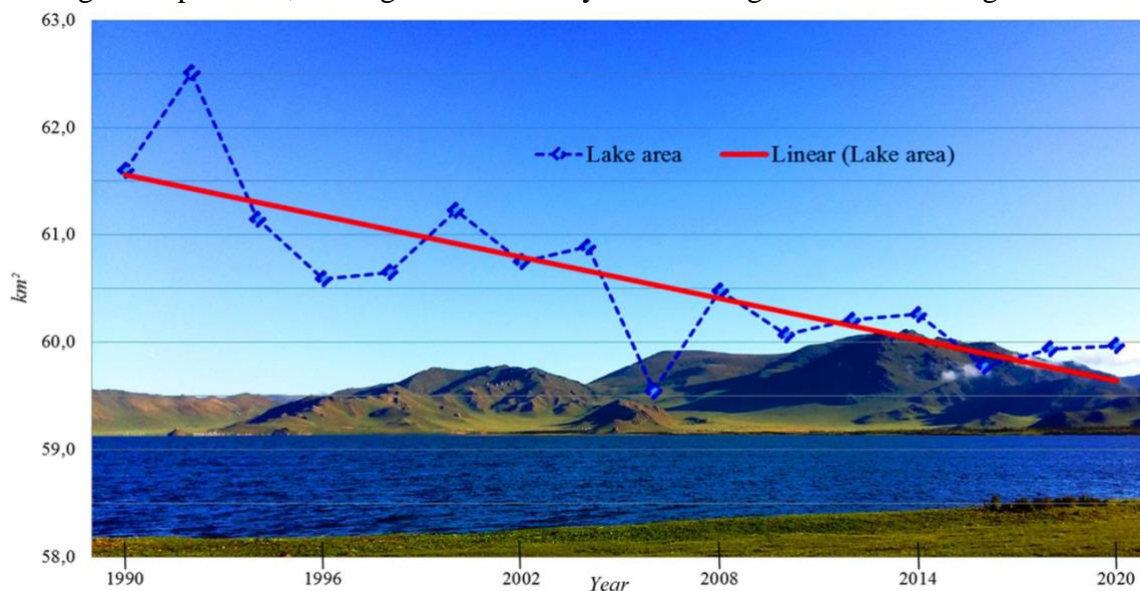
Stop 3. Khorgo Volcano: The Khorgo Volcano is a dormant volcano located on the eastern shore of Terkhiin Tsagaan Lake in the Tariat volcanic field (N48°11'11'', E99°51'25'', 2240 m a.s.l.) in Tariat soum in Arkhangai aimag (province), Mongolia. The Khorgo lava flow has phonolithic tephrite to alkali 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)