THE INTERNATIONAL CONFERENCE ON THE 120TH ANNIVERSARY OF THE BULNAY EARTHQUAKE:
ADVANCES IN ASTRONOMY AND GEOPHYSICS

MONGOLIAN NATIONAL DATA CENTER

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ULAANBAATAR
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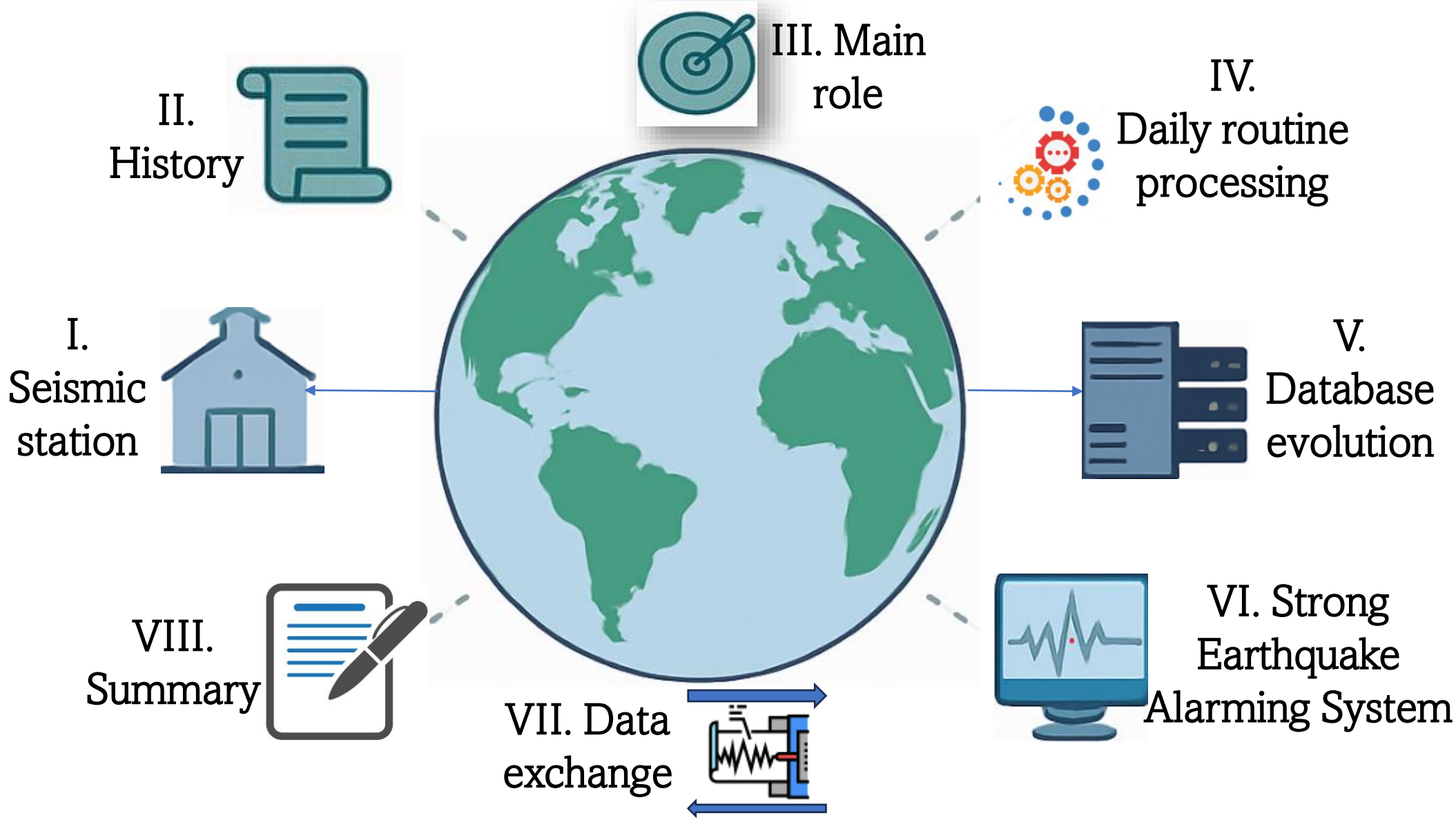
Outline


III. Main role
II. History
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VIII. Summary
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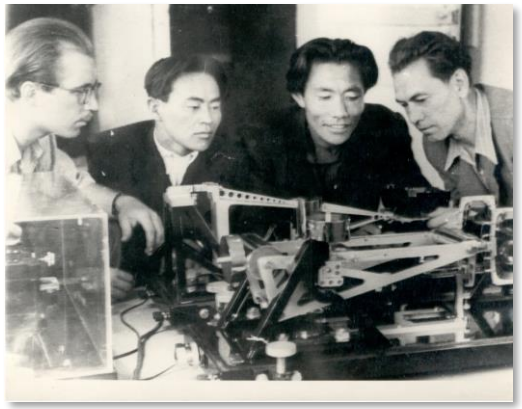
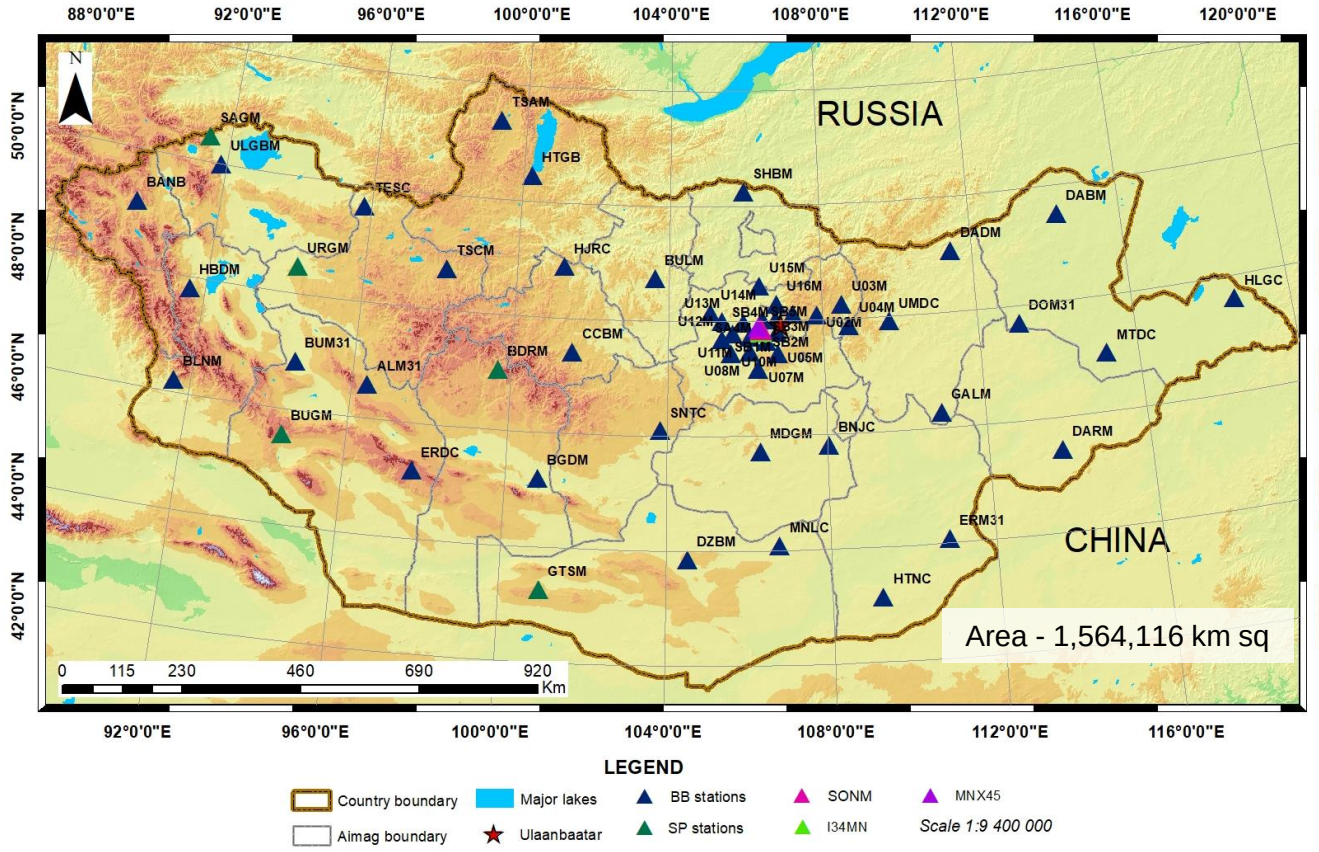
I. Mongolian Seismic Network





The first analog seismic station was installed in **July 1957** in Ulaanbaatar. In **September 1994**, the first digital seismic station was installed around capital city of Mongolia.

Currently, Mongolian seismic stations are widespread over 18 provinces, nearly ~150 high-sensibility digital stations.

All data from the seismic stations are collected into the MNDC in real time.

II. History

- Mongolian NDC was established in the mid of **2007** under the Seismological Department of IAG

MNDC staff

Leader of DC (PhD)	14 data analysts and researchers

- We use **DTK_tools** (DTK_Jade, DTK_Onyx) for daily interpretation, and **SEISCOMP** for automatic detection and a strong EQ alarm system.

III. Main role

The MNDC team is part of the Department of Seismology. It plays an important role in seismological studies, such as:

- *To control seismic activity monitoring in Mongolia and surroundings & EEWS for Ulaanbaatar*
- *Daily data interpretation & analysis of around 100000 earthquakes annually, about 40 of them are strong enough to be felt by the residents*
- *Produce earthquake bulletin and catalog, and research seismicity*
- *We send strong earthquakes to NEMA other organizations, international data centers (ISC, Irkutsk, Russia NDC, Novosibirsk, Russia NDC) and people result of the earthquake*

IV. Daily routine processing

10 day

1 day — Preliminary processing by regional station's analysist → Level 1

Preliminary processing by regional station's analysist includes:
Analysis, add events, delete events, marks
- DTK_ONYX, DTK_JADE

1 day — Checking process by regional station's lead analysist → Level 2

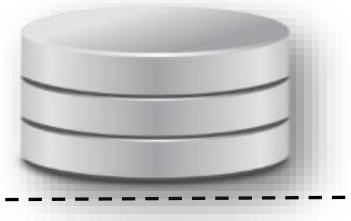
Checking process by regional station's lead analysist includes:
Analysis, checking, Add phases, remove phases
- DTK_ONYX, DTK_JADE

3 day — Checking process by NDC analysist → Level 3

Checking process by NDC analysist includes:
Analysis, processing, checking
- DTK_ONYX, DTK_JADE
- Own Python scripts

5 day — **REB processing** by NDC lead analysist → Level 4

REB processing by NDC lead analysist includes:
Checking, merge, archive
- DTK_ONYX (if need)
- ILOC (IDC)
- Own Python scripts

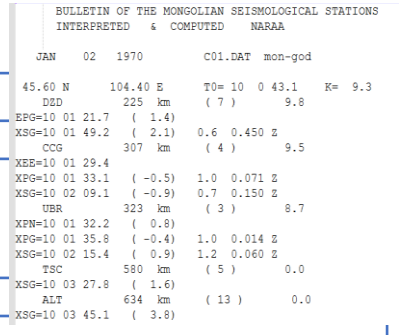


V. Database evolution

Historical DB

1900 – 1963:

- Event bulletin from international sources



BULLETIN OF THE MONGOLIAN SEISMOLOGICAL STATIONS
INTERPRETED & COMPUTED NARAA

JAN 02 1970 C01.DAT mon-god

45.60 N 104.40 E T0= 10 0 43.1 K= 9.3
DZD 225 km (7) 9.8
EPG=10 01 21.7 (1.4)
XSG=10 01 49.2 (2.1) 0.6 0.450 Z
CCG 307 km (4) 9.5
XEE=10 01 29.4
XPG=10 01 33.1 (-0.5) 1.0 0.071 Z
XSG=10 02 09.1 (-0.9) 0.7 0.150 Z
UBR 323 km (3) 8.7
XPN=10 01 32.2 (0.8)
XPG=10 01 35.8 (-0.4) 1.0 0.014 Z
XSG=10 02 15.4 (0.9) 1.2 0.060 Z
TSC 580 km (5) 0.0
XSG=10 03 27.8 (1.6)
ALT 634 km (13) 0.0
XSG=10 03 45.1 (3.8)

Analog DB

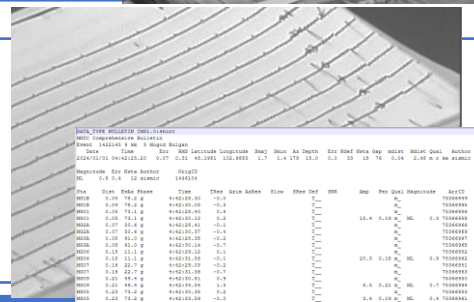
1964 – 1994:

- Event bulletin based on analog signal (photo paper)

Combined DB with analog and digital

1995 – 2006:

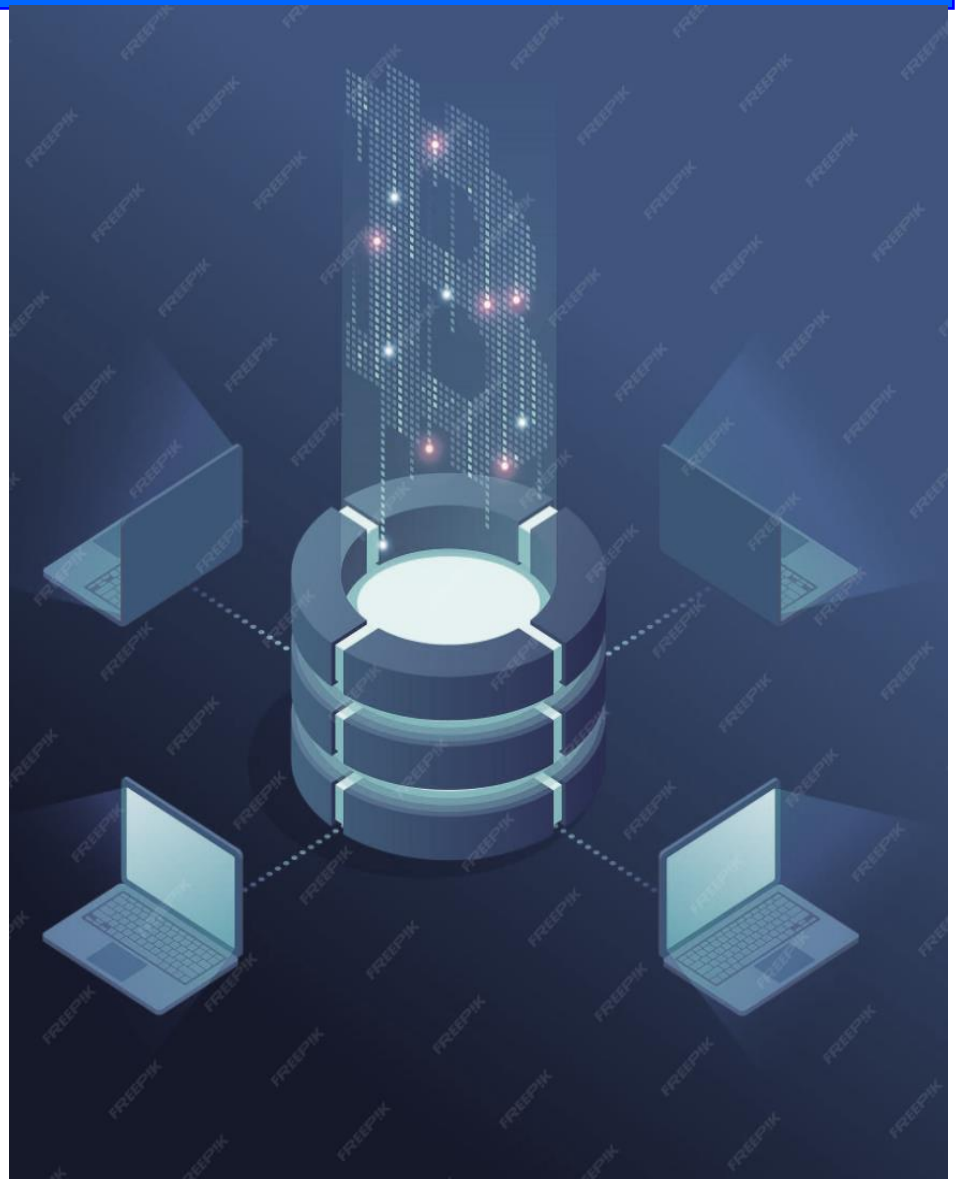
- Analog signal (1995-1999)
- Digital signal (1995-2006)
- Event bulletin mixed on analog & digital signal



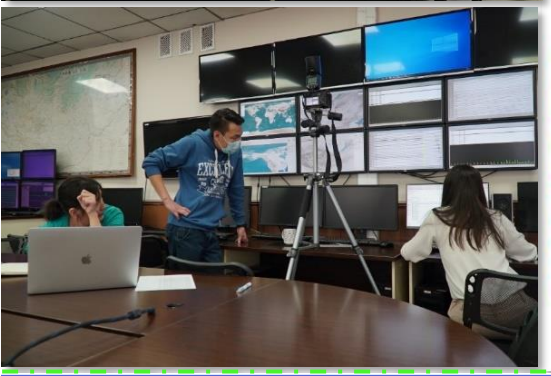
Digital DB

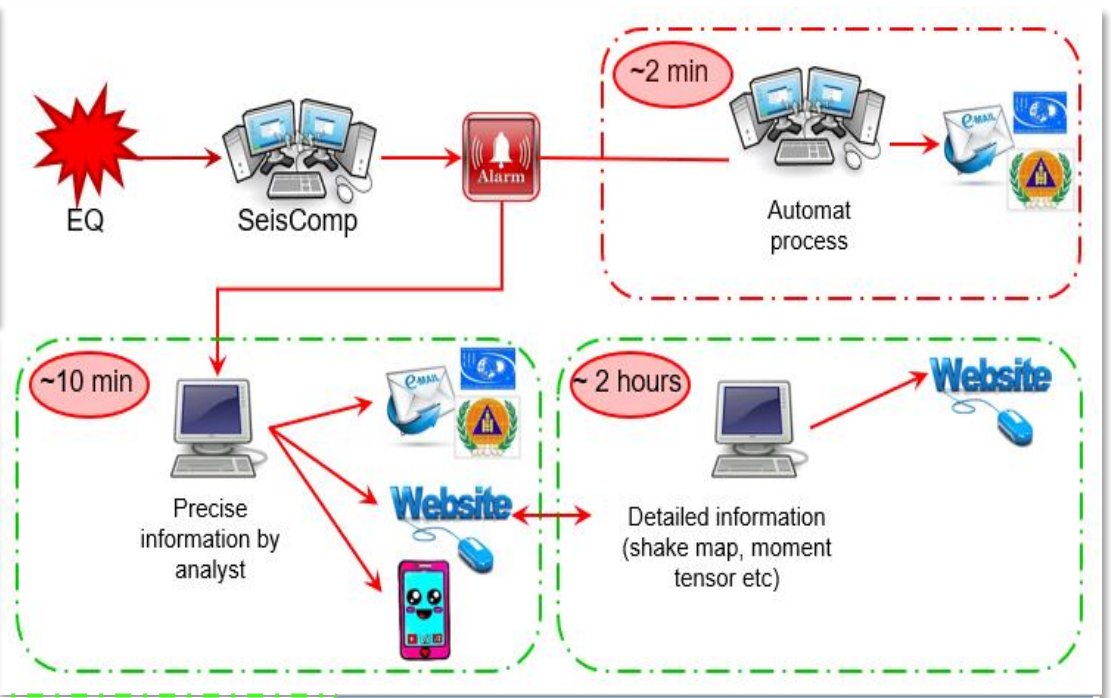
2007 – now:

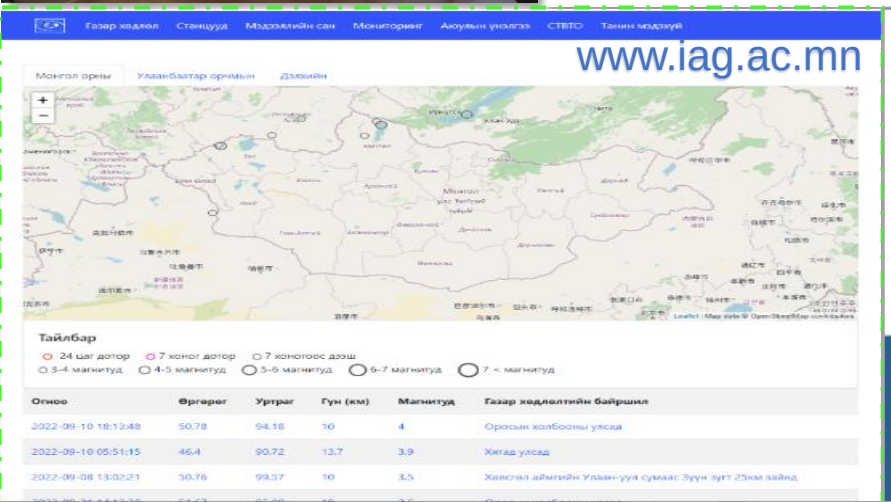
- Event bulletin based on digital signal

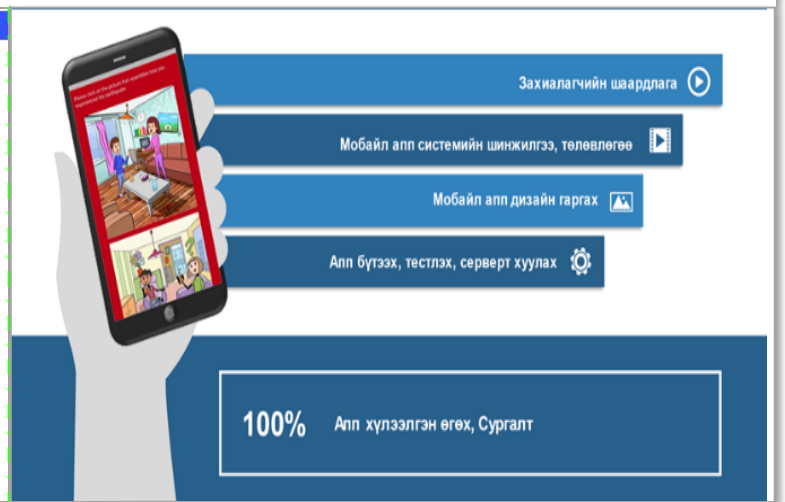


VI. Strong Earthquake Alarming System





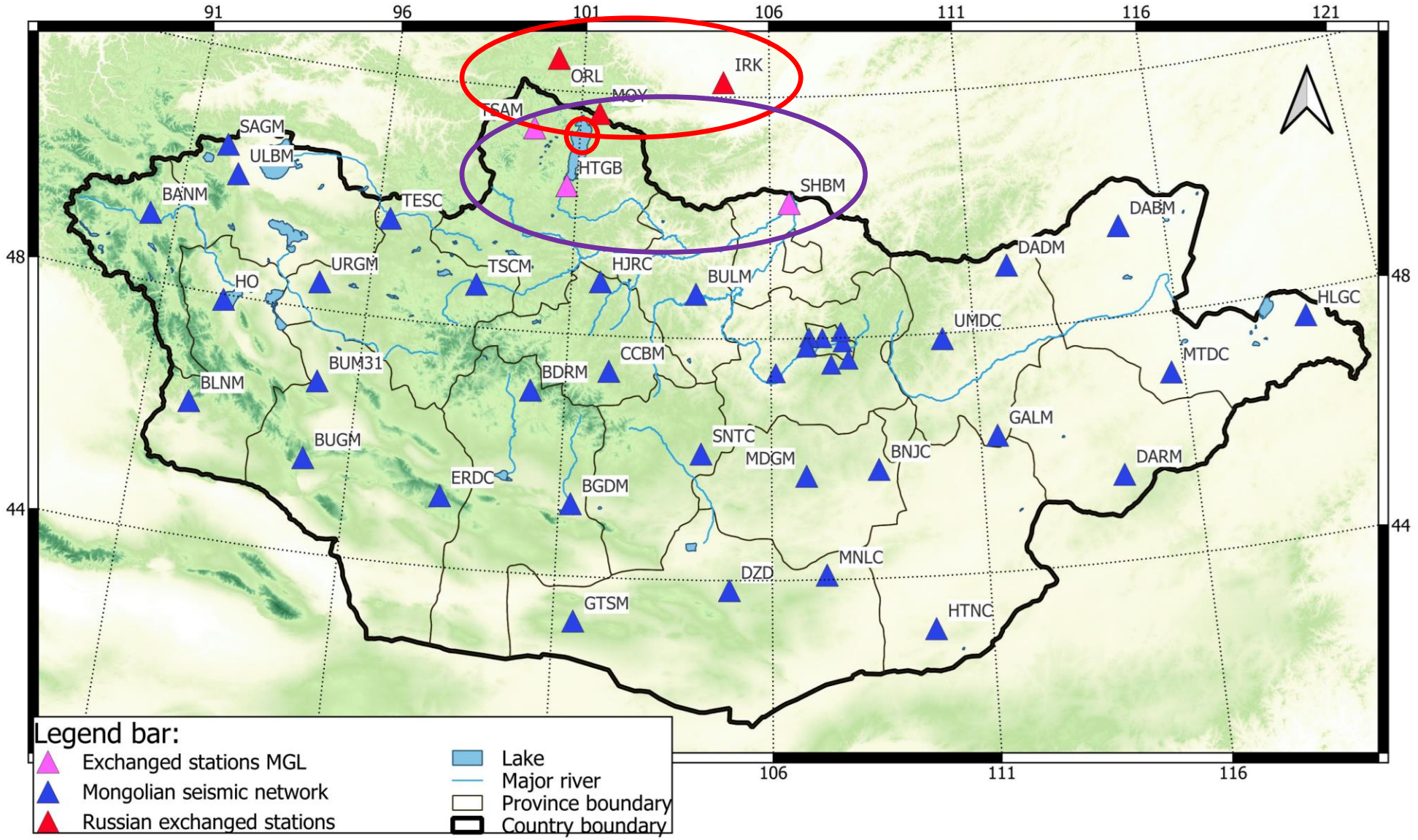




Data analysts at MNDC operate a **24/7** service to monitor earthquakes and provide accurate information.
They report on earthquakes with a magnitude greater than **Ml 3.5** within Mongolian territory and border regions, and those above **Mb 7.0** worldwide, as quickly and precisely as possible.

This new rapid earthquake notification system provides real-time information about significant events to the National Emergency Management Agency (NEMA) as they occur.

VII. Data exchange



Following the magnitude 6.7 earthquake on January 11, 2021, in khankh, a data exchange was established. As a result, data from three Russian stations (ORL, MOY, IRK) began to be received, while data from three local stations (TSAM, HTGM, SHBM) started being shared with the Russian side

VIII. Summary

- Improvement of the Mongolian seismic station's network enhancing annually.
- It is crucial for the alarming of a strong earthquake and seismological study in this area as well…
- Data transmission process and analysis all kinds of events (man-made and tectonic)…
- Control seismicity and activity & produce bulletin and exchange it with seismological institutes etc...
- Strong earthquake alarming system…

THANK YOU FOR ATTENTION