

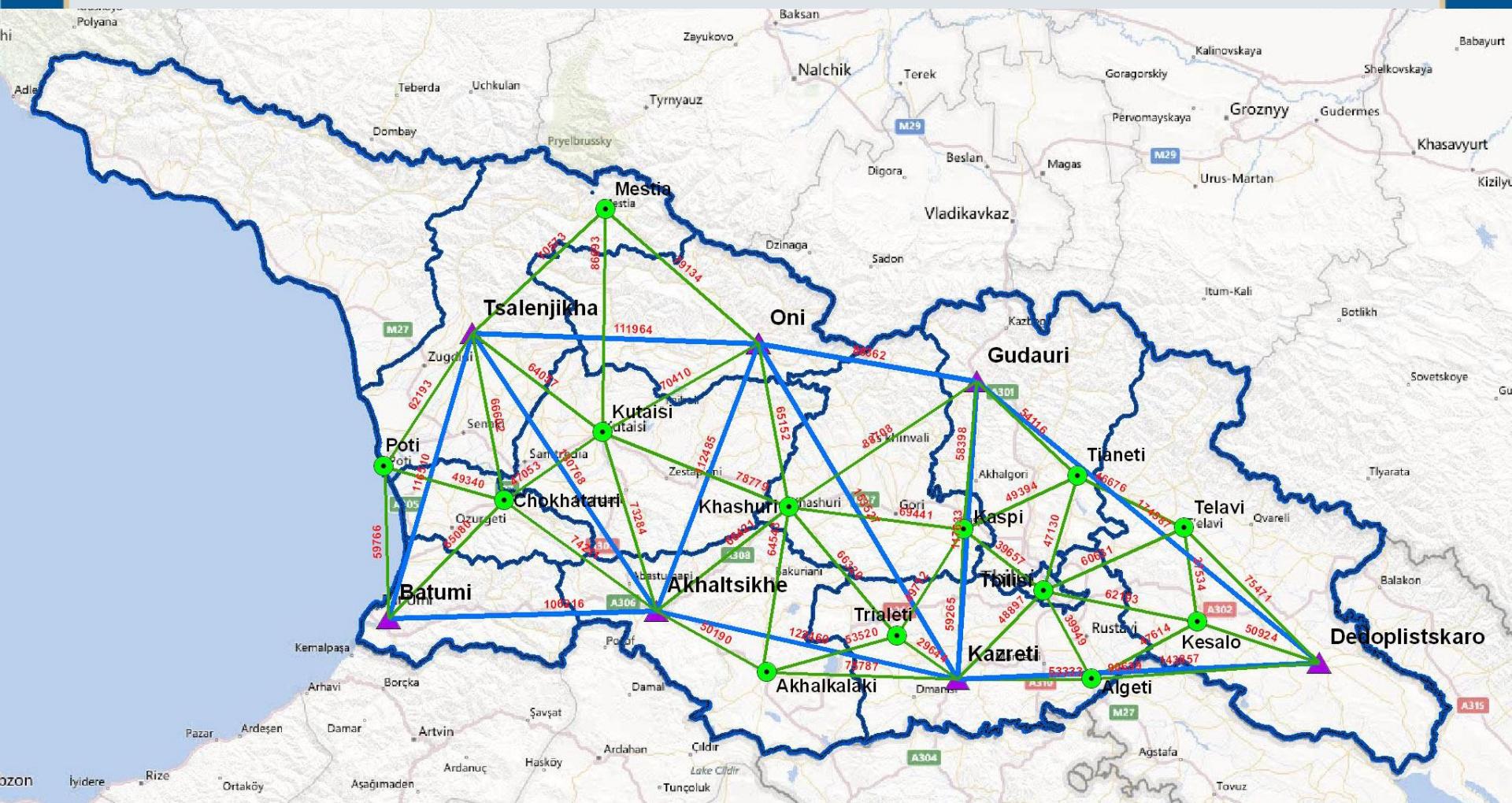
Ministry of Justice of Georgia National Agency of Public Registry (NAPR)



Head of Geodesy and Cartography Division
Galaktion Hahubia



20 A&B-class stations



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7 A-class stations



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13 B-class stations



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Antenna and Receiver



2 Leica LEIAT504

2 Leica 500RS

Antenna IGS Name

Phase Center Offset(East, North, Up)

LEIAR25.R3 LEIT

L1 0.0002 0.0001 0.1617

LEIAR25.R4 LEIT

L1 0.0006 0.0010 0.1583

17 Leica GNSS AR25 with individual calibration

13 Leica GRX1200+ 4 Leica GR10



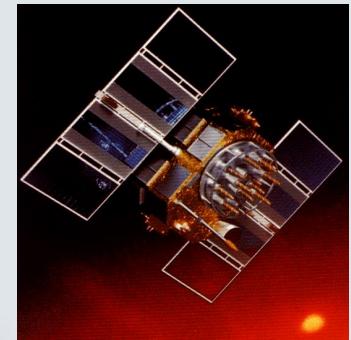
- 1 Trimble GNSS R8
- 1 Trimble GPS NETRS



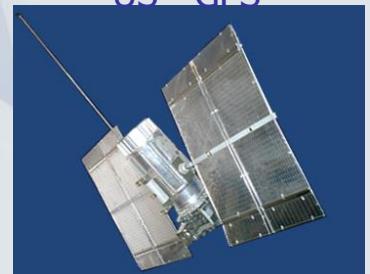
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GNSS signals

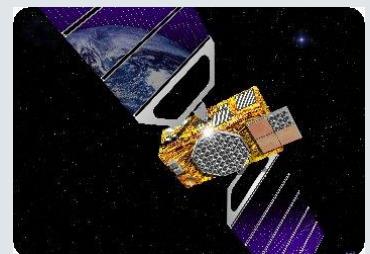
- Navstar/GPS – USA all
- GLONASS – Russia 15
- Galileo – EU (in a futures) 14



US - GPS



Russia - GLONASS

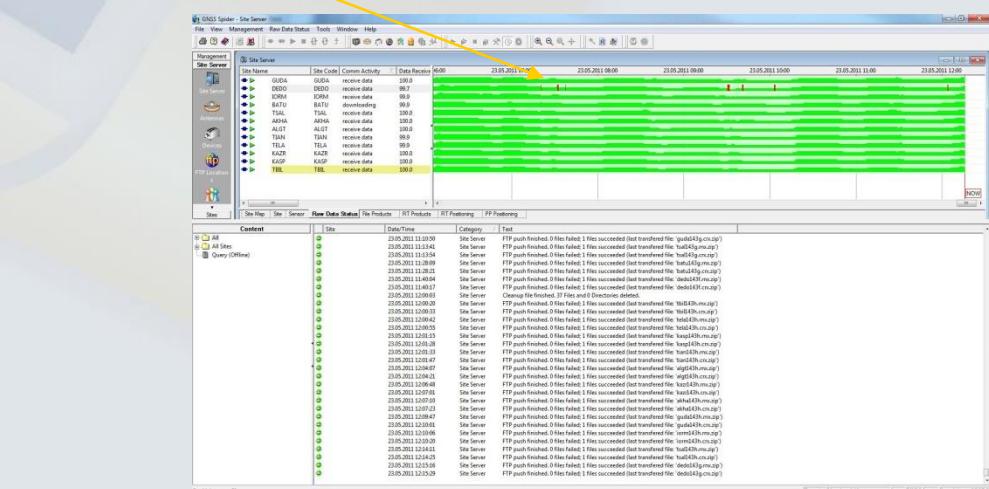
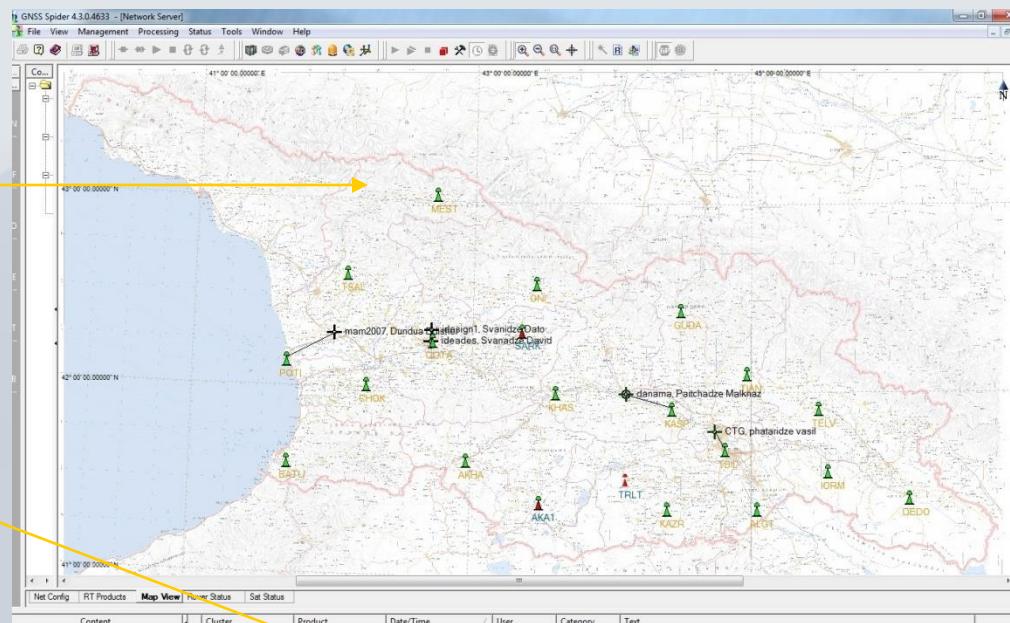
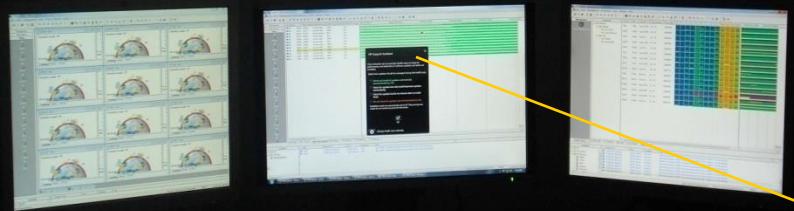
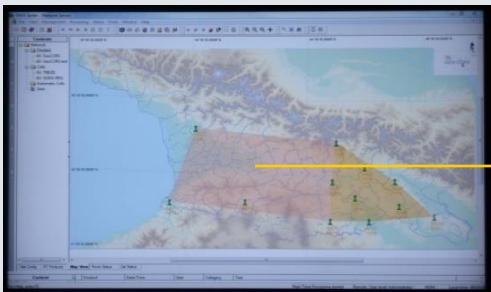


EU - Galileo



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Control Center GNSS Spider 4.3



- RINEX 30 sec all time
- RINEX 5 sec 1 year
- RINEX 1 sec 6 month



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GeoCORS services

- Positioning services:

- Positioning in Real-Time

- Positioning via Rinex file download from SpiderWeb server

- Automatic computation in SpiderWeb server

- Business center

- Registration



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geocors.napr.gov.ge

A screenshot of a web browser window titled "Geo-CORS, SpiderWeb - Windows Internet Explorer". The URL in the address bar is "http://geocors.napr.gov.ge/spiderweb/fmindex.aspx". The page content is in Georgian. On the left, there's a sidebar with sections like "მიმღები კომპანია", "მიმღები ტექნიკური დოკუმენტები", and "სამუშაოები და მიზანები". The main area features a map of Georgia with a red cross symbol and the text "GEO-CORS" overlaid. Below the map, it says "MINISTRY OF JUSTICE OF GEORGIA NATIONAL AGENCY OF PUBLIC REGISTRY". The top right corner shows the "GEO-CORS" logo with a British flag and the text "GEO-CORS". The top navigation bar includes links for "Google", "Facebook", "Twitter", "YouTube", "TV", and "Hotels". The status bar at the bottom right shows "EN | GE".

The screenshot shows the Geo-CORS SpiderWeb interface running in Microsoft Internet Explorer. The top navigation bar includes links for File, Edit, View, Favorites, Tools, Help, and a search bar. Below the bar, there's a toolbar with icons for Back, Forward, Stop, Home, and various social media sharing options. The main content area features a logo for "Geo-CORS SpiderWeb" and a map of the Caucasus region. The map displays several CORS stations as green dots with blue outlines, primarily concentrated in Georgia and Armenia. The map also shows major rivers, roads, and political boundaries. On the left, a sidebar titled "SpiderWeb" contains a "Home" section with links to various services like RINEX download, Site overview, Site quality, Virtual RINEX Service, Computation Service, Computations, Configuration, Results, Statistics, Leica Geosystems, SpiderWeb, EUPOS, NAPR, and NOVA-Maps. At the bottom right of the map, there are three buttons: "Map", "Satellite", and "Hybrid".

SBC - Home > Nap - Windows Internet Explorer

<http://person.nap.gov.ge/pbc/friendship.aspx?mode=register>

File Edit View Favorites Tools Help

Google Search More >

PLAY IT Search Go Facebook Facebook Games TV Home

Favorites Suggested Sites Web Slice Gallery ITSP Network Map Reference3D STONEX BRAND – Stonex ~...

SBC - Home სტონექსი

რეგისტრაცია

მომავალი სახელი:

მომავალი გვარი:

მომავალი შეზღუდვა:

საკოლეჯობრივი მომავალი:

სახელი:

გვარი:

დაუკავშირდეთ ჩატვირთვა:

კომპიუტერი:

კო:

მომავალი (მართველი)

Rover Brand:

დამატებითი

SBC Admin - Windows Internet Explorer

File Edit View Favorites Tools Help

Google

PLAY IT Search Go Facebook Facebook Games TV Radio Sign In

Favorites Suggested Sites Web Skin Gallery BTRF Network Map ReferenceID STONIX BRAND - Stores...

SBC Admin

Spider Business Center

My Profile | Help | About | Logout

when it has to be right **Leica Geosystems**

User Status	Company	E-Mail	Full Name	Subscriptions Status	User Name
Active	Air Group	zodimic@mail.ru	zodimic, nata	Active	mintzne
Active	air LTD	sergichi@mail.com	chikina, serg	In	ig
Active	Toller Group	reischewich@mail.com	Cheshikh, Nika	Active	ivali
Active	tomergraphic	institute@tomergraphic.com	vakhtangov, inaki	Active	bostashvili
Active	azakidiki	bostashvili@yahoo.com	bostashvili, ilesa	Active	eliebsashvili
Active	Orange Field LTD	infogit@gr		Active	shekeli
Active	Certis Bank	rino.mitsureishvili@certisbank.ge	Mitsureishvili, Rino	Active	rnmessi
Active	Idea Design Group	info@ideadesigngroup.ge	Zanganelashvili, Maren	Active	design
Active	Techno Ltd	contact@techno.ge	Konashvili, Archil	Active	Techno
Active	Georgia LTD	georgia@georgia-asus.net	Kvaratskhelia, Nika	Active	geonmap
Active	LTD "Geographic"	mamaliga@geographic.ge	Kharusidze, Melikaz	Active	mamaliga
Active	teat	andri-shams@teatcenter.ru	shamugia, andri	Active	andri.sham
Active	MCO	logistics@mco.com	Lobzjenidze, Giorgi	Active	dengio
Active	casper	casper@casper.ru	abuladze, gorgi	Active	casperidze
Active	shahle kofidress	kothers@kothers.ru	Kohkevadze, shahle	Active	skoreshidze
Active	ermitage	ermitage@ermitage.ge	korzunashvili, valent	Active	SEBEB
Active	AKT TERRA-DIGITAL	aktterra@aktterra.com	Khatashvili, illia	Active	illid
Active	bit bank	itsoft@bitbank.ge	khatalashvili, shota	Active	bitgraphy
Active	ERKA Mapping	erka@erka-mapping.com	bekber, masha	Active	01003232
Active	globalnet	internet@globalnet.ru	gorogozov, vallo	Active	valle
Active	B2B-Obul-epira 2009	trapez@gmail.ru	ba, iuli	Active	ba.julidi
Active	B2B-Obul-epira 2009	trapez@gmail.ru	shegulashvili, zaza	Active	zhegula

Show / Hide columns: User Status Company User Name E-Mail Subscriptions Status Full Name Language Privileges Dial-in authentication Host name GPUD1 GPUD2 Rover Brand

Configure Columns

Frozen columns: 1

Lines per page: 30

<http://www.facebook.com/geocorsgeorgia>

A Facebook post from the page "Geo-CORS" (Georgian Observatory for Climate and Society) featuring a sand drawing of the word "GEO-CORS" on a beach.

Insights:

- Your Posts
- Talking About This
- Reach

Recent Likes:

- Sofio Cercwadze (17 hours ago)
- Natashka Charkveliani (19 hours ago)
- Toka Xelidze (19 hours ago)
- Boris Smirnov (on Monday)

Recent Activity:

- Aliqpi Jafashvili and Giorgi Khachidze (on Tuesday)
- Aliqpi Jafashvili (on Tuesday)

Invite Friends:

- David Kapanadze (Invite)
- Giorgi Gagnisho Lobsanidze (Invite)
- Gela Mghaladze (Invite)
- Mixail Abashvili (Invite)

Photo: A man in a green t-shirt with a yellow logo sits cross-legged on a sandy beach, smiling. In front of him, the word "GEO-CORS" is written twice in large, light-colored letters in the sand. The background shows a flat, sandy landscape.

Geo-CORS
415 likes · 31 talking about this

About:

- Community & Government · Add A Category
- 2 St.Nikolo Str., Tbilisi, GE
- 577 62 03 33
- Today 10:00 am - 7:00 pm

Photos: [Link] **415** Likes

Likes See All

 Global Positioning System
Internat.

 GSS Car Rental
Transport/Flight

 GLONASS
Internat.

 Galileo (satellite navigation)
Internat.

 გვარი გვარები
Government Official

 Geo-Cards
Monday 4h

GLONASS- (Russian: ГЛОНАСС; IPA: [gleˈnɑs]-, acronym for Global'naya Navigatsionnaya Sputnikovaya Sistema or Global Navigation Satellite System, is a radio-based satellite navigation system oper ...See More

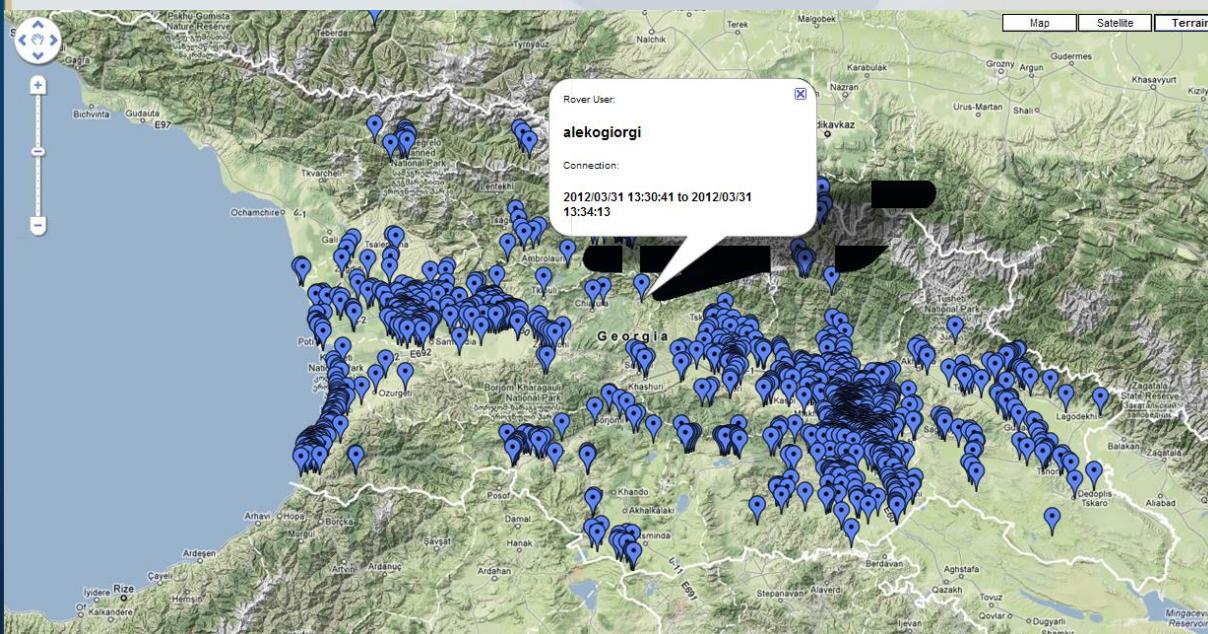




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Summary by Month

Month	Authorised Connections	Authorised Connections (%)	Unauthorised Connections	Unauthorised Connections (%)	Total Connection Time (hrs)	Average Connection Time (min)
2012.1	1,053	2.5	0	0.0	211.65	12.1
2012.2	1,286	3.1	0	0.0	289.86	13.5
2012.3	1,602	3.9	0	0.0	436.51	16.3
2012.4	2,474	6.0	0	0.0	584.16	14.2
2012.5	3,078	7.4	0	0.0	771.40	15.0
2012.6	3,452	8.3	0	0.0	844.51	14.7
2012.7	3,630	8.8	0	0.0	1,007.62	16.7
2012.8	2,862	6.9	0	0.0	842.38	17.7
2012.9	3,558	8.6	0	0.0	1,021.76	17.2
2012.10	2,796	6.7	0	0.0	837.01	18.0
2012.11	2,728	6.6	0	0.0	739.08	16.3
2012.12	2,843	6.9	0	0.0	671.35	14.2
2013.1	1,910	4.6	0	0.0	383.15	12.0
2013.2	3,627	8.8	0	0.0	772.65	12.8
2013.3	4,528	10.9	0	0.0	952.65	12.6



Summary

First Connection:	2012/01/01 12:24:26.00
Last Connection:	2013/03/28 12:16:03.00
Authorised Connections:	41,427
Unauthorised Connections:	0
Connections shown in map:	3,993
Customers:	71
Products:	12
Skipped Records:	51
Total Connection Time:	10,365.7 hrs
Average Connection Time:	15.0 min



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GNSS Spider - [Local Network Server]

File View Management Processing Tools Window Help

User-ID: zura Rover User Name: janashvili zura Connect: 13.05.2012

Search Images Videos Maps News Shopping Gmail More George Lobjanidze

Management Local Network Server

- Local Network Server
- FTP Locations
- Operators
- Events
- Transformations
- Business Center

Google 41.728392 41.734994(zura)

Map Photos

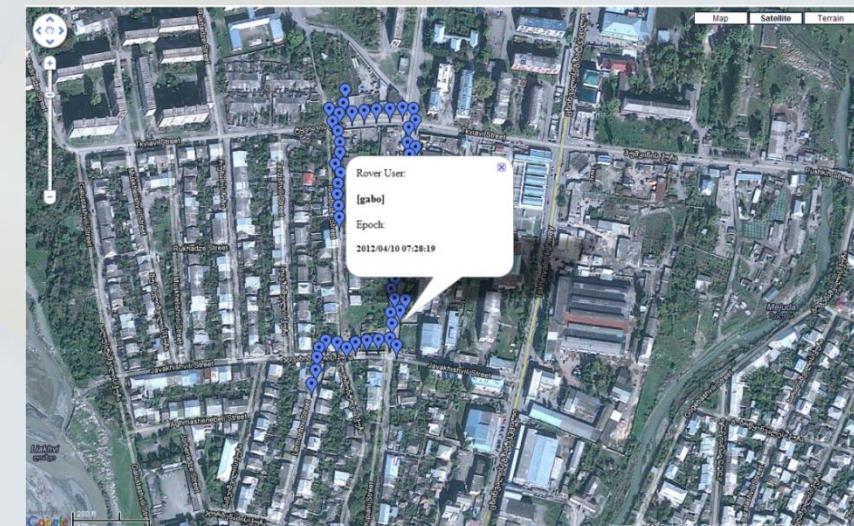
2000 ft 500 m

Net Config RT Products Map View Rover Status Sat Status

Content	Product	Date/Time	User	Category	Text
All	Spider Server	13.05.2012 19:00:30	Network Server	Ephemeris updated on RTK server. Satellite: R19, IODE: 9, Time: 05-13-2012 15:15:15.	
All Clusters	ClusterServer	13.05.2012 19:06:27	Cluster	Cluster GeoCOR5: Broadcast Ephemeris missing for SV G2 in network processing	
All Products	Spider Server	13.05.2012 19:06:52	Network Server	Ephemeris updated on RTK server. Satellite: G02, IODE: 86, Time: 05-13-2012 16:00:00.	
Query (Offline)	ClusterServer	13.05.2012 19:06:52	Cluster	Cluster GeoCOR5: Broadcast Ephemeris available for SV G2 in network processing	

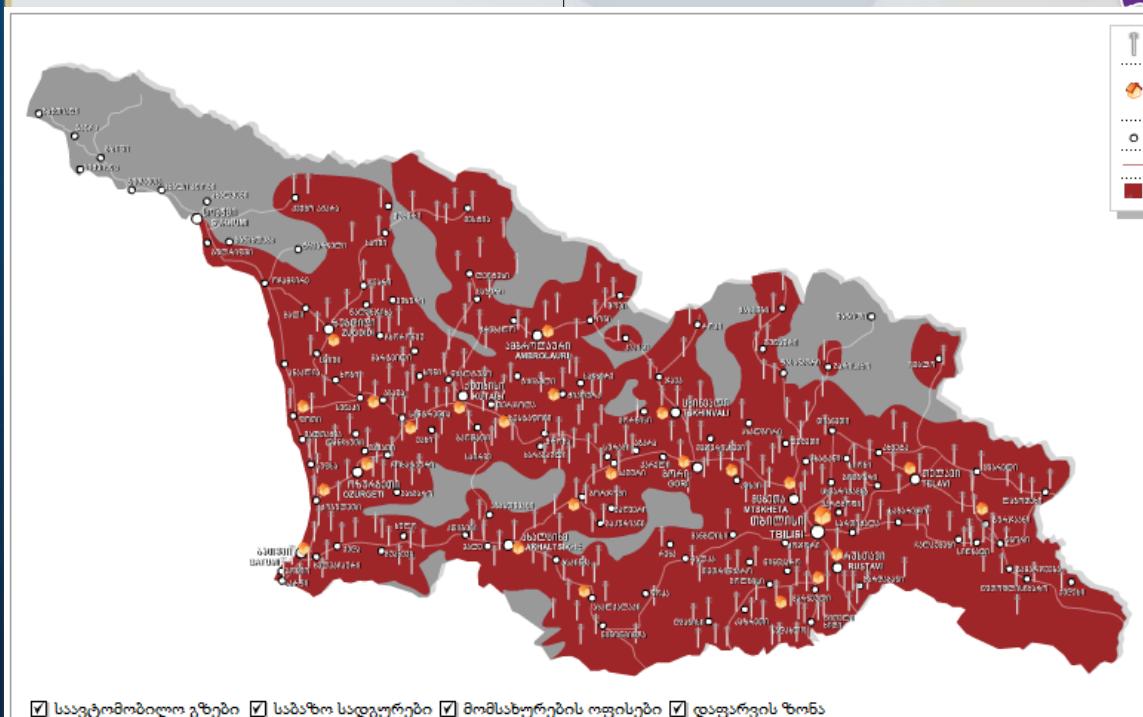
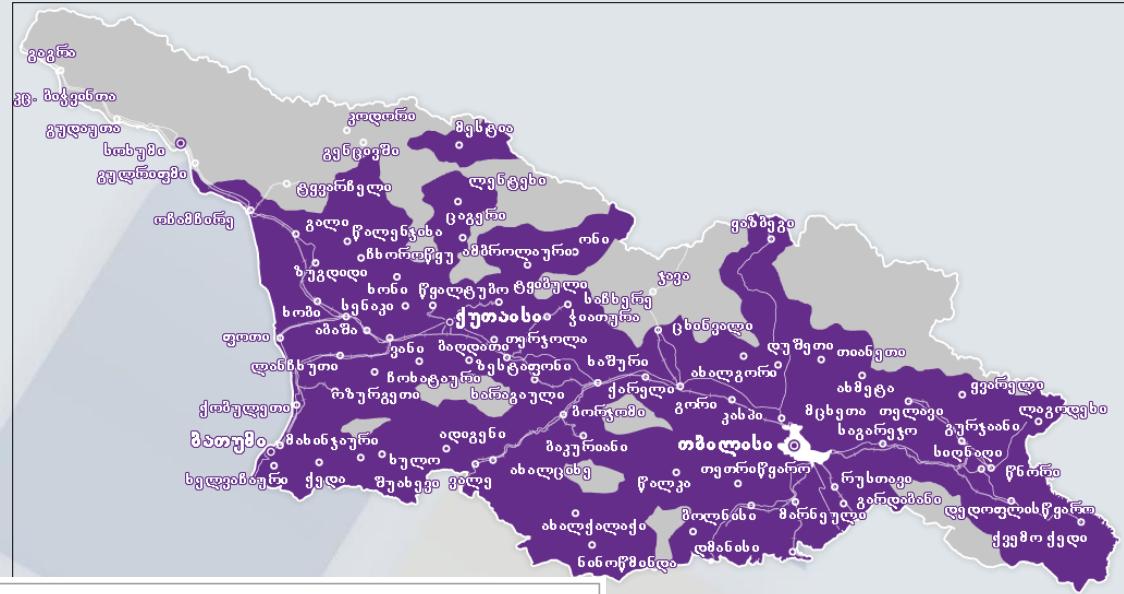
Real-Time Processing started Local User level: Administrator Local time : 19:07:14

Start | GNSS Spider ... | GNSS Spider ... | Ipswich What... | C:\gaga | \\10.100.100... | Leica SpiderQC | New GNSS Spide... | Administrator: ... | 7:07 PM



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GSM coverage



საკუთრივო გზები საბაზო სადგურები მომსახურების ოფისები დაფურვის ზონა



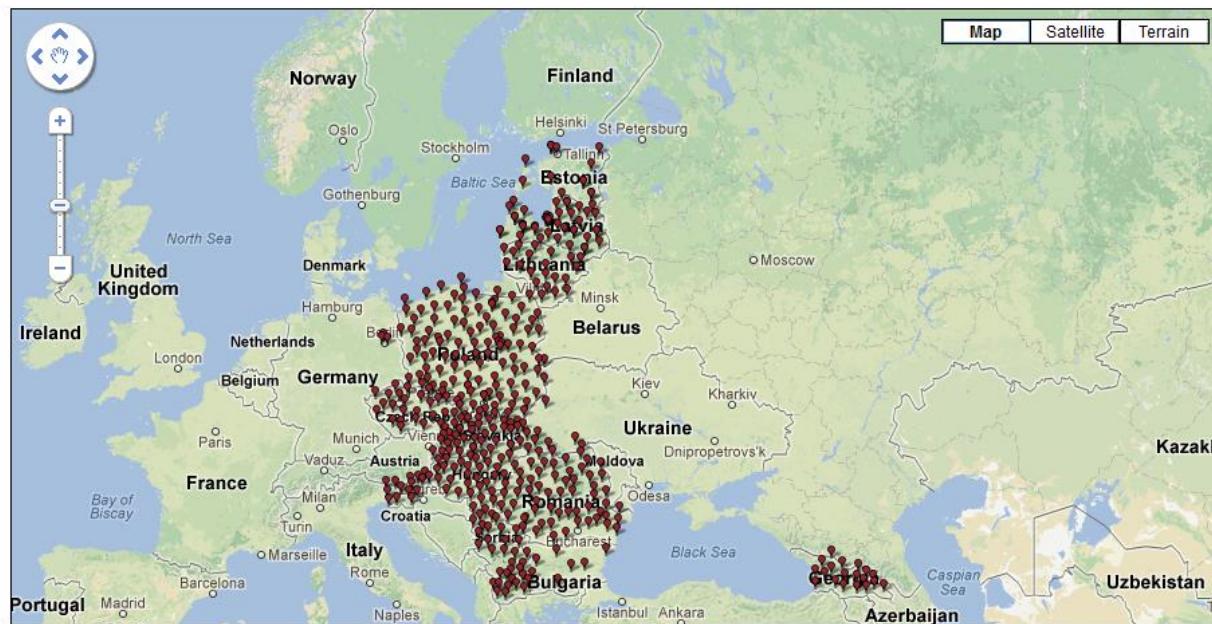
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Station DataBase



Station DataBase

Map of EUPOS Reference Stations



Desktop Libr. » EN 11:08 AM
5/29/2013

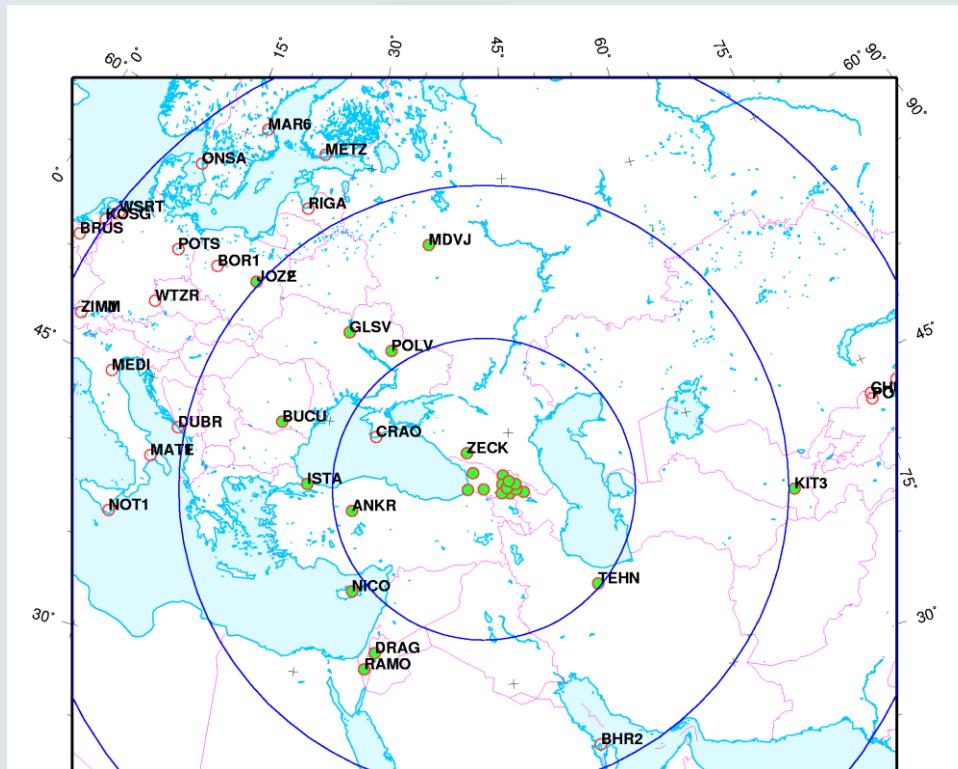


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- **Creation of new reference frame “CEONET”**
- **Establishment of new modern geoid model for Georgia**

Georgia Continuously Operating Reference Stations

Coordinates Computation Report by IGN author DPR/SGN/PMT/sb



Results

- 1. Georgia CORS IGS08 ep. 2011.353 Coordinates (use today)**
- 2. Georgia CORS ETRF2000 ep. 2011.353 Coordinates**

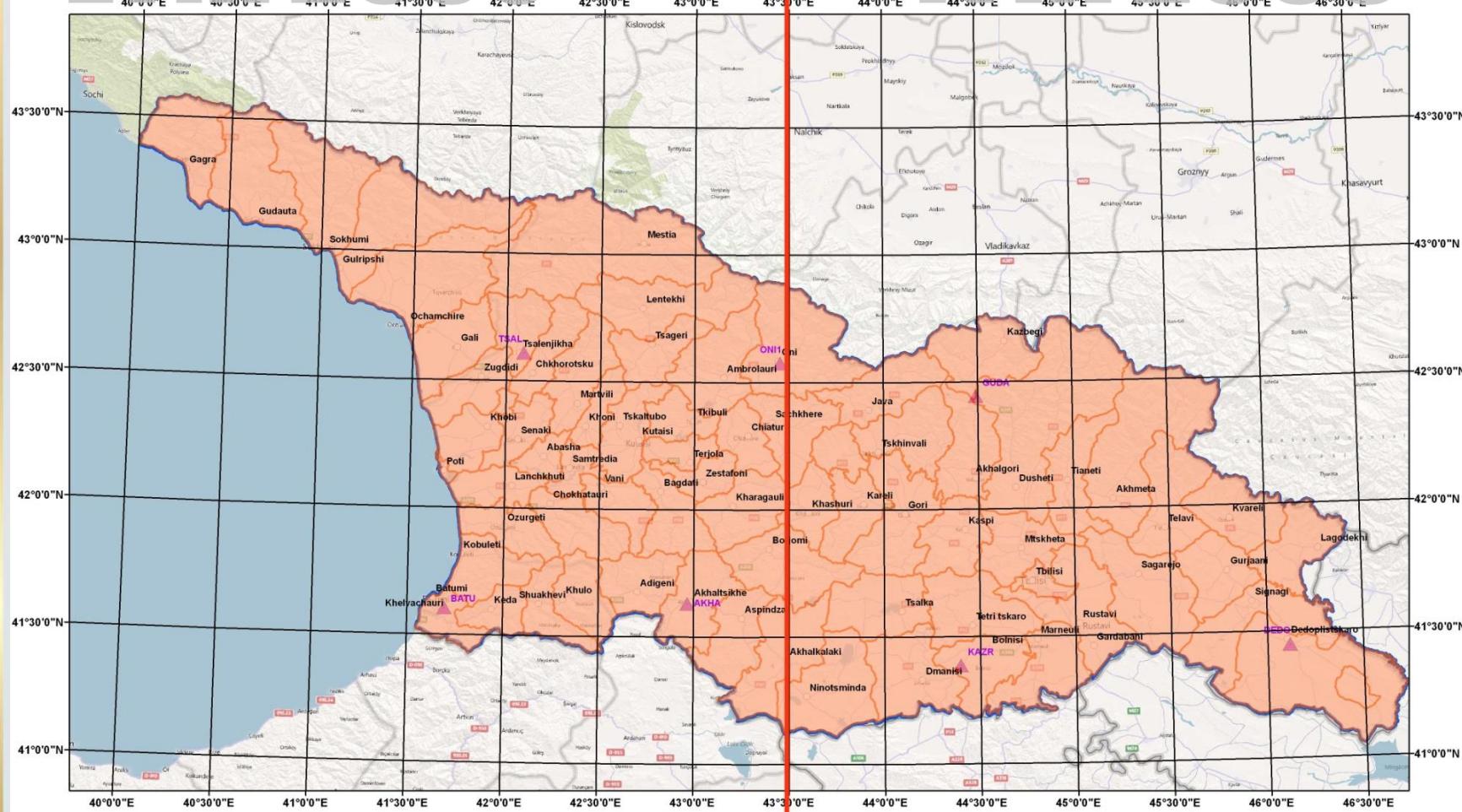


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GEONET12TM

FTRF2000

ITREF2008



Central meridian 43,5 degrees

1:10 000.....1:1 000 000 – scale factor 0,9996



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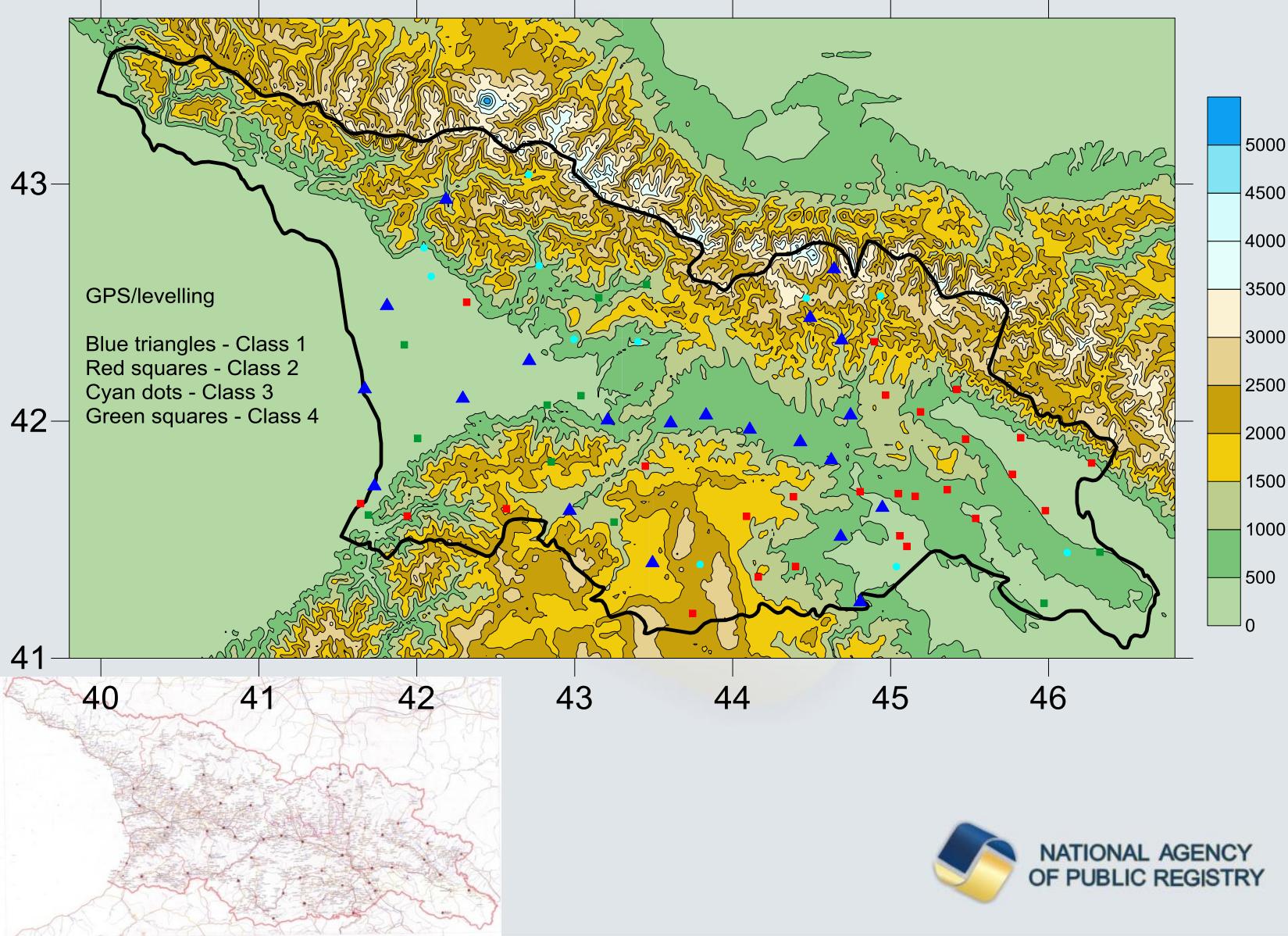
5 Zones for scales

1:500.....1:5000 scale factor 1

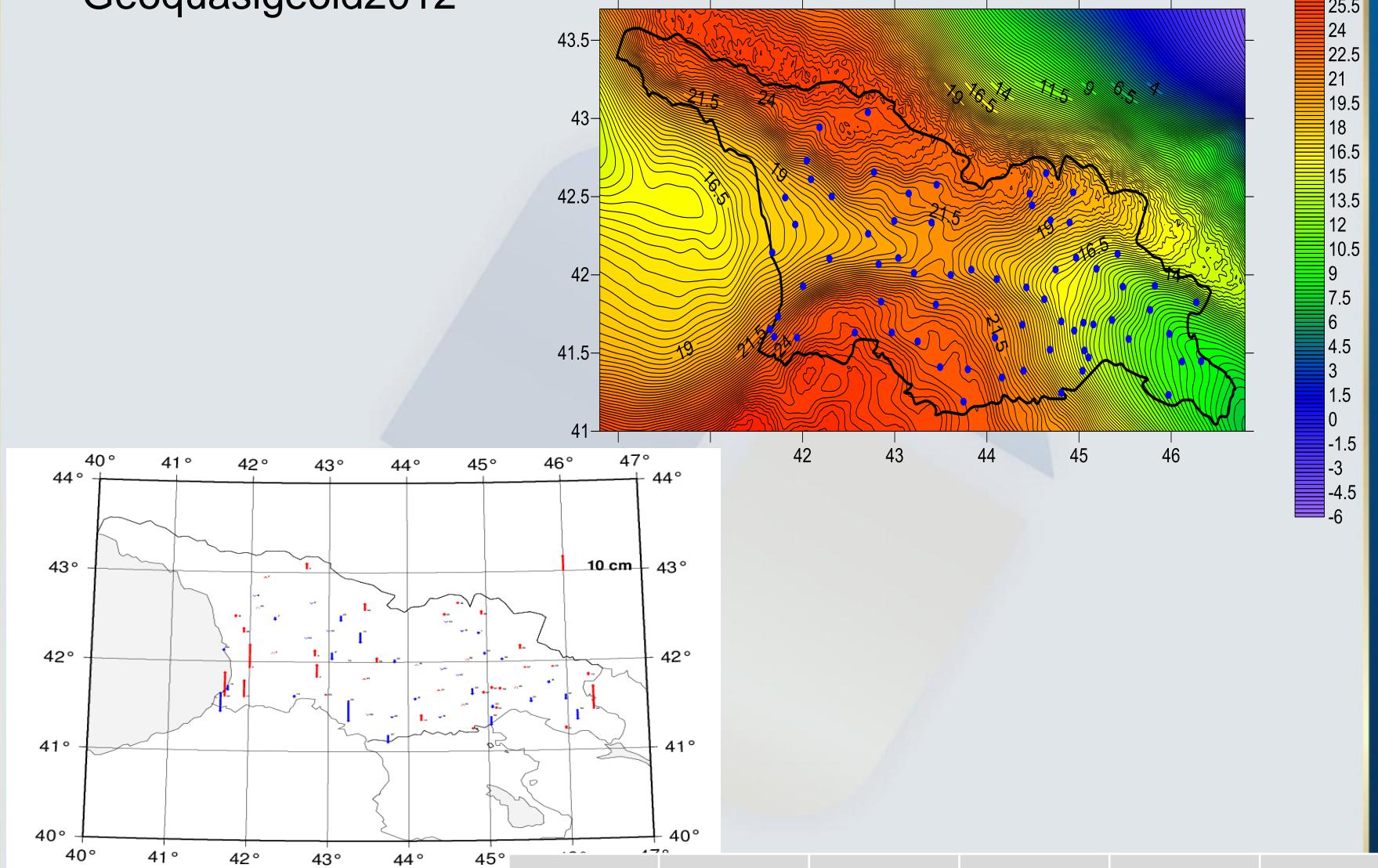


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69 GPS/levelling observed stations



Geoquasigeoid2012



#	Min	Max	Mean	StdErr	RMS
69	-0.135	0.157	0.003	0.050	0.050



INSPIRE

Annex I

•Coordinate reference systems

•Geographical grid systems

- Geographical names
- Administrative units
- Addresses
- Cadastral parcels
- Transport networks
- Hydrography
- Protected sites

Annex II

- Elevation
- Land cover
- Orthoimagery
- Geology

Annex III

- Statistical units
- Buildings
- Soil
- Land use
- Human health and safety
- Utilities and government service
- Environmental monitoring facilities
- Production and industrial facilities
- Agricultural and aquaculture facilities
- Population distribution - demography

- Area management/restriction / regulation zones & reporting units
- Natural risk zones
- Atmospheric conditions
- Meteorological geographical features
- Oceanographic geographical features
- Sea regions
- Bio-geographical regions
- Habitats and biotopes
- Species distribution
- Energy resources
- Mineral resources



Rehabilitation and creation of new height benchmarks for the leveling network



I class

II class



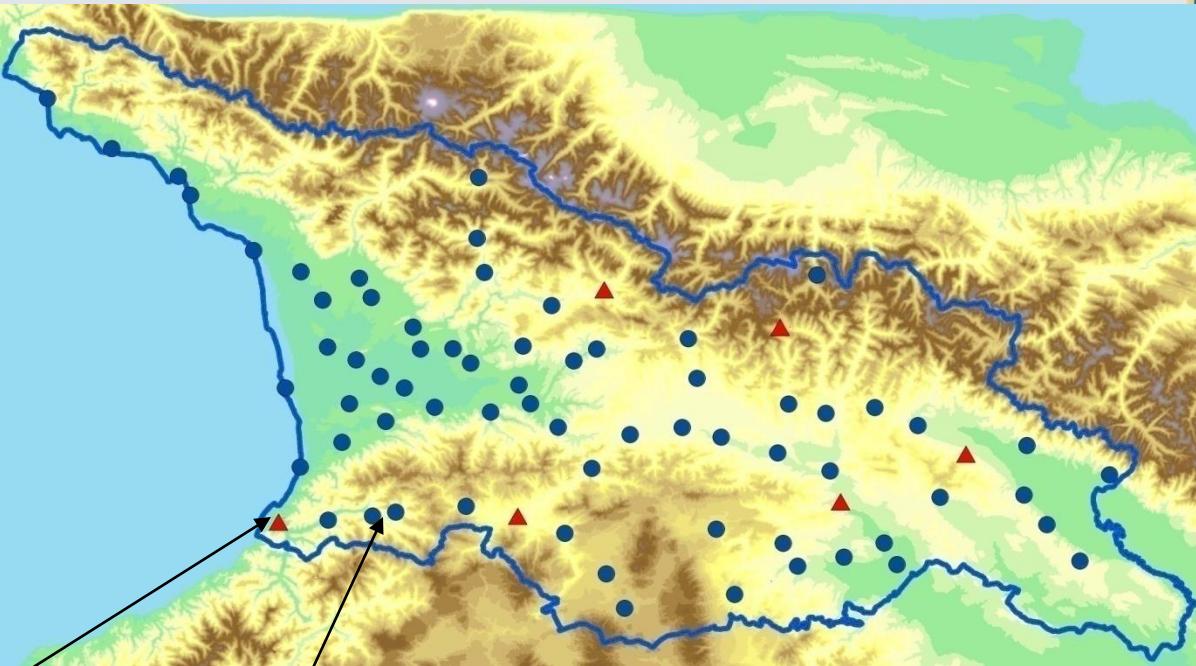
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Gravimetric work



Old gravimetric map

New gravimetric map



Absolute Gravity for ties



Relative Gravity for
expanding local regions
where airborne shows
significant mismatch with
existing terrestrial



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Part of the EPN

ORGANISATION	NETWORK & DATA	PRODUCTS & SERVICES	DOCUMENTATION	NEWS, EVENTS & LINKS
Creation, Management, Structure, Relation to IGS, Projects	Station list, Maps, Tracking status, Data access, Proposed stations, Station log submission, Station picture submission	Data analysis, Weekly EPN solutions, Coordinates, Position time series, Tropospheric delays, ETRS89/ITRS transformation, Satellite Orbit & Clock Correction Streams	Formats, Guidelines, Equipment & calibration, Papers, FAQ	News, Mails, Calendar, Workshops, FTP server, Site map, Web history, Links

[NETWORK & DATA > MAPS](#)

Interactive map

Legend

Station status (active, inactive, former)

- Active
- Inactive
- Former

Locate station on map

- Select a station -

Station criteria selection

Receiver manufacturer:

- ADA
- ASHTECH
- JAVAD

Antenna manufacturer:

- 3S NAVIGATION
- AOA

Satellite system:

- GPS
- GLONASS
- GALILEO

Status:

- ACTIVE
- INACTIVE
- FORMER

Data:

- DAILY
- HOURLY
- REAL-TIME

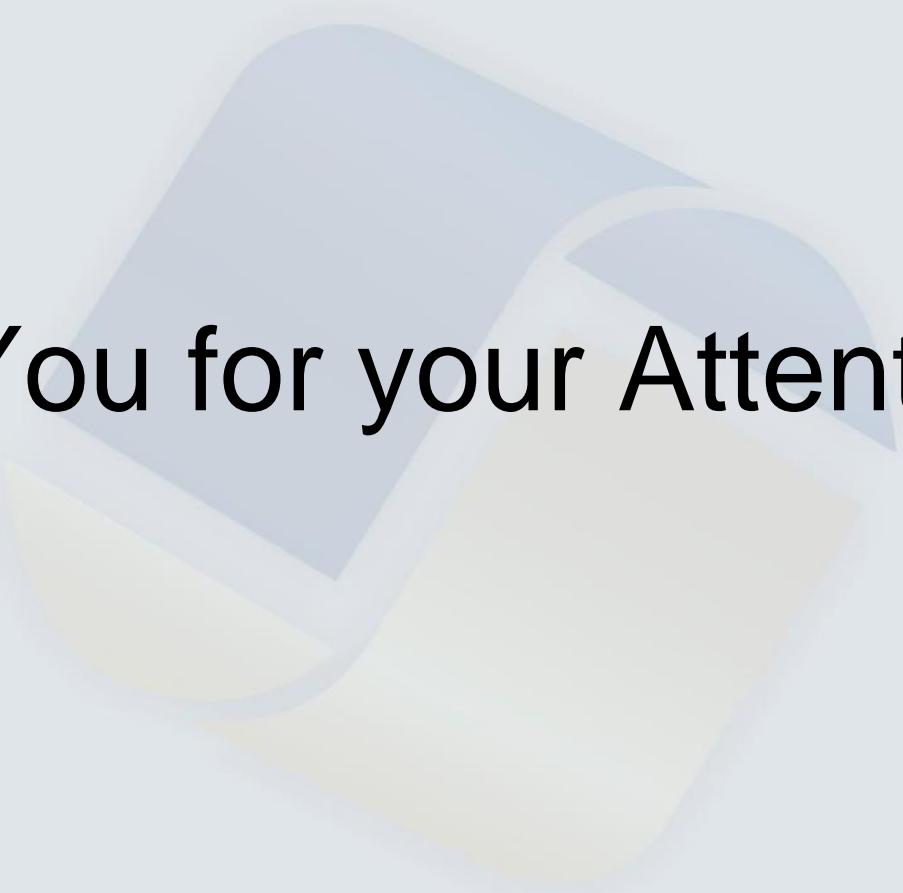
hold down CTRL for multiple selection

Update map

Map Data - Terms of Use



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Thank You for your Attention !!!



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