



EPN real-time analysis report

Wolfgang Söhne

Federal Agency for Cartography and Geodesy

- **Action Item no. 11 of last TWG (Brussels) was:**

- ***“CB, RP and WS to discuss the procedures to monitor the ASI and ROB regional broadcasters in addition to the BKG broadcaster. Deadline: next TWG”***

- **Motivation:**

- **Currently, only the monitoring of the BKG broadcaster(s) is visible on EPN web pages**
- **Basic measures of all three broadcasters should be visible at a glance**

Calling a broadcaster, a user gets

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Mozilla Firefox
Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe
http://www.euref-ip.net/
www.euref-ip.net
SOURCETABLE 200 OK
Server: NTRIP Caster 2.0.20/2.0
Date: Tue, 21 May 2013 06:30:56 GMT
Connection: close
Content-Type: text/plain
Content-Length: 19181

CAS;rtcm-ntrip.org;2101:NtripInfoCaster;BKG;0;DEU;50.12;8.69;http://www.rtcn-ntrip.org/home
CAS;www.euref-ip.net;2101:EUREF-IP;BKG;0;DEU;50.12;8.69;http://www.euref-ip.net/home
NET;EUREF;EUREF;B;N;http://www.epncb.oma.be/euref_IP;http://www.epncb.oma.be:80/stations/log/skl;http://register.rtcn-ntrip.org;none
NET;GREF;BKG;B;Y;http://igs.bkg.bund.de;http://igs.bkg.bund.de:80/root_ftp/GREF/station/rnxskl;gref-ip@bkg.bund.de;none
NET;Misc;BKG;B;N;http://igs.bkg.bund.de/root_ftp/NTRIP/streams/streamlist_euref-ip.htm;http://igs.bkg.bund.de:80/root_ftp/NTRIP/station/rnxskl;http://register
STR;ACORD;Coruna;RTCM 3.1;1004(1),1006(30),1008(30),1019(120);2;GPS;EUREF;ESP;43.36;351.60;0;0;LEICA GRX1200PRO;none;B;N;3000;ernss-ip.ign.es:2101/ACORD(1)
STR;AJACO;Ajaccio;RTCM 3.1;1004(1),1006(15),1008(60),1012(1),1033(60);2;GPS+GLO;EUREF;FRA;41.93;8.76;0;0;LEICA GR25;none;B;N;4000;www.igs-ip.net:2101/AJACO(2)
STR;ALACO;Alicante;RTCM 3.0;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;ESP;38.34;359.52;0;0;LEICA GR10;none;B;N;5000;ernss-ip.ign.es:2101/ALACO(1)
STR;ALBAO;Albacete;RTCM 3.0;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;ESP;38.98;358.14;0;0;LEICA GR10;none;B;N;5000;ernss-ip.ign.es:2101/ALBAO(1)
STR;ALMED;Almeria;RTCM 2.3;1(1),3(10),18(1),19(1),22(10),23(10),24(10),59(10);2;GPS;EUREF;ESP;36.85;357.54;0;0;TRIMBLE NETRS;none;B;N;4000;ernss-ip.ign.es:2
STR;AUT10;Thessaloniki;RTCM 3.0;1004(1),1006(10),1008(10);2;GPS;EUREF;GRC;40.57;23.00;0;0;LEICA GRX1200PRO;none;B;N;1500;none
STR;BELFO;Belfast;RTCM 3.1;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;GBR;54.34;-5.55;0;0;LEICA GRX1200GGPRO;none;B;N;2900;Ordnance Survey of Northern
STR;BELLO;Bellmunt de Segarra;RTCM 3.0;1004(1),1005(5),1008(5);2;GPS;EUREF;ESP;41.58;1.40;0;0;TRIMBLE NETRS;none;B;N;6000;ICC Catnet
STR;BOR10;Borowiec;RTCM 2.3;1(1),3(10),18(1),19(1),22(10);2;GPS;EUREF;POL;52.28;17.07;0;0;TRIMBLE NETRS;none;B;N;2400;SRC PAS
STR;BORJ1;Borkum;RTCM 3.0;1004(1),1006(10),1007(10),1012(1),1019,1020;2;GPS+GLO;EUREF;DEU;53.58;6.67;0;0;JPS LEGACY;none;B;N;2400;BKG
STR;BORRO;Borriana;RTCM 3.0;1004(1),1005(5),1008(5);2;GPS;EUREF;ESP;39.91;359.91;0;0;TRIMBLE R7;none;B;N;6000;ernss-ip.ign.es:2101/BORRO(1)
STR;BRSTO;Brest;RTCM 3.0;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;FRA;48.38;-04.49;0;0;TRIMBLE NETRS;none;B;N;2000;www.igs-ip.net:2101/BRSTO(2)
STR;BRUXO;Brussels;RTCM 3.0;1004(1),1006(10),1008(10),1012(1);2;GPS+GLO;EUREF;BEL;50.47;4.21;0;0;SEPT POLARX4TR;none;B;N;1300;www.igs-ip.net:2101/BRUXO(2)
STR;BSCNO;Besancon;RTCM 3.0;1004(1),1006(10),1008(10),1012(1),1013(10),1033(10);2;GPS+GLO;EUREF;FRA;47.24;5.99;0;0;LEICA GR25;none;B;N;2000;rgp-ip.ign.fr:210
STR;BUCUO;Bucharest;RTCM 3.0;1004(1),1006(10),1008(10),1012(1),1019(120),1020(30);2;GPS+GLO;EUREF;ROU;44.46;26.12;0;0;LEICA GRX1200GGPRO;none;B;N;2800;TU Buc
STR;BUTEO;Budapest;RTCM 3.0;1004(1),1006(10),1008(10),1012(1),1013(10);2;GPS+GLO;EUREF;HUN;47.48;19.06;0;0;TRIMBLE NETRS;none;B;N;3000;Budapest University
STR;BZRG0;Bolzano;RTCM 2.3;1(1),3(15),18(1),19(1),22(15),23(15),24(15);2;GPS+GLO;EUREF;ITA;46.47;11.56;0;0;LEICA GRX1200+GNSS;none;B;N;3600;www.igs-ip.net:21
STR;CACED;Caceres;RTCM 2.3;1(1),3(10),18(1),19(1),22(10),24(10),59(10);2;GPS;EUREF;ESP;39.48;353.66;0;0;TRIMBLE NETRS;none;B;N;5000;ernss-ip.ign.es:2101/CAC
STR;CAGZO;Cagliari;RTCM 2.1;1(3),3(60),16(60),18(1),19(1),31(3);2;GPS+GLO;EUREF;ITA;39.14;8.97;0;0;TPS E_GGD;none;B;N;3900;www.igs-ip.net:2101/CAGZO(2)
STR;CANTO;Cantabria;RTCM 3.0;1004(1),1006(15),1008(15),1012(1),1033(15);2;GPS+GLO;EUREF;ESP;43.47;356.20;0;0;LEICA GR10;none;B;N;5000;ernss-ip.ign.es:2101/C
STR;CASCO;Cascas;RTCM 3.0;1004(1),1006(60),1012(1);2;GPS+GLO;EUREF;PRT;38.69;350.58;0;0;LEICA GRX1200GGPRO;none;B;N;3000;62.48.187.123:2101/CASCO(1)
STR;CEU10;Ceuta;RTCM 2.3;1(1),3(10),18(1),19(1),22(10),23(10),24(10),59(10);2;GPS;EUREF;ESP;35.89;354.69;0;0;TRIMBLE NETRS;none;B;N;5000;ernss-ip.ign.es:210
STR;CFRMO;Frydek Mistek;RTCM 3.0;1004(1),1006(10),1008(10),1012(1);2;GPS+GLO;EUREF;CZE;49.68;18.35;0;0;LEICA GRX1200+GNSS;none;B;N;9600;Land Survey Office
STR;CLIBO;Liberec;RTCM 3.0;1004(1),1006(10),1008(10);2;GPS;EUREF;CZE;50.77;15.06;0;0;LEICA GRX1200+GNSS;none;B;N;9600;Land Survey Office
STR;CMNSO;Cannes;RTCM 3.0;1004(1),1005(10),1007(10);2;GPS;Misc;FRA;43.55;7.02;0;0;TRIMBLE NETRS;none;B;N;1300;RGP Mairie de Cannes
```



Calling a broadcaster, the administrator gets

The screenshot shows a web browser window with the address bar displaying "EUREF-IP Ntrip Broadcaster". The page title is "Welcome to the EUREF-IP Ntrip Broadcaster". The content includes:

Protocol: NTRIP 2.0
This server is www.euref-ip.net, running on Port 80 and 2101 (*http*) and on Port 443 (*https*), operated by [BKG](#) in support of the EUREF-IP Project.

Details about GNSS data streams on the EUREF-IP Ntrip Broadcaster are available as

- Distribution [Map](#)
- Stream [Table](#)
- Notice Advisories to Broadcaster Users [NABU](#)
- List of [Contributors](#) and [Applications](#).

An overview on EUREF-IP data is available from the [EPN CB](#) server.

To receive GNSS streams via NTRIP in real-time you will need an [NTRIP Client](#) program. This can be used on a PC/Laptop, PDA or mobile phone. NTRIP Clients send HTTP stream requests and transfer GNSS data to serial or IP port to your application. NTRIP Clients can also be part of your GNSS receiver firmware.

All streams on this server are protected. Authorization is provided through an online user [Registration](#).

For more information visit

- [EUREF-IP](#) for the EUREF-IP Project
- [RTIGS](#) for the Real-time IGS Pilot Project, or www.igs-ip.net for Real-time IGS observations, or [Products.IGS-IP.Net](#) for Real-time IGS products
- [NTRIP](#) for the real-time GNSS stream dissemination technique
- [Other](#) Ntrip Broadcaster implementations

or contact euref-ip@bkg.bund.de.

The BKG is responsible today for operating this Real-time GNSS streaming server. It disclaims any liability, or responsibility to any person or entity with respect to any loss or damage, or alleged to be caused, direct or indirectly by the use and application of its GNSS Ntrip service.



Calling a broadcaster, the administrator gets

Welcome to the EUREF GNSS NTRIP RELAY Caster of the ROB

This server, available at www.euref-ip.be, is run by the [GNSS/Time Team of the Royal Observatory of Belgium](#).

It aims at being a thematic server for all EUREF NTRIP streams.

The Belgian ROB stations BRUX0, BRUX1, DENT0, WARE0 are directly streaming to the caster.

The other EUREF stations are mirrored from 17 casters such as:

- the [caster](#) in CHE run by [SWISSTOPO](#) (for stations ZIM2_RTCM)
- the [caster](#) in CZE run by [GOP](#) (for stations GOPE0, GOPE1, TUBO0)
- the [caster](#) in ESP run by [IGN](#) (for stations ACOR0, ACOR1, ALAC0, ALBA0, ALME0, ARDU0, ARDU1, BCLN0, BORR0, CACE0, CANT0, CANT1, CEU10, COBA0, COBA1, FRAG0, GIRO0, HUEL0, IGNE0, IGNE1, IZAN0, IZAN1, JACA0, JORD0, LEON0, LEON1, LPAL0, LUGO0, MALA0, MALA1, MALL0, MALL1, MELI0, MER20, MER21, RIO10, SALA0, SALA1, SONS0, SONS1, TARI0, TERU0, TN010, TN020, TN030, VALE0, VIGO0, YEB10, YEB11, YEBE0, ZARA0, ZFRA0)
- the [caster](#) in FRA run by [IGN](#) (for stations AJAC1, BRST1, BSCN1, GRAS1, MARS1, SCOA1, TLSE1, VFCH1)
- the [caster](#) in GBR run by [OS](#) (for stations DARE_RTCM, INVR_RTCM, SHOE_RTCM)
- the [caster](#) in GER run by [BKG](#) (for stations AJAC0, AUT10, BELF0, BELL0, BOGI0, BOR10, BORJ1, BRST0, BSCN0, BUCU0, BUTE0, BZRG0, CAGZ0, CFRM0, CLIB0, CPAR0, CRAK0, CREU0, CTAB0, DARE0, DRES1, DUBR0, EBRE0, GANP0, GRAZ3, HERT0, HOE21, HOFN0, IENG0, IGEO0, INVR0, ISTA0, JOEN0, JOZ20, KARL1, KIR00, KURE0, LAMA0, M0SE0, MAR60, MARS0, METS0, MOP20, NICO0, OBE40, ONSA0, ORID0, OSJE0, OSLS0, PADO0, PENC0, REYK0, ROVE0, SASS1, SKE00, SODA0, SOFI0, SPT00, STAS0, SULP0, SUR4, TOIL0, TOR20, TORI0, TRDS0, UNPG0, UNTR0, VAAS0, VALA0, VARS0, VFCH0, VIS00, WARN1, WROC0, WSRT0, WTZR0, ZIM20, ZOUF0)
- the [caster](#) in GER run by [BKG](#) (for stations BRUX7)
- the [caster](#) in GER run by [BKG](#) (for stations POTS0)
- the [caster](#) in HUN run by [FÖMI](#) (for stations PENC_RAW-RTCM3.0)
- the [caster](#) in ITA run by [UNIPD](#) (for stations Bolzano, Padova, Rovereto)
- the [caster](#) in ITA run by [SAPIENZA](#) (for stations M0SE)
- the [caster](#) in ITA run by [E-GEOS](#) (for stations MATE0, USAL0, VEN10)
- the [caster](#) in NOR run by [SK](#) (for stations Oslo, Stavanger, Trondheim, Vardo)
- the [caster](#) in POL run by [AGH](#) (for stations KRA10, KRAW0, KRAW1)
- the [caster](#) in PRT run by [IGEO](#) (for stations CASC0, FLRS0, FUNC0, GAIA0, LAGO0, PDEL0, TERC0)
- the [caster](#) in SVK run by [STUBA](#) (for stations MOP2)
- the [caster](#) in SWE run by [LM](#) (for stations kir0_euref, mar6_euref, onsa_euref, ske0_euref, spt0_euref, vis0_euref)

This server supports the *NTRIP* v2.0 protocol. See <http://igs.bkg.bund.de/ntrip/about> for more information on NTRIP.

Uptime is 7 days, 13 hours, 2 minutes, 6 seconds, since 2013-05-14T16:54:37+00:00.

To apply for an account, use [this](#) form.

Calling a broadcaster, the administrator gets

EUREF-IP Admin Interface - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

EUREF-IP Admin Interface

www.euref-ip.net/admin?mode=sourcetable

home | statistics | sourcetable | listeners | sources | admins | settings

Sourcetable

- CAS;rtcm-ntrip.org;2101;NtripInfoCaster;BKG;0;DEU;50.12;8.69;http://www.rtcn-ntrip.org/home
- CAS;www.euref-ip.net;2101;EUREF-IP;BKG;0;DEU;50.12;8.69;http://www.euref-ip.net/home
- NET;EUREF;EUREF;B;N;http://www.epncb.oma.be/euref_IP;http://www.epncb.oma.be:80/stations/log/skl;http://register.rtcn-ntrip.org;none
- NET;GREF;BKG;B;Y;http://igs.bkg.bund.de;http://igs.bkg.bund.de:80/root_ftp/GREF/station/rnxskl;gref-ip@bkg.bund.de;none
- NET;Misc;BKG;B;N;http://igs.bkg.bund.de/root_ftp/NTRIP/streams/streamlist_euref-ip.htm;http://igs.bkg.bund.de:80/root_ftp/NTRIP/station/rnxskl;http://register.rtcn-ntrip.org;none
- STR;ACOR0;Coruna;RTCM 3.1;1004(1),1006(30),1008(30),1019(120);2;GPS;EUREF;ESP;43.36;351.60;0;0;LEICA GRX1200PRO;none;B;N;3000;ergnss-ip.ign.es:2101/ACOR0(1)
- STR;AJAC0;Ajaccio;RTCM 3.1;1004(1),1006(15),1008(60),1012(1),1033(60);2;GPS+GLO;EUREF;FRA;41.93;8.76;0;0;LEICA GR25;none;B;N;4000;www.igs-ip.net:2101/AJAC0(2)
- STR;ALAC0;Alicante;RTCM 3.0;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;ESP;38.34;359.52;0;0;LEICA GR10;none;B;N;5000;ergnss-ip.ign.es:2101/ALAC0(1)
- STR;ALBA0;Albacete;RTCM 3.0;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;ESP;38.98;358.14;0;0;LEICA GR10;none;B;N;5000;ergnss-ip.ign.es:2101/ALBA0(1)
- STR;ALME0;Almeria;RTCM 2.3;1(1),3(10),18(1),19(1),22(10),23(10),24(10),59(10);2;GPS;EUREF;ESP;36.85;357.54;0;0;TRIMBLE NETRS;none;B;N;4000;ergnss-ip.ign.es:2101/ALME0(1)
- STR;AUT10;Thessaloniki;RTCM 3.0;1004(1),1006(10),1008(10);2;GPS;EUREF;GRC;40.57;23.00;0;0;LEICA GRX1200PRO;none;B;N;1500;none
- STR;BELF0;Belfast;RTCM 3.1;1004(1),1006(15),1008(15),1012(1);2;GPS+GLO;EUREF;GBR;54.34;-5.55;0;0;LEICA GRX1200GPRO;none;B;N;2900;Ordnance Survey of Northern Ireland
- STR;BELL0;Bellmunt_de_Segarra;RTCM 3.0;1004(1),1005(5),1008(5);2;GPS;EUREF;ESP;41.58;1.40;0;0;TRIMBLE NETR8;none;B;N;6000;ICC Catnet
- STR;BOCHO;Bochum;RTCM 2.1;1(1),3(60),14(60),16(60),18(1),19(1);2;GPS;Misc;DEU;50.45;7.27;0;0;LEICA SR9500;none;B;N;4000;FH Bochum
- STR;BOGIO;Borowa_Gora;RTCM 3.0;1004(1),1006(10),1008(10),1012(1);2;GPS+GLO;EUREF;POL;52.48;21.04;0;0;JAVAD TRE_G3T DELTA;none;B;N;4000;IGiK
- STR;BOR10;Borowiec;RTCM 2.3;1(1),3(10),18(1),19(1),22(10);2;GPS;EUREF;POL;52.28;17.07;0;0;TRIMBLE NETRS;none;B;N;2400;SRC PAS
- STR;BORJ1;Borkum;RTCM 3.0;1004(1),1006(10),1007(10),1012(1),1019,1020;2;GPS+GLO;EUREF;DEU;53.58;6.67;0;0;JPS LEGACY;none;B;N;2400;BKG



Calling a broadcaster, the administrator gets

EUREF-IP Admin Interface - Mozilla Firefox										
Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe										
EUREF-IP Admin Interface										
www.euref-ip.net/admin?mode=sources										
/SONS0	1658489	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:39:55	193.144.251.13	6	1162	5687	43	52 minutes and 38 seconds
/CANT0	1658493	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:39:55	193.144.251.13	5	1078	4259	42	52 minutes and 38 seconds
/LPAL0	1658495	78.46.41.8	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:39:55	78.46.41.8	5	1029	4076	43	52 minutes and 38 seconds
/COBA0	1658497	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:39:55	193.144.251.13	4	561	1622	40	52 minutes and 38 seconds
/ALBA0	1658892	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	6	1102	5400	43	51 minutes and 8 seconds
/LEON0	1658893	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	5	1107	4384	41	51 minutes and 8 seconds
/CEU10	1658894	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	4	1740	6870	40	51 minutes and 8 seconds
/ACOR0	1658895	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	7	584	3450	44	51 minutes and 8 seconds
/ALME0	1658896	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	3	1774	5291	41	51 minutes and 8 seconds
/BORR0	1658897	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	7	509	2497	43	51 minutes and 8 seconds
/VALE0	1658899	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	5	1100	4367	42	51 minutes and 8 seconds
/MALL0	1658900	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	8	1083	7549	44	51 minutes and 8 seconds
/RIO10	1658901	193.144.251.13	NTRIP Caster/2.0.20 (relay)	21/May /2013:05:41:25	193.144.251.13	4	1068	3149	6	51 minutes and 8 seconds

Calling a broadcaster, the administrator gets

EUREF-IP Admin Interface - Mozilla Firefox

File Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

EUREF-IP Admin Interface

www.euref-ip.net/admin?mode=listeners

[home](#) | [statistics](#) | [sourcetable](#) | [listeners](#) | [sources](#) | [admins](#) | [settings](#)

Connected Listeners

- [Host: 212.18.21.156] [IP: 212.18.21.156] [User: tvn-de-1] [Mountpoint /HERT0] [Id: 319] [Connected for: 7 days, 21 hours, 33 minutes and 46 seconds] [Bytes written: 226907640] [Errors: 0] [User agent: NTRIP Trimble NtripClient] [Type: http client]
- [Host: 139.17.3.60] [IP: 139.17.3.60] [User: Gseis] [Mountpoint /JOZ20] [Id: 477] [Connected for: 7 days, 21 hours, 33 minutes and 42 seconds] [Bytes written: 243960249] [Errors: 0] [User agent: NTRIP ntrips/2.0.11677] [Type: http client]
- [Host: 139.17.3.60] [IP: 139.17.3.60] [User: Gseis] [Mountpoint /HOFN0] [Id: 478] [Connected for: 7 days, 21 hours, 33 minutes and 42 seconds] [Bytes written: 253437464] [Errors: 0] [User agent: NTRIP ntrips/2.0.11677] [Type: http client]
- [Host: 139.17.3.60] [IP: 139.17.3.60] [User: Gseis] [Mountpoint /HERT0] [Id: 482] [Connected for: 7 days, 21 hours, 33 minutes and 42 seconds] [Bytes written: 226906380] [Errors: 0] [User agent: NTRIP ntrips/2.0.11677] [Type: http client]
- [Host: 212.59.35.100] [IP: 212.59.35.100] [User: user4] [Mountpoint /HERT0] [Id: 532] [Connected for: 7 days, 21 hours, 33 minutes and 39 seconds] [Bytes written: 226905063] [Errors: 0] [User agent: NTRIP GNSMART] [Type: http client]
- [Host: 212.59.35.100] [IP: 212.59.35.100] [User: user4] [Mountpoint /JOZ20] [Id: 538] [Connected for: 7 days, 21 hours, 33 minutes and 39 seconds] [Bytes written: 243958893] [Errors: 0] [User agent: NTRIP GNSMART] [Type: http client]
- [Host: 212.59.35.100] [IP: 212.59.35.100] [User: user4] [Mountpoint /HOFN0] [Id: 546] [Connected for: 7 days, 21 hours, 33 minutes and 39 seconds] [Bytes written: 253435976] [Errors: 0] [User agent: NTRIP GNSMART] [Type: http client]
- [Host: 212.18.21.156] [IP: 212.18.21.156] [User: tvn-de-1] [Mountpoint /KARL1] [Id: 609] [Connected for: 7 days, 21 hours, 33 minutes and 36 seconds] [Bytes written: 229450169] [Errors: 0] [User agent: NTRIP Trimble NtripClient] [Type: http client]
- [Host: 195.37.199.220] [IP: 195.37.199.220] [User: goldan] [Mountpoint /HERT0] [Id: 735] [Connected for: 7 days, 21 hours, 33 minutes and 18 seconds] [Bytes written: 226898366] [Errors: 0] [User agent: NTRIP X-Stream/3.2.18] [Type: http client]
- [Host: 141.74.33.12] [IP: 141.74.33.12] [User: bkg] [Mountpoint /KARL1] [Id: 1001] [Connected for: 7 days, 21 hours, 32 minutes and 48 seconds] [Bytes written: 229433767] [Errors: 0] [User agent: NTRIP Caster/2.0.15] [Type: puller]
- [Host: 213.229.135.3] [IP: 213.229.135.3] [User: gmvCaster] [Mountpoint /HOFN0] [Id: 1280] [Connected for: 7 days, 21 hours, 32 minutes and 18 seconds] [Bytes written: 253406085] [Errors: 0] [User agent: NTRIP Caster/2.0.15] [Type: puller]
- [Host: 141.74.33.12] [IP: 141.74.33.12] [User: bkg] [Mountpoint /SRJV0] [Id: 179738] [Connected for: 7 days, 14 hours, 34 minutes and 41 seconds] [Bytes written: 206827303] [Errors: 0] [User agent: NTRIP Caster/2.0.15] [Type: puller]



■ On file level, the administrator gets additional information from various log files:

- **access-yymmdd.log** (Date, Time, User, IP, Station, Client, Seconds, Bytes)
- **ntripcaster-yymmdd.log** (connection information for clients and sources)
- **usage-yymmdd.log** (Bandwidth:384.416667KB/s Sources:117 Clients:857)

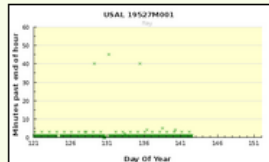
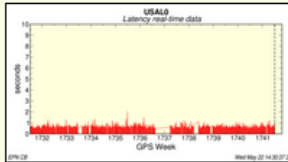


■ EPN CB is hosting several web pages

- Data access (http://www.epncb.oma.be/_networkdata/data_access/real_time/)
- Completeness of high rate files
(http://www.epncb.oma.be/_networkdata/data_access/highrate/)
- Products (http://www.epncb.oma.be/_productsservices/realtimecorrections/)

EPN CB is hosting several web pages

GNSS Data (RINEX, RTCM, ...)

DAILY	FORMAT : RINEX V2.11, 30 sec, Hatanaka compressed ACCESS : free DOWNLOAD DATA <table><tr><th colspan="8"><< < May 2013 > >></th></tr><tr><th>Wk No</th><th>Sun</th><th>Mon</th><th>Tue</th><th>Wed</th><th>Thu</th><th>Fri</th><th>Sat</th></tr><tr><td>1738</td><td></td><td></td><td></td><td>01 (121)</td><td>02 (122)</td><td>03 (123)</td><td>04 (124)</td></tr><tr><td>1739</td><td>05 (125)</td><td>06 (126)</td><td>07 (127)</td><td>08 (128)</td><td>09 (129)</td><td>10 (130)</td><td>11 (131)</td></tr><tr><td>1740</td><td>12 (132)</td><td>13 (133)</td><td>14 (134)</td><td>15 (135)</td><td>16 (136)</td><td>17 (137)</td><td>18 (138)</td></tr><tr><td>1741</td><td>19 (139)</td><td>20 (140)</td><td>21 (141)</td><td>22 (142)</td><td>23 (143)</td><td>24 (144)</td><td>25 (145)</td></tr><tr><td>1742</td><td>26 (146)</td><td>27 (147)</td><td>28 (148)</td><td>29 (149)</td><td>30 (150)</td><td>31 (151)</td><td></td></tr></table> Data available from the historical EPN data centre Data available from a Regional data centre Data only available from a Local data centre Data only available from a Global IGS data centre META DATA ERRORS Header of the RINEX observation files	<< < May 2013 > >>								Wk No	Sun	Mon	Tue	Wed	Thu	Fri	Sat	1738				01 (121)	02 (122)	03 (123)	04 (124)	1739	05 (125)	06 (126)	07 (127)	08 (128)	09 (129)	10 (130)	11 (131)	1740	12 (132)	13 (133)	14 (134)	15 (135)	16 (136)	17 (137)	18 (138)	1741	19 (139)	20 (140)	21 (141)	22 (142)	23 (143)	24 (144)	25 (145)	1742	26 (146)	27 (147)	28 (148)	29 (149)	30 (150)	31 (151)		FORMAT : RINEX V3.00, 30 sec, Hatanaka compressed (unvalidated data - download from here - , only for test purposes!) DATA CENTRES STATUS <table><tr><td>EPN (historical)</td><td>Online. No data detected for USAL since 2013/091 (50 days).</td></tr><tr><td>BKGE (secondary)</td><td>Online.</td></tr><tr><td>OLG</td><td>Online.</td></tr><tr><td>ASI (primary)</td><td>Online.</td></tr><tr><td>IGE</td><td>Online.</td></tr></table>	EPN (historical)	Online. No data detected for USAL since 2013/091 (50 days).	BKGE (secondary)	Online.	OLG	Online.	ASI (primary)	Online.	IGE	Online.
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REAL-TIME	ACCESS : free, using Ntrip AVAILABLE FROM ASI (broadcaster, registration) USALO : RTCM 3.1 (1004(1),1006(15),1008(15),1012(1),1019(120),1020(120),1033(15)) BKGE (broadcaster, registration) USALO : RTCM 3.1 (1004(1),1006(15),1008(15),1012(1),1019(120),1020(120),1033(15)) ROB (broadcaster, registration) USALO : RTCM 3.1 (1004(1),1006(15),1008(15),1012(1),1019(120),1020(120),1033(15))	DATA LATENCY 																																																																		



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- Products (http://www.epncb.oma.be/_productsservices/realtimecorrections/)

HOME

EUREF Permanent Network

ROB
GNSS Research Group

EUREF

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, ETRSS9/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](#) > [DATA ACCESS](#) > **15MIN HIGH-RATE RINEX**

The 1Hz RINEX files for 15min intervals as converted from streams are currently made available from the [EPN Regional Data Centre BKG](#) only for a guaranteed period of three months. They may be deleted at any time later without prior notice. The files are converted from streams coming either in RTCM Version 2, RTCM Version 3, or RTIGS (to be more precise: SOC) stream format. Which stream and stream conversion tool has been used is described in the RINEX headers. Because of the real-time stream conversion, the provided RINEX files may contain small gaps of a couple of seconds or even become completely unavailable because of a longer lasting communication problem.

Only C1, C2, P1, P2, L1, L2, S1, and S2 observations can be provided. Which observables become available depends on the setup of the receiver and the stream format used. Note the following specifications for the high-rate RINEX files from streams:

- (a) RINEX files from RTCM Version 2 streams are based on the message types 18 and 19 only. They do not carry signal-to-noise ratio values.
- (b) RINEX files from RTCM Version 3.x streams can only transport one code observable per frequency. The resolution of pseudo-ranges is 0.02 m. The carrier phase resolution is 0.5 mm. The signal-to-noise ratios 'S' are also logged mapped to integer numbers 1 to 9. Only the RTCM Version 3 message types 1002, 1004, 1010, and 1012 are properly converted. If a stream contains message types 1001, 1003, 1009 and 1011 where the ambiguity field is not set, the output will be no valid RINEX because all values will be stored modulo 299792.458 (speed of light).
- (c) RINEX files from RTIGS streams can not contain GLONASS or SBAS observations because RTIGS streams are based on the SOC format which does not allow the transport of observations from other systems than GPS. The pseudo-range resolution is 0.001 m and the carrier phase resolution is 0.02 mm.

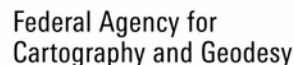
The following is a table providing information on the **completeness of 15min high-rate RINEX files** as converted from streams. Each cell covers information concerning 4 consecutive files. Hence it covers the period of one hour with a total number of 3600 epochs.

- "100%" would mean that none of the 3600 epochs is missing and hence the RINEX files which fall into that 1 hour period do not show any gap.
- "98.9%" would mean at least 1 missing epoch (but not more than 60).
- "98.1%" would mean more than 60 missing epochs.

Previous 24 hours

Next 24 hours

	146/2013 (26-05-2013)																147/2013 (27-05-2013)							
	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h
ACOR	95.7%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95.1%	95.3%	100%	100%	100%	100%	92.1%
AJAC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95.1%	95.3%	100%	100%	100%	100%	100%
ALAC	95.7%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95.6%
ALBA	95.6%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95.7%
ALME	95.7%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	92.1%
AUT1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BELF	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BELL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BGR1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Real-time on EPN CB

ZARA	95.6%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	95.6%
ZIM2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	-
ZOUF	100%	100%	100%	100%	100%	100%	99.7%	100%	100%	100%	100%	100%	100%	99.6%	100%	100%	100%	100%	100%	100%	99.7%	100%	100%	99.2%

The following table provides the mean latency of observations. Each cell covers the period of one hour with a total number of 3600 epochs.

- "1.24s" would mean that the mean latency is below 2 seconds.
- "2.32s" would mean that the mean latency is between 2 and 3 seconds.
- "7.84s" would mean that the mean latency is above 3 seconds.

	146/2013 (26-05-2013)																147/2013 (27-05-2013)							
	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h	0h	1h	2h	3h	4h	5h	6h	7h
ACOR	1.15x	0.99x	1.03x	1.07x	1.03x	1.08x	1.27x	1.01x	1.21x	1.27x	1.21x	1.11x	1.15x	1.01x	1.07x	1.13x	1.33x	0.99x	1.03x	1.03x	0.98x	1.01x	1.03x	0.98x
AJAC	1.44x	1.48x	1.62x	1.59x	1.68x	1.57x	1.54x	1.75x	1.43x	1.32x	1.35x	1.54x	1.65x	1.56x	1.73x	1.57x	1.53x	1.55x	1.60x	1.71x	1.77x	1.41x	1.33x	1.64x
ALAC	1.44x	1.57x	1.46x	1.42x	1.52x	1.35x	1.45x	1.46x	1.56x	1.32x	1.16x	1.46x	1.49x	1.39x	1.39x	1.20x	1.34x	1.51x	1.53x	1.53x	1.58x	1.25x	1.33x	1.12x
ALBA	1.31x	1.45x	1.48x	1.37x	1.42x	1.32x	1.39x	1.31x	1.47x	1.56x	1.16x	1.42x	1.42x	1.32x	1.29x	1.13x	1.28x	1.49x	1.35x	1.42x	1.39x	1.20x	1.31x	1.04x
ALME	1.16x	1.19x	1.42x	1.41x	1.46x	1.46x	1.40x	1.36x	1.27x	1.26x	1.39x	1.38x	1.41x	1.48x	1.48x	1.39x	1.47x	1.19x	1.20x	1.21x	1.31x	1.26x	1.35x	1.11x
AUT1	1.03x	0.93x	0.67x	0.68x	0.74x	0.83x	0.66x	0.84x	1.17x	0.91x	1.03x	1.34x	0.89x	0.84x	0.77x	0.68x	0.80x	0.74x	0.84x	0.75x	0.89x	0.77x	0.71x	0.69x
BELF	0.86x	0.86x	0.89x	0.98x	1.13x	0.95x	1.16x	1.09x	1.02x	0.97x	1.14x	1.09x	1.18x	1.01x	0.73x	1.08x	0.87x	0.87x	1.12x	1.08x	0.96x	0.71x	1.08x	0.91x
BELL	1.23x	0.98x	0.92x	0.98x	1.08x	1.10x	0.96x	1.15x	0.86x	1.20x	1.23x	0.95x	0.91x	0.96x	1.01x	1.16x	1.20x	1.10x	1.44x	0.96x	1.02x	1.17x	1.03x	1.21x
BOR1	1.51x	1.28x	1.32x	1.25x	1.26x	0.80x	1.10x	0.82x	0.90x	0.97x	1.14x	1.18x	0.99x	1.24x	1.25x	1.53x	1.24x	1.22x	1.06x	1.25x	1.55x	1.30x	1.37x	-
BORJ	1.50x	1.34x	1.32x	1.30x	1.30x	1.29x	1.31x	1.33x	1.32x	1.26x	1.42x	1.45x	1.40x	1.35x	1.37x	1.30x	1.33x	1.30x	1.30x	1.32x	1.29x	1.31x	1.33x	1.34x
BORR	1.69x	1.67x	1.66x	1.92x	1.71x	1.81x	1.88x	1.86x	1.97x	2.08x	2.00x	1.98x	1.86x	1.85x	1.65x	1.73x	1.63x	1.67x	1.73x	1.72x	1.70x	1.73x	1.78x	1.70x
BRST	1.17x	1.32x	1.32x	1.42x	1.36x	1.42x	1.37x	1.35x	1.42x	1.40x	1.19x	1.25x	1.38x	1.37x	1.35x	1.12x	1.25x	1.45x	1.42x	1.38x	1.39x	1.25x	1.36x	-
BRUX	1.05x	1.05x	1.07x	1.16x	1.14x	1.12x	1.10x	1.19x	1.09x	1.10x	1.16x	1.10x	1.10x	1.05x	0.88x	0.89x	1.07x	1.00x	1.13x	1.16x	1.06x	0.93x	1.02x	-
BSCN	1.71x	1.52x	1.50x	1.48x	1.79x	1.81x	1.76x	1.71x	1.48x	1.55x	1.75x	1.59x	1.69x	1.71x	1.80x	1.59x	1.83x	1.65x	1.57x	1.66x	1.75x	1.65x	1.76x	1.68x
BUCU	1.09x	1.30x	1.04x	1.32x	1.27x	1.05x	1.11x	1.64x	1.42x	1.18x	1.21x	1.45x	1.46x	1.27x	1.31x	1.23x	1.26x	1.39x	1.29x	1.28x	1.43x	1.13x	1.00x	-
BUTE	0.79x	0.83x	0.82x	0.79x	0.76x	0.75x	0.65x	1.09x	0.79x	0.84x	1.02x	1.00x	0.97x	0.82x	0.62x	0.74x	0.70x	0.92x	0.63x	0.95x	0.90x	0.66x	0.65x	0.92x
BZRG	1.06x	1.06x	0.95x	0.90x	1.10x	1.10x	1.05x	1.01x	0.91x	0.94x	0.92x	0.96x	1.04x	1.04x	1.00x	1.05x	1.06x	0.98x	1.05x	1.07x	1.11x	1.10x	1.07x	-
CACE	1.24x	1.36x	1.31x	1.32x	1.15x	1.26x	1.32x	1.23x	1.18x	1.27x	1.29x	1.23x	1.27x	1.35x	1.35x	1.41x	1.45x	1.14x	1.25x	1.21x	1.08x	1.20x	1.20x	1.35x
CAGZ	1.69x	1.61x	1.55x	1.58x	1.68x	1.65x	1.66x	1.60x	1.54x	1.51x	1.49x	1.52x	1.59x	1.61x	1.59x	1.68x	1.66x	1.62x	1.63x	1.62x	1.66x	2.13x	1.75x	-
CANT	1.19x	1.44x	1.51x	1.51x	1.46x	1.38x	1.45x	1.41x	1.51x	1.55x	1.35x	1.35x	1.38x	1.42x	1.30x	1.23x	1.22x	1.46x	1.42x	1.60x	1.50x	1.31x	1.46x	1.16x
CASC	1.34x	1.22x	0.94x	0.93x	1.04x	1.36x	1.38x	1.36x	0.93x	0.90x	1.15x	0.87x	0.99x	1.24x	1.34x	1.16x	0.96x	1.31x	0.83x	1.01x	1.36x	1.26x	1.32x	1.22x
CEU1	1.22x	1.26x	1.39x	1.29x	1.40x	1.28x	1.33x	1.27x	1.17x	1.35x	1.38x	1.31x	1.45x	1.31x	1.35x	1.45x	1.51x	1.20x	1.26x	1.48x	1.19x	1.18x	1.37x	1.07x
CFRM	0.81x	0.89x	0.86x	1.10x	1.09x	1.02x	0.81x	1.12x	1.11x	1.17x	1.22x	1.26x	1.21x	1.08x	0.89x	0.87x	0.86x	1.08x	0.94x	1.19x	1.13x	0.94x	0.98x	1.21x
CLIB	0.84x	0.92x	0.96x	1.00x	1.09x	1.00x	0.85x	1.08x	0.95x	1.14x	1.08x	1.11x	1.09x	0.84x	0.89x	0.72x	1.00x	1.00x	1.02x	1.14x	0.98x	0.91x	0.93x	1.10x
COBA	0.98x	0.96x	0.97x	1.36x	1.06x	1.22x	1.32x	1.25x	1.26x	1.36x	1.37x	1.40x	1.59x	0.96x	0.98x	1.02x	0.98x	0.95x	0.99x	1.00x	0.95x	0.98x	1.08x	0.88x
CFAR	0.80x	0.86x	1.09x	0.84x	0.88x	0.83x	1.05x	1.12x	1.20x	1.04x	1.01x	0.94x	1.09x	0.91x	0.76x	0.71x	0.87x	0.90x	0.88x	1.05x	0.76x	0.77x	0.82x	1.03x
CRAK	0.84x	0.96x	1.01x	0.95x	1.06x	0.98x	0.99x	1.10x	1.13x	1.05x	1.14x	1.09x	1.14x	1.07x	0.84x	0.81x	1.02x	1.04x	1.07x	1.09x	1.03x	0.99x	0.87x	1.08x
CREU	1.22x	1.17x	1.32x	1.29x	1.34x	1.28x	1.28x	1.32x	1.55x	1.61x	1.68x	1.72x	1.39x	1.36x	1.34x	1.26x	1.31x	0.93x	0.96x	1.20x	0.99x	1.02x	1.12x	1.05x
CTAB	0.71x	1.02x	1.09x	0.83x	0.97x	0.86x	1.07x	1.17x	1.14x	1.06x	1.11x	1.06x	1.11x	0.97x	0.78x	0.74x	0.99x	0.98x	0.96x	1.08x	0.99x	0.84x	0.86x	0.99x
DARE	1.01x	1.30x	1.14x	1.26x	1.29x	1.15x	1.37x	1.20x	1.31x	1.26x	1.30x	1.28x	1.38x	1.35x	1.05x	1.36x	1.12x	1.15x	1.40x	1.22x	1.21x	1.13x	1.31x	1.11x
DENT	2.15x	1.99x	1.84x	1.77x	1.59x	1.70x	1.83x	1.59x	1.59x	1.98x	1.60x	1.68x	1.63x	1.57x	1.97x	1.95x	2.00x	1.66x	1.73x	1.71x	1.77x	1.79x	1.58x	1.72x
DRES	1.31x	1.33x	1.29x	1.28x	1.30x	1.35x	1.33x	1.36x	1.27x	1.20x	1.35x	1.30x	1.28x	1.33x	1.31x	1.31x	1.34x	1.31x	1.29x	1.31x	1.34x	1.29x	1.33x	1.30x
EBRE	1.11x	1.30x	1.36x	1.45x	1.29x	1.41x	2.64x	1.43x	1.66x	1.76x	1.68x	1.84x	1.50x	1.31x	1.21x	1.17x	1.10x	1.00x	1.14x	1.18x	1.25x	1.08x	1.03x	-
FLRS	1.61x	1.47x	1.64x	1.25x	1.16x	1.20x	1.18x	1.88x	1.79x	1.31x	1.41x	1.61x	1.51x	1.76x	1.74x	1.67x	1.31x	1.59x	1.46x	1.62x	1.66x	1.56x	1.81x	-
FUNC	1.35x	1.36x	0.87x	0.91x	0.81x	0.83x	1.07x	1.07x	1.04x	1.02x	1.23x	0.84x	0.85x	1.04x	1.25x	1.30x	1.06x	1.08x	0.90x	0.97x	0.90x	1.17x	1.24x	-
FLUC	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	1.32x	-



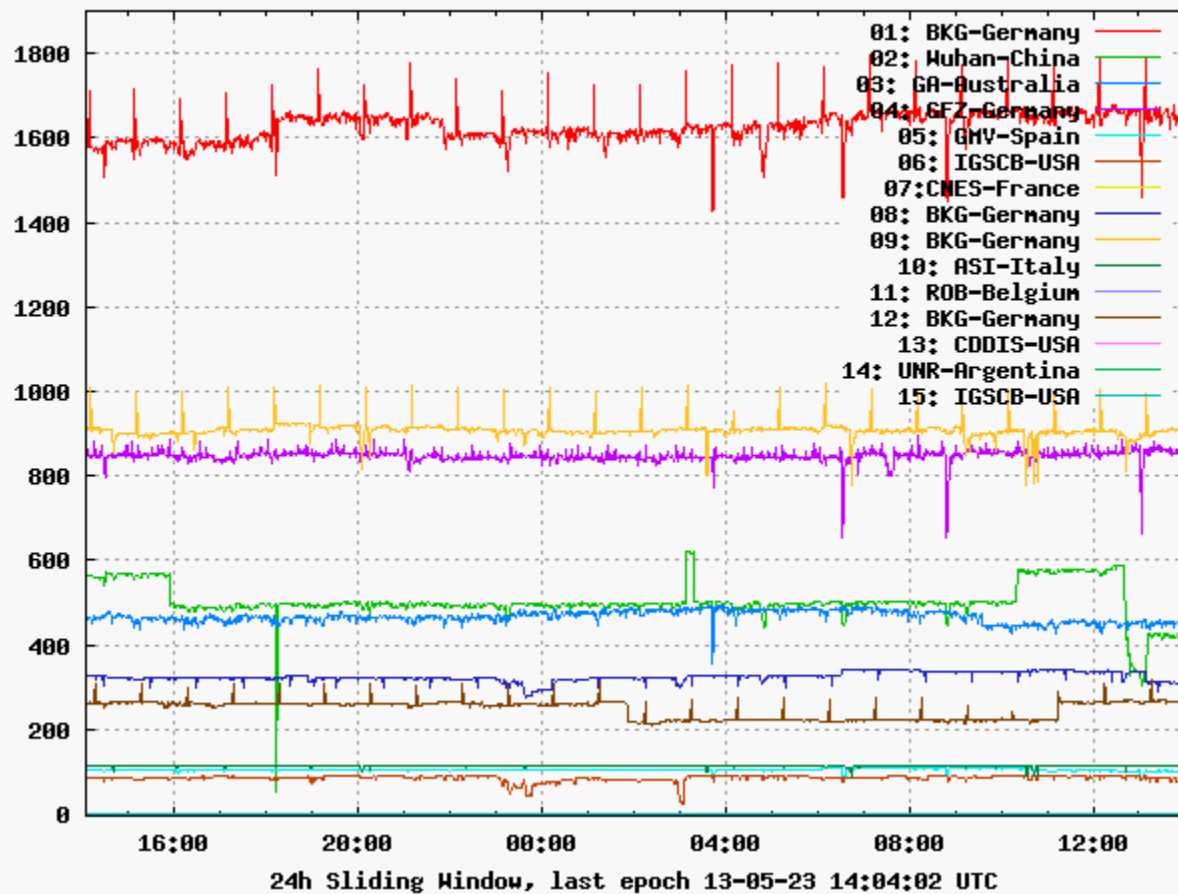
- **Monitoring of BKG broadcasters (access, usage, outages, etc.) with many scripts**

- **<http://igs.bkg.bund.de/ntrip/workload>**

- **http://igs.bkg.bund.de/root_ftp/NTRIP/documentation/DailyCasterLoadListeners.png**

- **http://igs.bkg.bund.de/root_ftp/NTRIP/documentation/DailyCasterLoadSources.png**

Listeners on Casters - (c) BKG



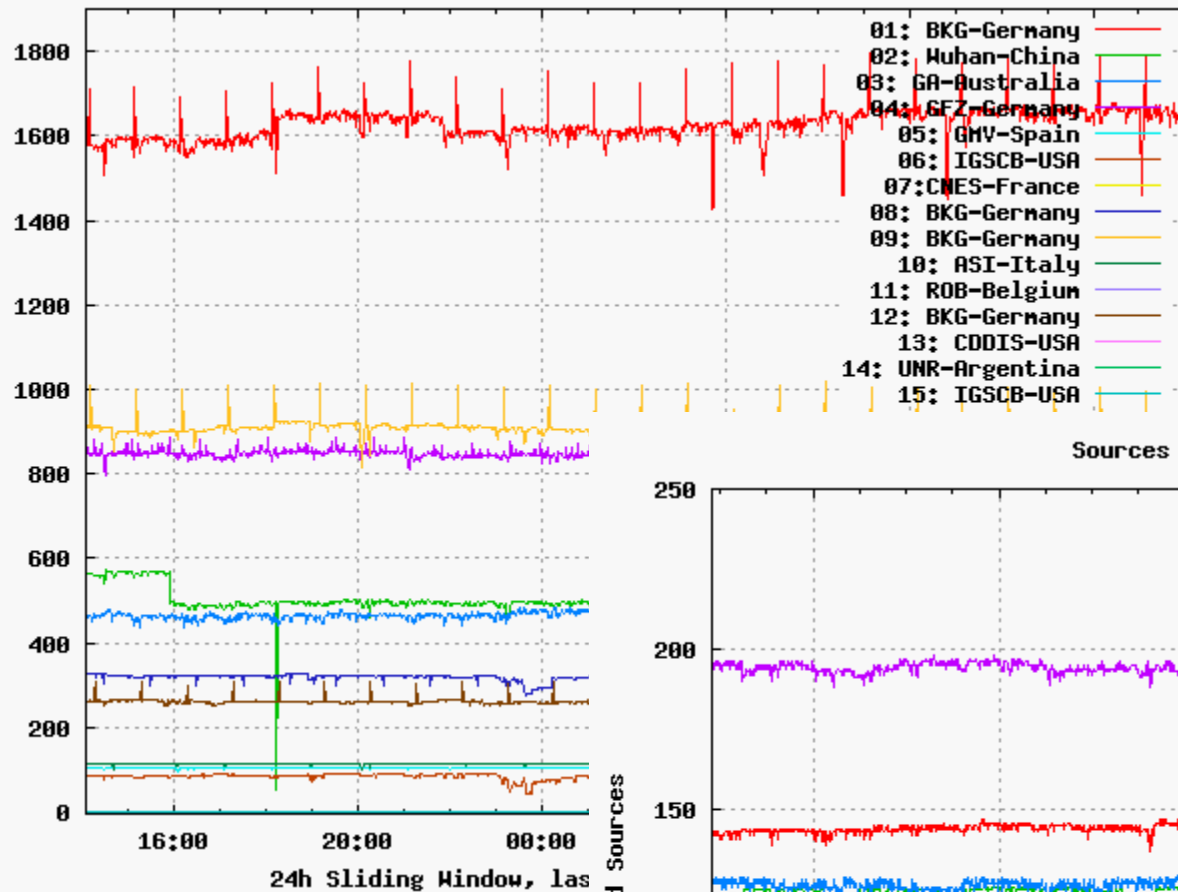
Real-time activities at BKG

etc.) with many scripts

γCasterLoadListeners.png

γCasterLoadSources.png

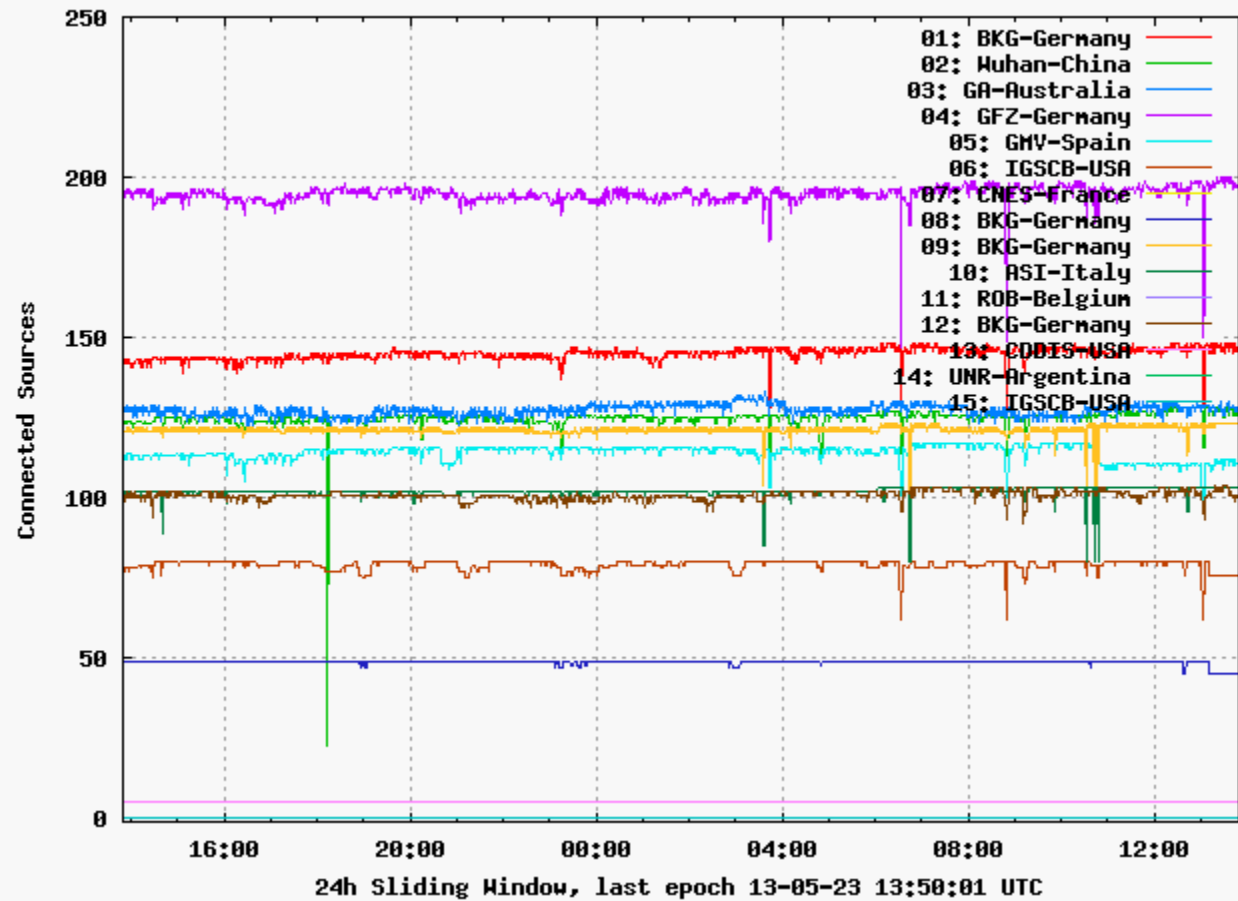
Listeners on Casters - (c) BKG



real-time activities at BKG

etc.) with many scripts

Sources on Casters - (c) BKG





- **Monitoring of BKG broadcasters (access, usage, outages, etc.) with many, many shell and perl scripts**
- **Validation of orbit&clock products with several PPP jobs using BNC (and RTKLIB and GeMon) (<http://igs.bkg.bund.de/ntrip/ppp>)**
- **New features are under development using web interfaces (NAGIOS)**



Caster-Interface - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

Caster-Interface

casters.rtcn-ntrip.org/cgi-bin/alberdingCaster.cgi?mod=Monitoring&stream=&user=&loginUser=&caster=euref-ip.net&index=1&search=&moniMod=Summary&moniTyp=

Caster-Interface

2013-05-24 10:09:08

MONITORING USERS GROUPS RETRIEVE DATA PUSH DATA MAP SOURCETABLES CONFIGURATION LOAD CONFIGURATION USER-STREAM HANDLING ERROR-LOG CASTER: EUREF-IP.NET

SUMMARY VERBOSE

Reload in: 0 day(s) 00:01:46

MONITORING

All	Offline	Online	Warning
152	29	122	1

ACORo	AJA Co	ALA Co	ALBa o	ALHEo	AUTa o	BELFo	BELL o	BOCH o	BRISo
BORa o	BORJa	BORRo	BRSTo	BRUSo	BRUJo	BSCJo	BUCKo	BUTEo	CAACo
CAACo	CAGCo	CAITo	CASCo	CEUa o	CFRJo	CLIBo	CLJa a	CHISo	COBa o
CPARo	CRaJo	CREUo	CTABo	DAREo	DEITo	DRESa	DUBRo	DVINGo	EBPEo
ERFUo	EUREFo1	EUREFo2	FFHJo	FLRSo	FUIJo	GAJa o	GAHJo	GOPEo	GRASo
GRACz	HELJa	HERTo	HOESa	HOFIJo	HUEL o	IEHJo	IGEJo	IGHJo	IIRJo
ISTa o	ICAHo	JOEHo	JOZa o	JOZJo	IAJJo	IARLa	IIRJo	IRaJo	IRAVJo
IUREo	LAGOo	LAIHa o	LEOHo	LRAJo	HOSEo	HALLa o	HALLo	HAPOo	HAPOo
IATEo	IETSo	IOPa o	IICOo	OBEJo	OLSCo	OHSAo	ORIDo	OSIEo	OSLSo
PLDOo	PLSJo	PDEL o	PEHJo	PLBJa	POTSo	REVIJo	RIOa o	ROIJa o	ROVEo
SALAo	SASSa	SCOAo	SHOEo	SISHET	SISHETo	SEJo	SODa o	SOFJo	SOHJo
SPJo o	SPTJo	SRJJo	STAJo	SULJo	SURJo	TERCo	TERJo	TESTo	TESTa
TEST2	TESTa	TLSEo	TOLJo	TORJo	TORJo	TOVEo	TRDJo	TUBJo	TUVJo
UNIPJo	UNITJo	USALo	VARa o	VALJo	VALEo	VARJo	VEHJo	VFCJo	VGOJo
VISOo	WAREo	WARHa	WAPSo	WROJo	WSRTo	VTZJo	VTZJo	VEBEo	ZARAo
ZILJo	ZOUJo								

Alberding Caster-Interface :: Alberding GmbH :: Lärzthalstraße 25 :: 32529 Schönefeld :: info@alberding.de :: +49 (0) 30 / 678 260 60