NATIONAL UNIVERSITY OF MONGOLIA
DEPARTMENT OF GEOGRAPHY
Laboratory of GIS and Remote Sensing

GNSS application in Mongolia

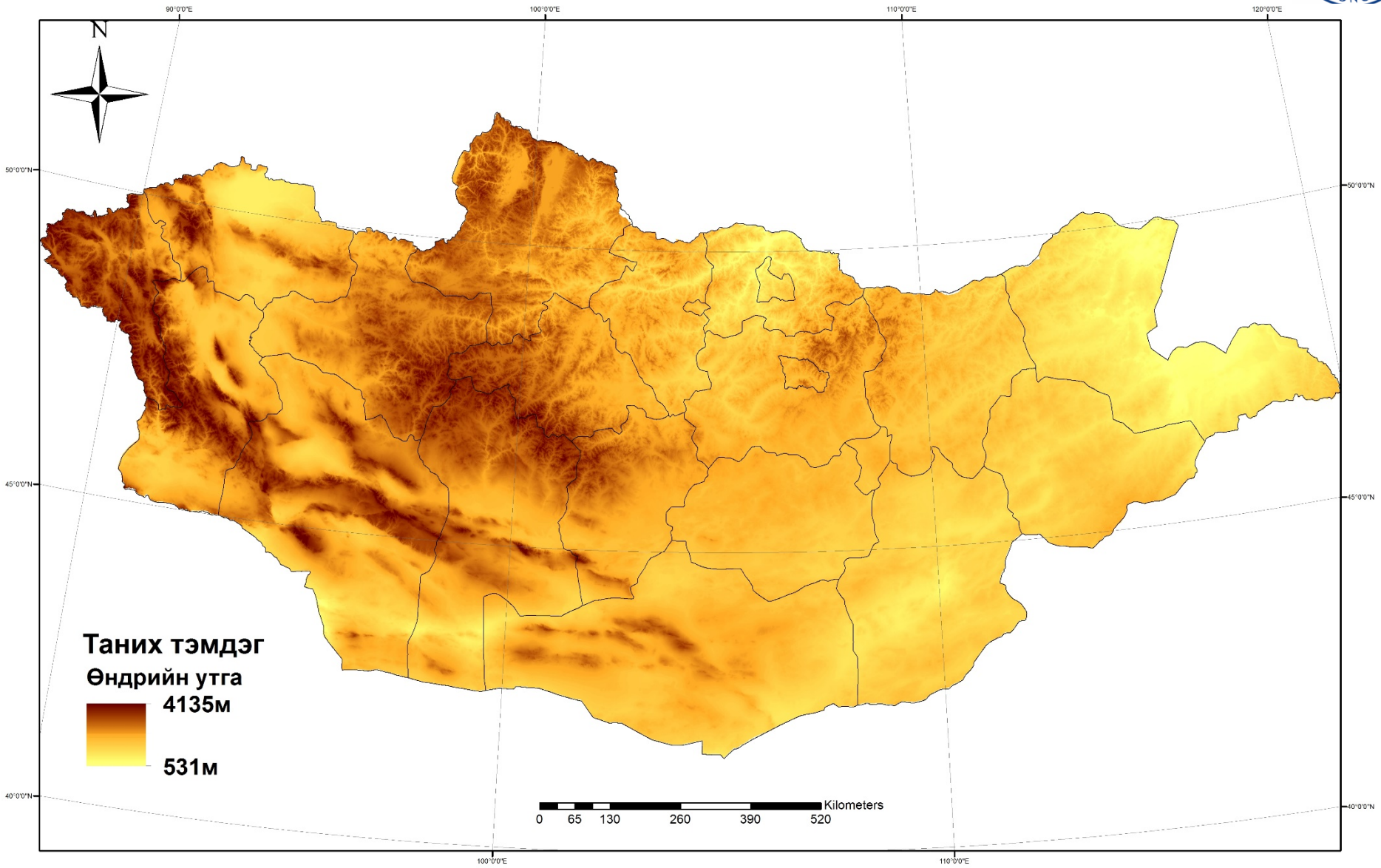
Bolorchuluun Chogsom

Sumiya Altangerel

Overview

- **Country background**
- Coordinate system problems
- MonRef97 network
- Asia-Pacific Reference Frame (APREF)
  - GNSS CORS network
- Applications

Country background



Bolorchuluun Chogsom

United Nations/Russian Federation Workshop on the Applications of Global Navigation Satellite
Systems, Krasnoyarsk, Russian Federation, 18-22 May 2015

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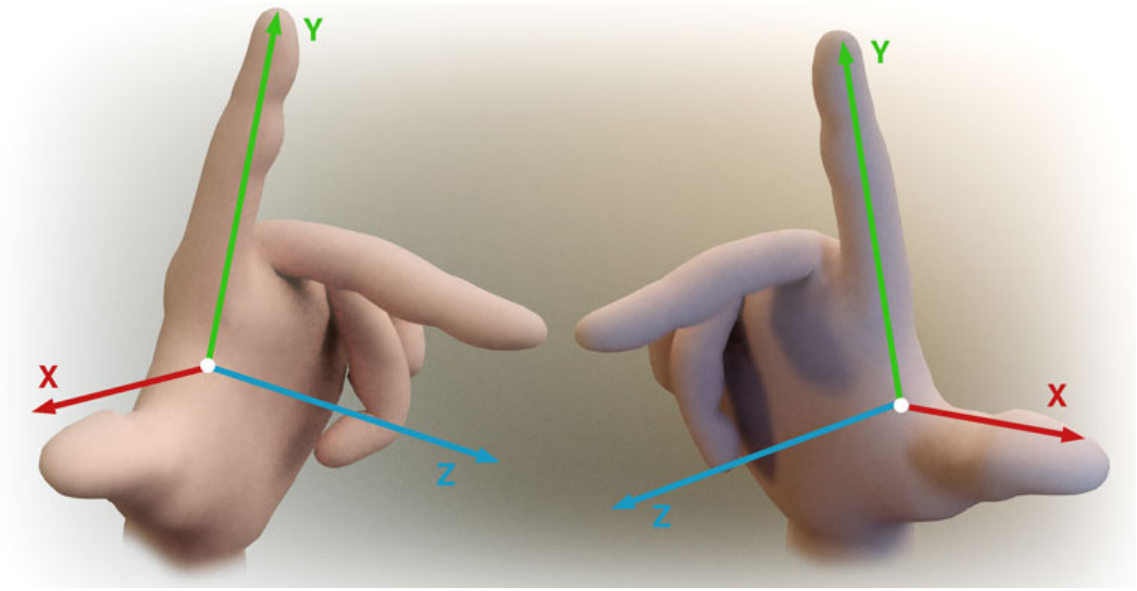
Before 2009

Coordinate system – WGS84, Local, Pulkova-42

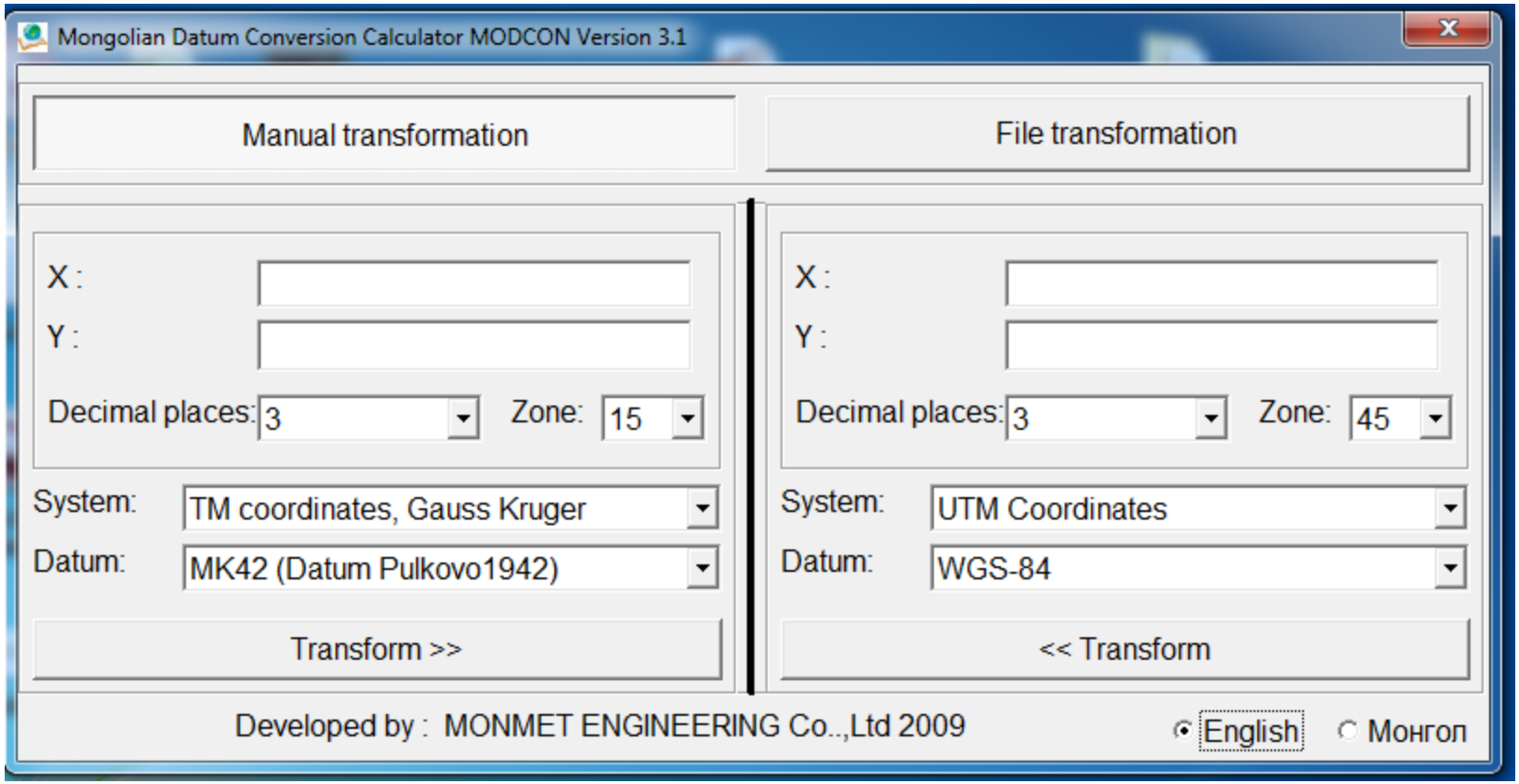
Height system – Baltic sea, Local

Projection – UTM, TM, Gauss-Kriuger /Conic/

problem is how to combine maps into 1 coordinate system?



MODCON

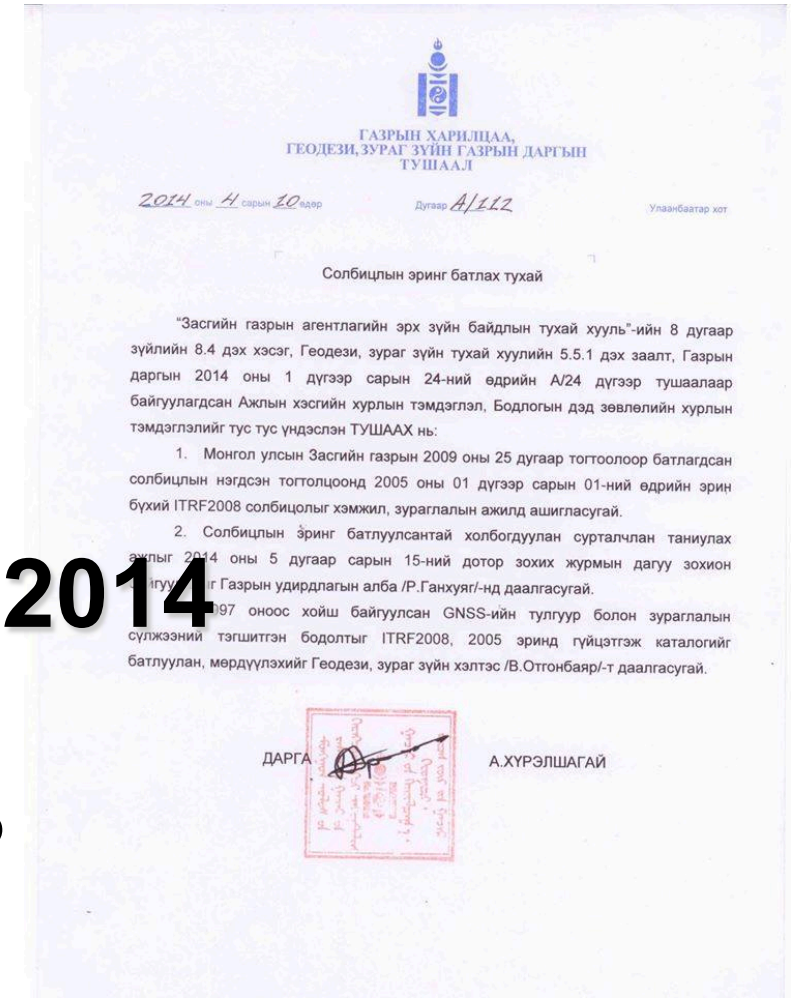

Mongolian Datum Conversion Calculator MODCON Version 3.1
Manual transformation
File transformation
X :
Y :
Decimal places: 3
Zone: 15
System: TM coordinates, Gauss Kruger
Datum: MK42 (Datum Pulkovo1942)
Transform >>
X :
Y :
Decimal places: 3
Zone: 45
System: UTM Coordinates
Datum: WGS-84
<< Transform
Developed by : MONMET ENGINEERING Co.,Ltd 2009
English
Монгол

Government decree №25 in 2009

Coordinate system - WGS84

Height system - Baltic sea

Projection - UTM



ГАЗРЫН ХАРИЛЦАА,
ГЕОДЕЗИ, ЗУРАГ ЗҮЙН ГАЗРЫН ДАРГЫН
ТУШААЛ

2014 оны 4 сарын 10 өдөр Дугаар А/112 Улаанбаатар хот

Солбицлын эринг батлах тухай

"Засгийн газрын агентлагийн эрх зүйн байдлын тухай хууль"-ийн 8 дугаар зүйлийн 8.4 дэх хэсэг, Геодези, зураг зүйн тухай хуулийн 5.5.1 дэх заалт, Газрын даргын 2014 оны 1 дүгээр сарын 24-ний өдрийн А/24 дүгээр тушаалаар байгуулагдсан Ажлын хэсгийн хурлын тэмдэглэл, Бодлогын дэд зөвлөлийн хурлын тэмдэглэлийг тус тус үндэслэн ТУШААХ нь:

1. Монгол улсын Засгийн газрын 2009 оны 25 дугаар тогтоолоор батлагдсан солбицлын нэгдсэн тогтолцоонд 2005 оны 01 дүгээр сарын 01-ний өдрийн эрин бүхий ITRF2008 солбицолыг хэмжил, зураглалын ажилд ашигласугай.

2. Солбицлын эринг батлуулсантай холбогдуулан сурталчлан таниулах ажлыг 2014 оны 5 дугаар сарын 15-ний дотор зохих журмын дагуу зохион [illegible] Газрын удирдлагын алба /Р.Ганхуяг/-нд даалгасугай.

[illegible]97 оноос хойш байгуулсан GNSS-ийн тулгуур болон зураглалын сүлжээний тэгшитгэн бодолтыг ITRF2008, 2005 эринд гүйцэтгэж каталогийг батлуулан, мөрдүүлэхийг Геодези, зураг зүйн хэлтэс /В.Отгонбаяр/-т даалгасугай.

ДАРГА А.ХҮРЭЛШАГАЙ

ALAGaC order №A/112 in 2014

Datum - ITRF2008

Mongolian Government policy on GNSS up to 2020

Policy is to make possibility:

-To enhance Mongolian geodetic network using GNSS

-To surveying based on WGS coordinate system

-**To establish Real time GNSS network**

-To use online Post-processing service

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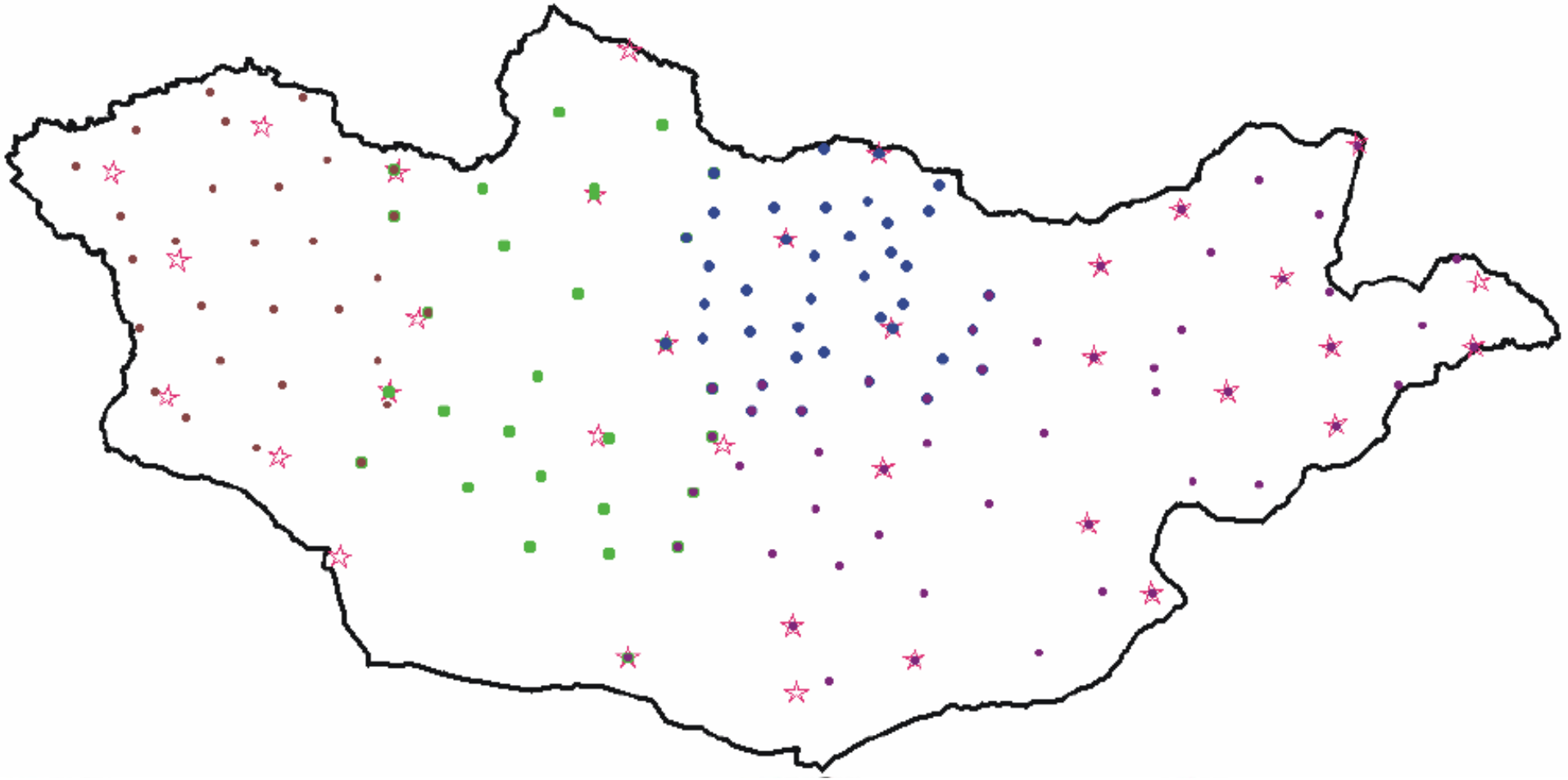
MonRef97 network



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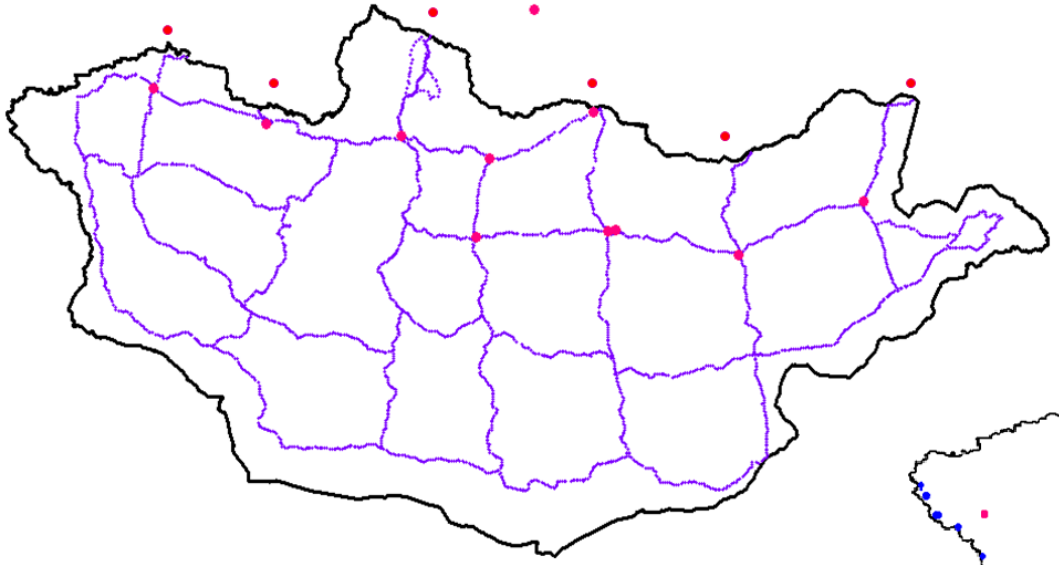
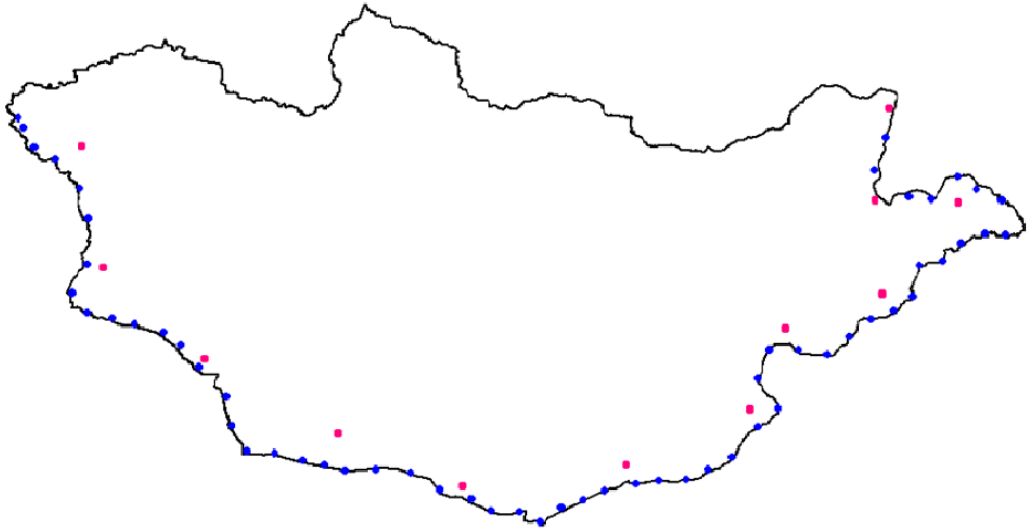
Near border GNSS network

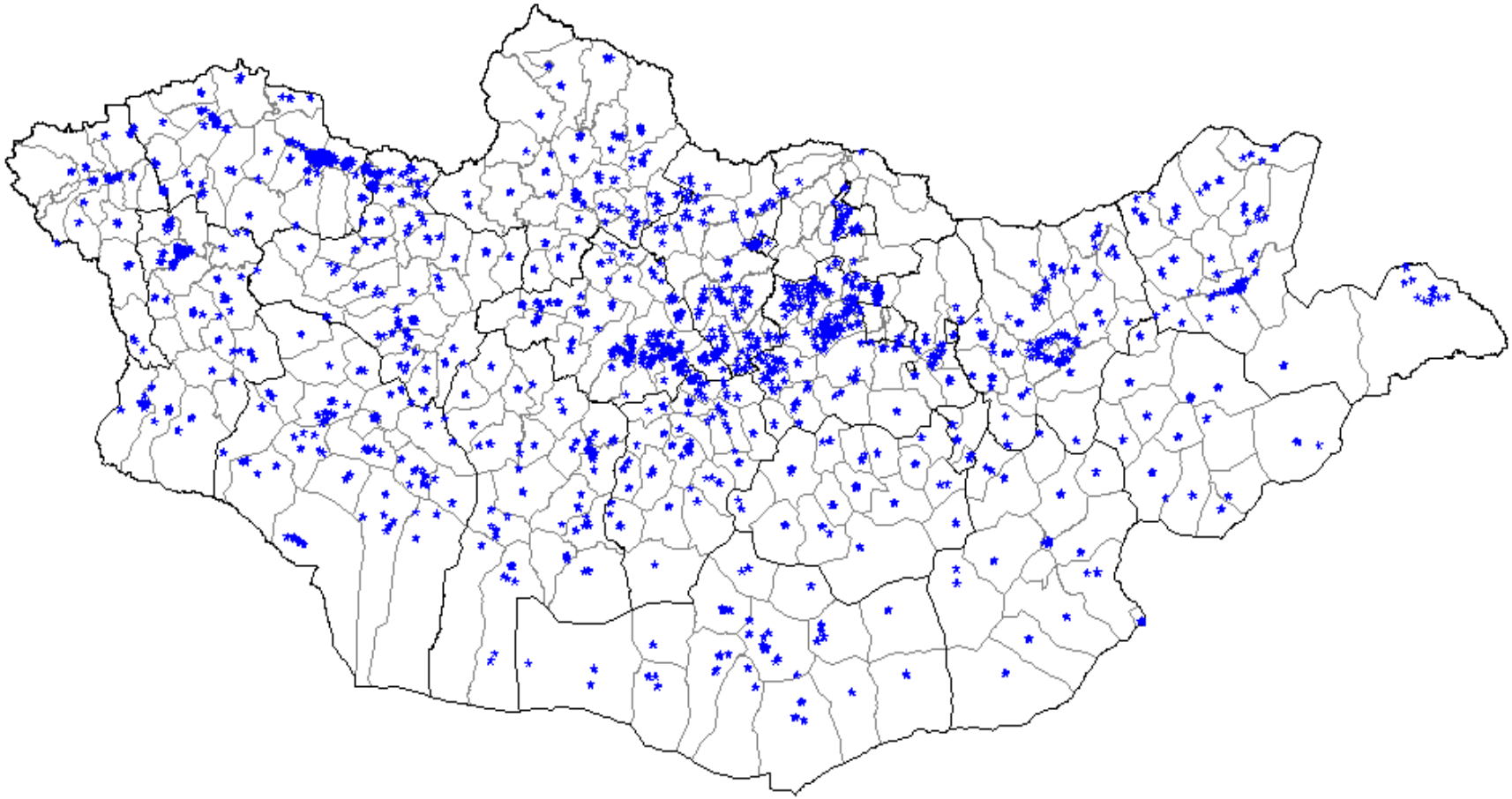
Mongolia-Russia



Mongolia-China



GNSS network points



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  - **GNSS CORS network**
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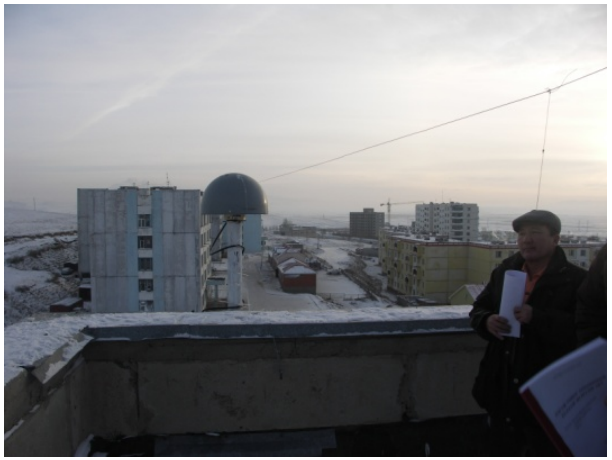
Asia-Pacific Reference Frame (APREF)

The purpose of the Asia-Pacific Reference Frame (APREF) project is to create and maintain an accurate geodetic framework to meet the growing needs of industries, science programs and the general public using positioning applications in the Asia-Pacific region.

Continually Operating Reference Stations (CORS)

On December 2, 2010, the Ministry of Roads, Transportation, Construction and Urban Development and the Millennium Challenge Account – Mongolia presented the Delivery Ceremony of the CORS.

CORS stations



GNSS CORS network

GNSS CORS stations have been established since 2010 in Mongolia. Trimble Net R8, NETR9 receivers are used.

-3 locations /2010/

-6 locations /2011/

-8 locations /2012/

-6 locations /2013/

-17 locations /2014/

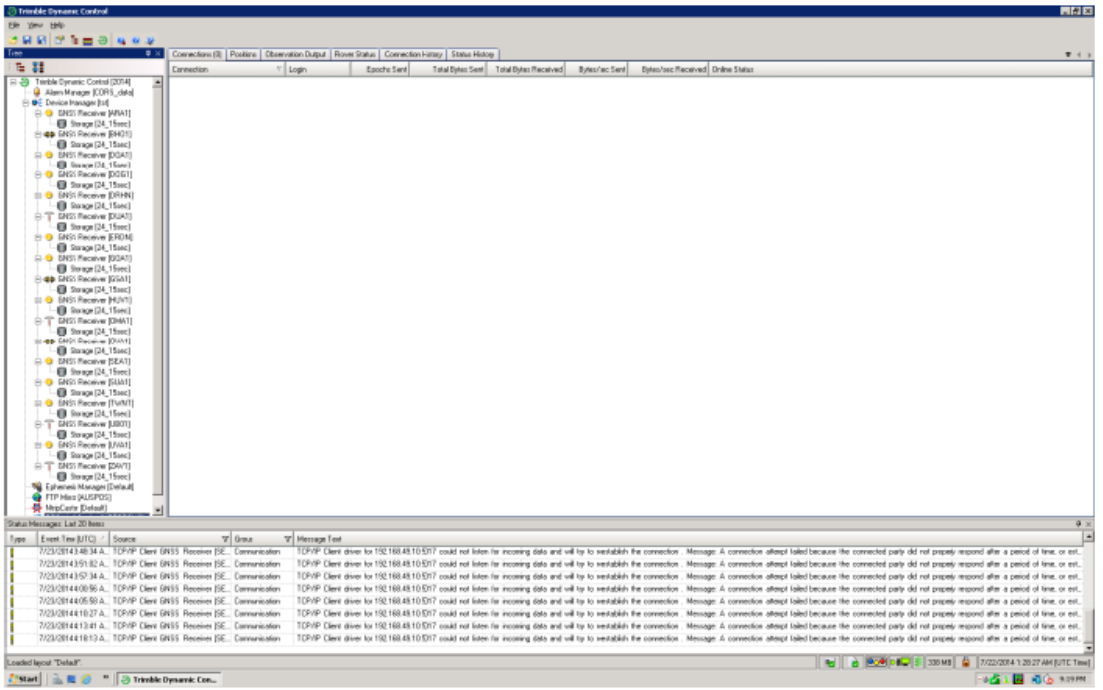
Current status of Mongolian Real-time GNSS network

Each CORS stations are connected to Trimble Dynamic Control. Users could be connected through the following references:

RTN users
IP: 202.21.125.8
Port: 2101
User: Rover
Password:262461

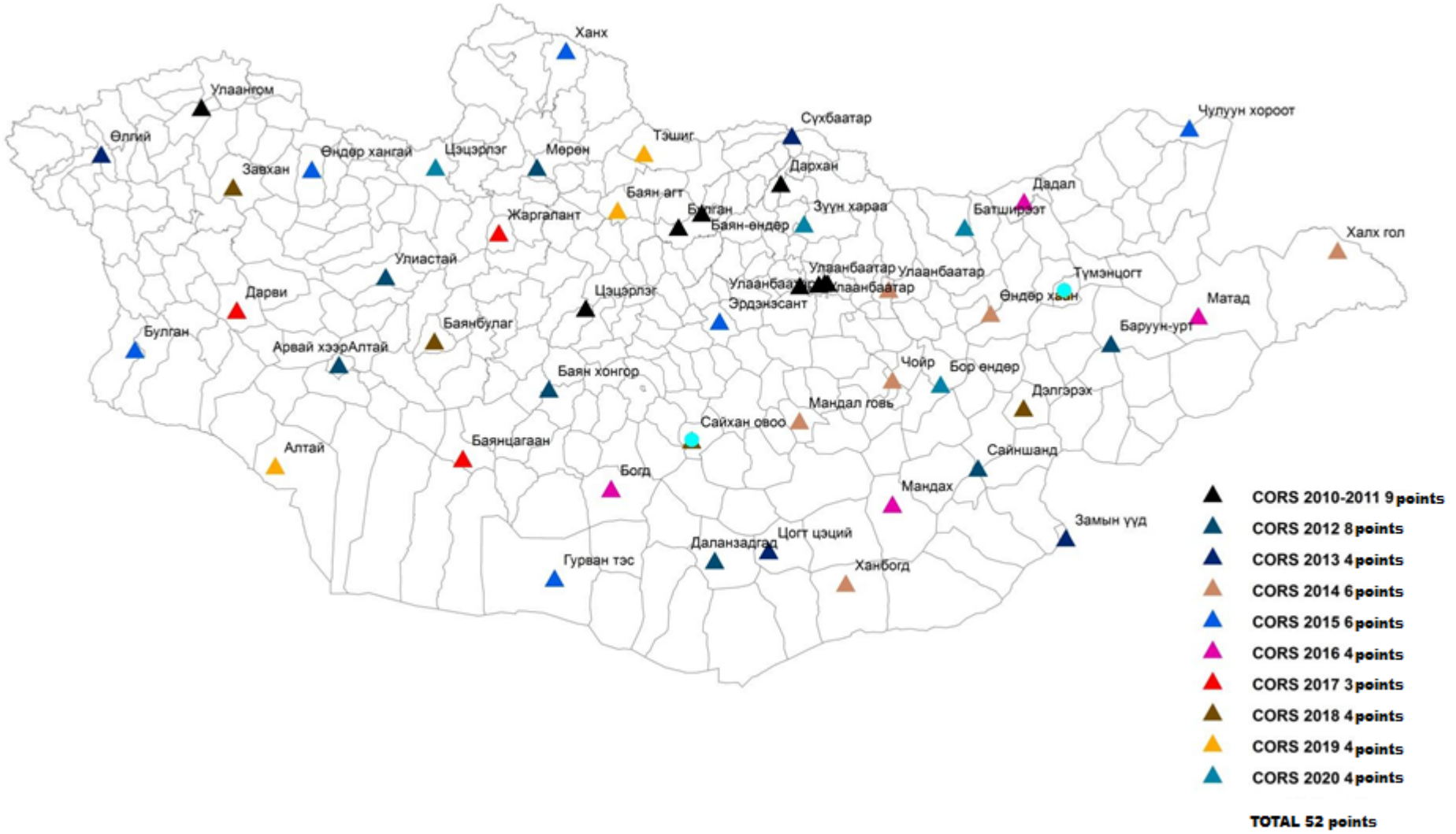
Rinex files
ftp://202.21.125.8

TDC manage page
http://202.21.125.8



Each stations save their observation file as RINEX.

GNSS CORS network - 2020



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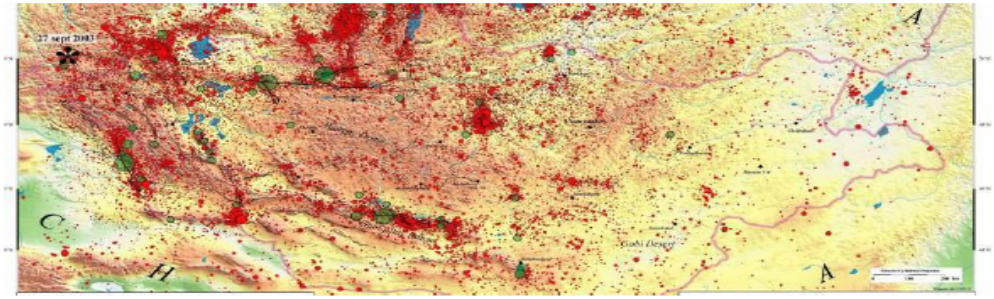
Users of GNSS network

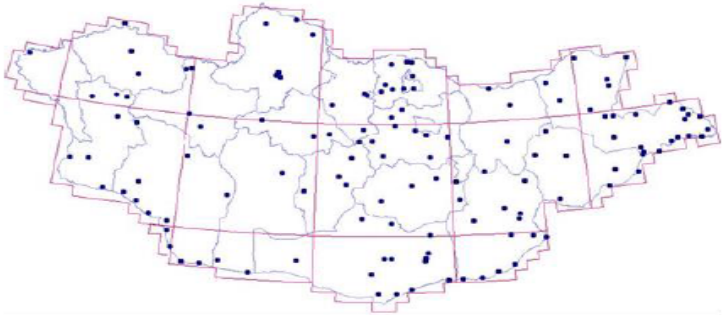
USERS:
1.Private companies /500/
- RTK, Static

2. Mongolian Academy of Sciences /Institute of Astronomy and Geophysics/

-Kinematic, Static data



3. ALACaG /local organizations/
- Static data, RTK



Application

Summary

One of the of Mongolian government's policy of geodesy and surveying activities is to enhance Mongolian geodetic network using GNSS, all surveying must be based on WGS coordinate system, to establish Real time GNSS network, to improve Post-processing service.

Contact

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APSCO education and training center in Mongolia

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