



How to configure EGNOS on your mapping/GIS receiver: step-by-step guide

ESSP SaS



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Who we are - ESSP

Who we are

European Satellite Services Provider



delivers EGNOS augmentation services 24/7



operates and maintain EGNOS system



promotes EGNOS and its applications



supports and interfaces with users



monitors & analyses EGNOS performance



supports in the development of EGNOS-based applications





What we offer? – Free GPS augmentation

What we offer

EGNOS: Free GPS augmentation

system



- the European Satellite Based Augmentation System
- provides GPS corrections
- broadcasts from GEO satellites

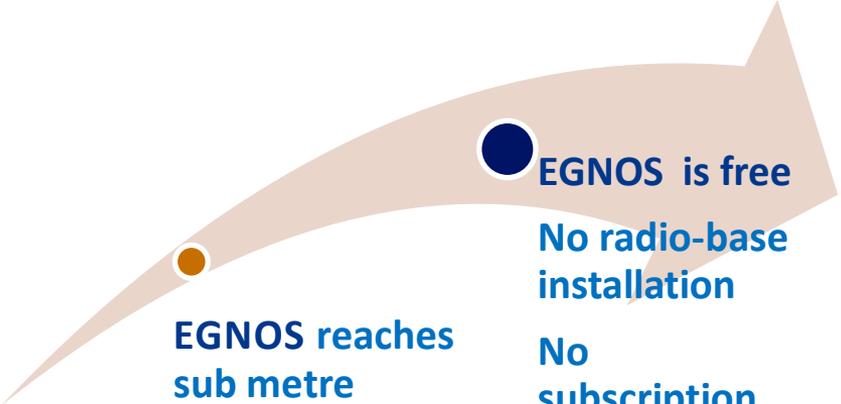
since 2009



SATELLITE based corrections

- Free of charge
- Sub-metre positioning accuracy
- Real time
- Throughout Europe

Satellite based corrections: Why choosing EGNOS OS?



EGNOS reaches
sub metre
accuracy in real
time with
negligible
convergence
time*

EGNOS is free

No radio-base
installation

No
subscription

* in comparison with PPP/RTK



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EGNOS added value in:

General mapping and basis-
accuracy cartography

GIS mapping

Large amount of points to be
referenced

Inventories over wide areas
(roads, natural parks,
municipalities)

Archeological works

Fauna and botanical species
catalogues



How to configure your GPS/SBAS receiver: step-by-step guide for selected receivers

What is a GPS/SBAS receiver?

A **GPS/SBAS** receiver is a **GPS** receiver that locks onto the **EGNOS** satellites and apply the **EGNOS** corrections to the **GPS** signal.



Example#1: Trimble R1 + ArcGIS collector.



Model

Sub-metre accuracy

Trimble R1 Receiver + ArcGIS collector

Capabilities

GNSS single frequency (L1):

- GPS, Glonass, BeiDou, Galileo, QZSS

SBAS corrections supported:

- WAAS, **EGNOS**, GAGAN, MSAS, SDCM

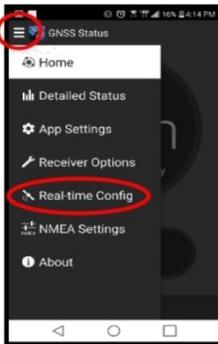
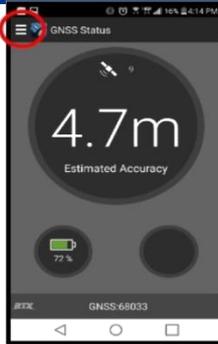


 This receiver connects wirelessly to a smart device via Bluetooth connectivity.

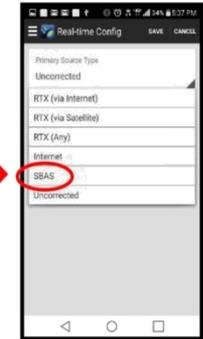


Example#1: Trimble R1 + ArcGIS collector. How to configure EGNOS OS

1. Once the App is connected to the R1 receiver, you are taken to the GNSS Status Home Screen.
2. Tap the Menu button, and chose "Real-Time Config"

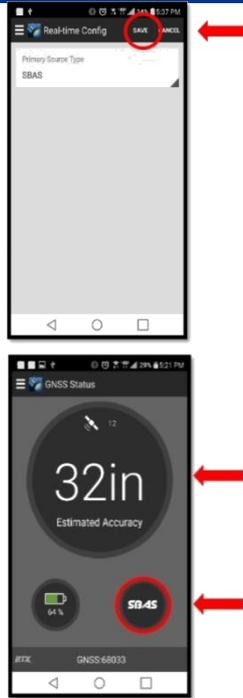


3. On Real-time Config tap "Edit" at the top right of the screen.
4. Tap the *Primary Source Type* field. Choose **SBAS**.



Example#1: Trimble R1 + ArcGIS collector. How to configure EGNOS OS

5. Tap “Save”. Then tap the Menu button and return to the Home Screen.
6. Once GNSS Status app is connected to R1 Receiver and **SBAS** service in use, you will have the word “SBAS” in the bottom right-hand circle and the **Estimated Accuracy** will drop to **< 1m**.



7. Tap home button of your device to minimize the GNSS Status (It stays running) then open the Collector App. The location Collector in use is now coming from the R1 Receiver vs the mobile devices internal receiver.



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EUROPE

Example#2: Leica Viva.



Model

Sub-metre accuracy

Viva

Capabilities

GNSS multifrequency:

- GPS (L1/L2/L5), Glonass (G1/G2/G3), BeiDou (B1/B2/B3), Galileo (E1/E5a/E5b/AltBOC/E6)

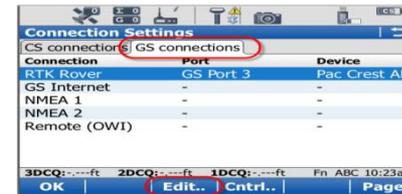
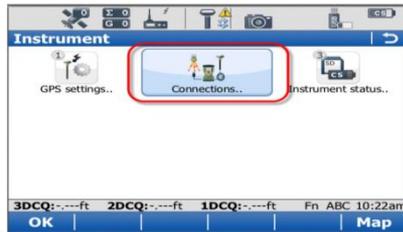
SBAS corrections supported:

- WAAS, **EGNOS**, GAGAN, MSAS



Example#2: Leica Viva. How to configure EGNOS OS

1. From main menu select *Instrument* icon and then choose *Connections*.
2. Select *All other connections* and then in *GS connections* page highlight *RTK Rover* and tap on *Edit*.
3. On the General page change the “RTK Data Format” field to “Automatic SBAS”.



Example#3: Leica GS16/ GS18.



Model

Sub-metre accuracy

Captivate: GS16/ GS18.

Capabilities

GNSS:

- GPS (L1/L2/L2C/L5), Glonass (G1/G2/G3), BeiDou (B1/B2/B3), Galileo (E1/E5a/E5B/Alt-BOC/E6)

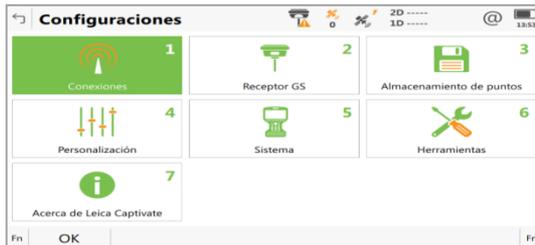
SBAS corrections supported:

- WAAS, **EGNOS**, GAGAN, MSAS



Example#3: Leica GS16/ GS18. How to configure EGNOS OS

1. Tap on *Configuration* button and then *Connections*.



2. Go to *All connections*, then *RTK Rover* and tap on *Edit*.



3. Check *Receive RTK Data* and select *Automatic SBAS*. *WAAS/EGNOS* will appear as *RTK rover* connection.



Example#4: NavCom SF-3050.



Model

Sub-metre accuracy

Model: SF-3050

Capabilities

GNSS:

- GPS (L1/L2/L5), GLONASS (G1/G2), QZSS, StarFire

SBAS corrections supported:

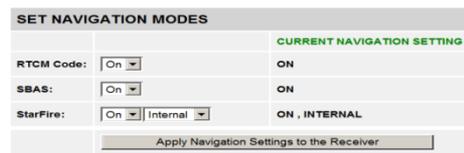
- WAAS, **EGNOS**, GAGAN, MSAS

 Basic receiver is GIS but upgradable to higher precision .



Example#4: NavCom SF-3050. How to configure EGNOS OS

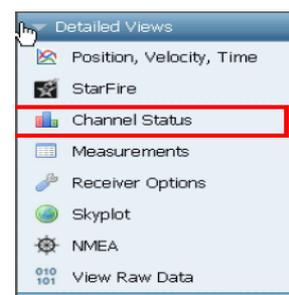
1. *Navigation Modes* provides access to settings for RTCM, SBAS and StarFire.
Activate **SBAS**.



2. *Sky Plot* displays tracked satellite locations and provides an interface to select constellations. Each satellite is displayed by color and PRN: GPS=Green, GLONASS=Grey, SBAS=Orange.



3. The SF-3050 receiver locates and tracks **SBAS** satellites at run-time, building a list of satellites that contribute to navigation solution.



CHNLSTATUS1B - GPS Constellation																											
PRN	AZ	EL	CH (L1CA)	ST	CNO	CR	AL	TM	CH (L1P)	ST	CNO	CR	AL	TM	CH (L2)	ST	CNO	CR	AL	TM	CH (L2C)	ST	CNO	CR	AL	TM	
1	202	51	8	LOCK	52.25	1	N	3	8	LOCK	51	0.94	N	3	9	COHY	47.75	0.99	N	3	-	-	-	-	-	-	-
11	245	41	4	LOCK	52.5	0.99	N	3	4	LOCK	51	0.88	N	3	5	COHY	46	1	N	3	-	-	-	-	-	-	-
14	52	26	10	LOCK	46	0.97	N	3	10	LOCK	44.5	0.75	N	3	11	COHY	40.75	1	N	3	-	-	-	-	-	-	-
20	310	29	14	LOCK	49	1	N	3	14	LOCK	48	0.8	N	3	15	COHY	42	0.98	N	3	-	-	-	-	-	-	-
22	111	22	16	LOCK	49.25	0.97	N	3	16	LOCK	48.5	0.95	N	3	17	COHY	44	1	N	3	-	-	-	-	-	-	-
23	260	15	6	LOCK	46.75	0.99	N	3	6	LOCK	44.25	0.83	N	3	7	COHY	41.25	0.97	N	3	-	-	-	-	-	-	-
25	59	10	18	LOCK	42.25	1	N	3	18	LOCK	39.25	0.41	N	3	19	COHY	37	0.9	N	3	-	-	-	-	-	-	-
30	149	13	20	LOCK	46	0.97	N	3	20	LOCK	45	0.75	N	3	21	COHY	39.25	0.92	N	3	-	-	-	-	-	-	-
31	109	71	0	LOCK	54.25	1	N	3	0	LOCK	53.25	0.82	N	3	1	COHY	50	0.99	N	3	-	-	-	-	-	-	-
32	325	54	2	LOCK	51.5	1	N	3	2	LOCK	50.25	0.91	N	3	3	COHY	48.25	0.96	N	3	-	-	-	-	-	-	-

CHNLSTATUS1B - GLONASS Constellation																										
PRN	AZ	EL	CH (G1C)	ST	CNO	CR	AL	TM	CH (G2C)	ST	CNO	CR	AL	TM	CH (G1P)	ST	CNO	CR	AL	TM	CH (G2P)	ST	CNO	CR	AL	TM
1	16	55	25	LOCK	52	0.98	N	3	40	LOCK	36	0.99	N	3	-	-	-	-	-	-	-	-	-	-	-	-
2	313	21	26	LOCK	47.75	0.99	N	3	41	LOCK	33.75	1	N	3	-	-	-	-	-	-	-	-	-	-	-	-
10	31	22	29	LOCK	47	0.98	N	3	30	LOCK	30.75	0.99	N	3	-	-	-	-	-	-	-	-	-	-	-	-
11	96	64	33	LOCK	51.75	0.99	N	3	42	LOCK	37	0.99	N	3	-	-	-	-	-	-	-	-	-	-	-	-
12	176	34	24	LOCK	51.5	1	N	3	43	LOCK	41.5	0.99	N	3	-	-	-	-	-	-	-	-	-	-	-	-
17	294	17	31	LOCK	45.5	0.99	N	3	27	LOCK	35.75	0.98	N	3	-	-	-	-	-	-	-	-	-	-	-	-
24	240	14	38	LOCK	45	0.98	N	3	39	LOCK	36	0.99	N	3	-	-	-	-	-	-	-	-	-	-	-	-

CHNLSTATUS1B - SBAS Constellation																										
PRN	AZ	EL	CH (L1CA)	ST	CNO	CR	AL	TM	CH (L1P)	ST	CNO	CR	AL	TM	CH (L2)	ST	CNO	CR	AL	TM	CH (L2C)	ST	CNO	CR	AL	TM
135	205	47	49	LOCK	53.25	0.99	N	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
138	160	48	50	LOCK	52.75	0.95	N	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Example#5: Hemisphere R330 and SX Blue.



Model **Sub-metre accuracy**

R330

Capabilities

GNSS double frequency:

- GPS (L1/L2)

SBAS corrections supported (3 channels):

- WAAS, **EGNOS**, GAGAN, MSAS



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Model **Sub-metre accuracy**

II-GNSS series

Capabilities

GNSS single frequency:

- GPS (L1), GLONASS (G1)

SBAS corrections supported (3 channels):

- WAAS, **EGNOS**, GAGAN, MSAS

ESSP-

Example#5: Hemisphere R330 and SX Blue.

How to configure EGNOS OS

1. On *RX Config* page of receiver configuration software select **SBAS** as Differential corrections source (*Diff Source*).

2. In SBAS page you can select three **SBAS** satellites for tracking. Please check [EGNOS User Support Webpage](#) to find the current PRNs broadcasting corrections

Receiver Configuration

Parameter	Current	Change
Diff Source	SBAS	SBAS
Diff Age	2700	2700
Elevation Mask	5	5
Decimal Precision		
Smoothing Time	LONG900	LONG900
Altitude Aiding Mode	NEVER (3D ONLY)	NEVER (3D ONLY)
Altitude Aiding Value		
RESID Limit	10,0	10,0
GPS Only Mode	NO	NO
Forest Mode	NO	NO
Null NMEA Mode	NO	NO
TunnelMode	NO	NO
SBAS Ranging Mode	NO	NO
Mixed Mode	NO	NO
Timekeep Mode	NO	NO
L1 Only Mode	NO	NO
Suretrack Mode	NO	NO
GGA ALL GNSS Mode	NO	NO
glotix Mode	NO	NO

Diff Source

- SBAS
- PORTA
- PORTB
- PORTC
- NONE
- BEACON
- RTK
- LBAND

SBAS

Auto Mode Manual Mode

PRN	138	133	135
Lon	120	0	0
Ele	121	46	44
Az	123	156	216
124			
125			
126			
127			

Example#5: Hemisphere R330 and SX Blue. How to configure EGNOS OS

3. On Position page SBAS will appear as Differential corrections source.

Parameter	Value	Option
Serial Port		
Date	2012/03/13	
Time	15:43:17	Local
Latitude	33 33 25.60922	DMS
Longitude	-111 53 21.23008	DMS
Height	380.521	m
Speed	0.02	m/s
Precision	0.236	CEP (50%)
COG	155.12	
HDOP	0.8	
Sats Used	12	
Diff Requested	SBAS	
Diff Used	SBAS	
Diff Status	DGPS	
Diff Age	6	
Reference ID	0	

Legend: COMMS GPS DIFF

4. In Satellites page tracked GNSS and SBAS information is shown.

GNSS Summary:

- Tracked: 15
- Abv Mask: 15
- Corrected: 14
- L1 Used: 12
- L2 Used: 0
- G1 Used: 0
- G2 Used: 0

SBAS Summary:

- Tracked: 3
- Used: 1

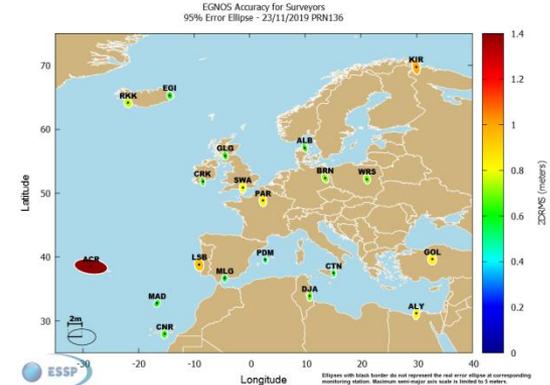
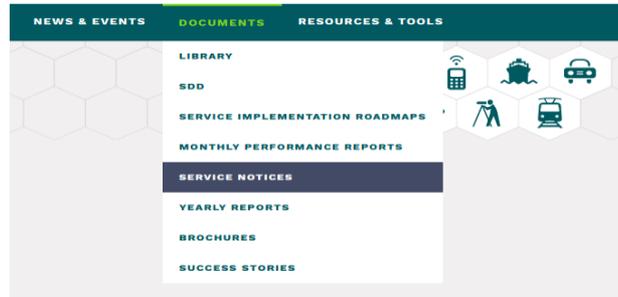
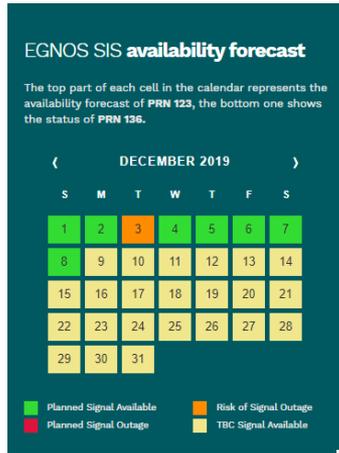
Legend: ● SBAS ● GLONASS ● Above Mask ○ Below Mask

SNR Chart Data (SV):

SV	L1 SNR	L2 SNR
3	11	11
15	17	25
16	6	13
6	13	16
18	20	30
30	9	29
9	16	22
29	18	28
21	7	10
27	12	17
26	17	24
22	18	15
138	15	18
133	15	18
135	18	18

Useful information about EGNOS

<https://egnos-user-support.essp-sas.eu>



EGNOS
EGNOS SERVICE NOTICE

Service Notice #15 EGNOS Space Segment Update - (In Force)

Service Notices | Friday, August 31, 2018

The EGNOS Service Notices are notifications published whenever there is any complementary information that could have a relevant impact in any of the EGNOS Service Definition Documents' contents. Hence, an EGNOS Service Notice is a temporal amendment to the EGNOS Service Definition Documents.

[service_notice_15.pdf](#)



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Summary

Summary

EGNOS provides free GPS corrections:

EGNOS OS is a free of charge real time SATELLITE based correction service enhancing GPS accuracy throughout Europe.

How to access EGNOS corrections:

Access to EGNOS requires a GPS/SBAS receiver.

GPS/SBAS receivers are easily configured through the display.
No registration is needed as EGNOS signal is ready to use.
Check PRN codes broadcasting EGNOS signal [in this link](#)

Disclaimer

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www.essp-sas.eu



<http://egnos-user-support.essp-sas.eu>



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Corporate Video

Thank you!