GNSS application in Mongolia

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Overview

- **Country background**
- Coordinate system problems
- MonRef97 network
- Asia-Pacific Reference Frame (APREF)
  - GNSS CORS network
- Applications
Country background
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Before 2009

Coordinate system – WGS84, Local, Pulkova-42
Height system – Baltic sea, Local
Projection – UTM, TM, Gauss-Krüger /Conic/

problem is how to combine maps into 1 coordinate system?
MODCON

Mongolian Datum Conversion Calculator MODCON Version 3.1

Manual transformation

X:
Y:
Decimal places: 3 Zone: 15
System: TM coordinates, Gauss Kruger
Datum: MK42 (Datum Pulkovo1942)

Transform >>

Developed by: MONMET ENGINEERING Co., Ltd 2009

File transformation

X:
Y:
Decimal places: 3 Zone: 45
System: UTM Coordinates
Datum: WGS-84

<< Transform

English Монгол
Government decree №25 in 2009

Coordinate system - WGS84
Height system - Baltic sea
Projection - UTM

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
Near border GNSSS network

Mongolia-Russia

Mongolia-China
GNSS network points
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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.
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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

GPS satellite → Communications satellite → Receiver → Mobile communication → Tracks with GPS

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Summary

One of the 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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Thank you for your attention...