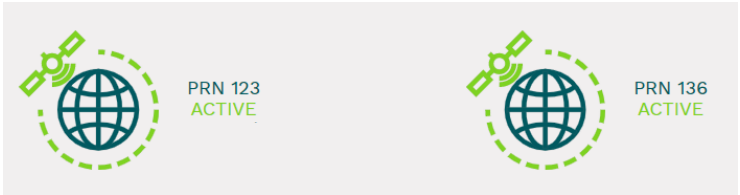
How to configure EGNOS receivers for Agriculture

ESSP

Let`s access free GPS augmentation for agriculture

Free GPS augmentation for agriculture: **EGNOS Open Service (OS)**

EGNOS is a free of charge signal provided by two **GEO satellites** (PRN123 & PRN136) available **through out Europe.**



A **GPS/SBAS** ([1]WAAS in USA) **receiver is the hardware required** to access [2]EGNOS (In Europe) augmentation signal

Detailed information about WAAS and EGNOS:

[1]https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/waas

[2]https://egnos-user-support.essp-sas.eu/new_egnos_ops/egnos-system/about-egnos

EGNOS FOR AGRICULTURE

EUSPA European Union Agency for the Space Programme

ESSP

Precise navigation, powered by Europe

What is a GPS/SBAS receiver?

- A **GPS/SBAS receiver is a device with** special software able to receive **GPS/EGNOS signals and** apply the EGNOS corrections to the GPS signal, reducing the position error.
- Almost **all commercial GPS receivers for agriculture include EGNOS** capability, although is recommended to check the specifications on your device.
- GPS/SBAS **receiver has an antenna, normally** installed on top of the **machinery roof** and a display installed in the cabin. (Next slide shows the common system setup)

Components of a **GPS/EGNOS receiver**

Picture is property of Trimble CFX-750 system

1. **Display**
2. Display mount
3. Reference guide
4. CD
5. GNSS antenna cable
6. Power bus
7. Power cable
8. **Antenna**
9. Antenna mount plate

GPS/EGNOS receivers are integrated either in the display or the antenna. Most of the manufacturers sell the display and the antenna separately

How to configure most common GPS / EGNOS market receivers

*If your receiver is not within this slides please contact EGNOS user support for more information.
https://egnos-user-support.essp-sas.eu/new_egnos_ops/helpdesk

GPS/EGNOS agriculture receiver **manufacturers : examples**

Receiver: TOPCON
AGI-4 /AGM-1 /AGS-2

Model: AGI-4/AGM-1/AGM-2

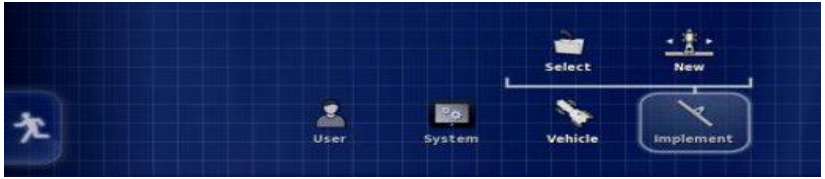
- GPS/SBAS receiver
- EGNOS OS enabled
- RTK/NTRIP module enabled integrated in the antenna AGI4/AGS-2
- X35 / X25 / X14 display
- Receivers can be used with other market ISOBUS displays






AGI-4/AGM-1/AGS-2
EGNOS OS configuration

1. After startup, the X35/25 console, main *setup screen* is shown:



2. To select the EGNOS OS corrections, tap **System** then **GPS** and then **Correction**:

3. Then, tap **GPS Correction Source**:

4. Finally, from the correction list choose: **EGNOS**

Receiver: Ag Leader Technology GPS 6000/6500/7500

Model: GPS6000/6500/7500

- EGNOS OS enabled
- RTK (A) /NTRIP (B) module
- GPS/EGNOS receiver integrated in the antenna
- Incommand displays

(A)

(B)

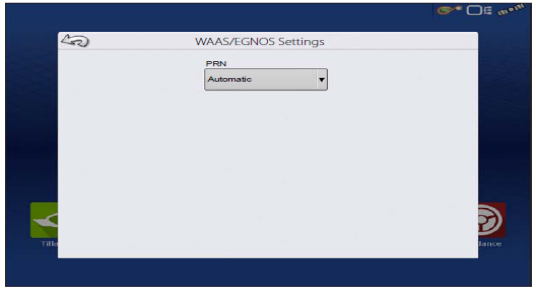
GPS6000/6500/7500
EGNOS OS configuration

1. After startup, the Incommand *homescreen* layout is shown:

2. To start the EGNOS OS setup, tap:  **Setup**

3. Then tap the following sequence of icons and select WAAS/EGNOS.

4. Then tap the system  and select AUTOMATIC to allow select the PRN automatically.



5. On the back of the antenna, the green LED blinks when SBAS is detected then it comes on solid when SBAS is enabled.

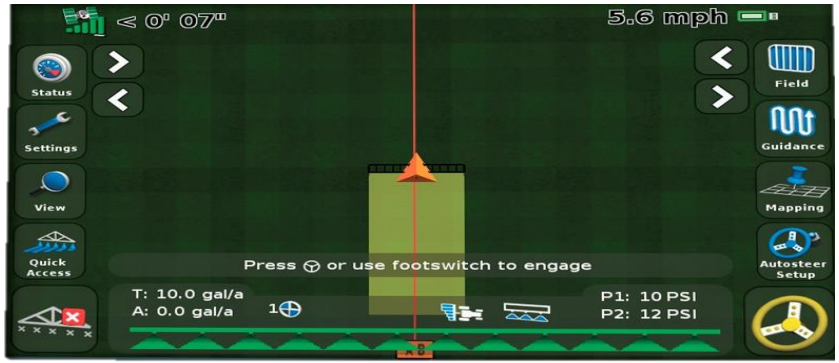
Receiver: Trimble CFX-750

Model: CFX-750

- EGNOS OS enabled
- GPS/EGNOS receiver integrated in the display
- Compatible with EZ-Steer, EZ-Pilot^{tm} or Autopilot^{tm}
- Compatible with farmStream fleet

Trimble CFX-750
EGNOS OS configuration

1. After startup, the CFX750 *guidance* screen is shown:



2. To start the EGNOS OS setup, tap: **Settings**

3. On the *Settings* screen, tap: **GNSS**

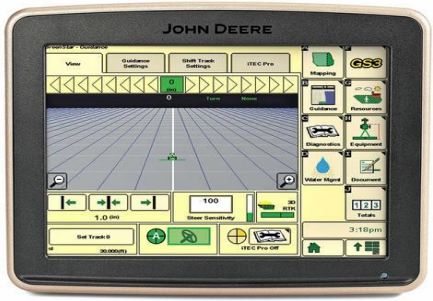
4. On the *GNSS* screen, tap **GNSS setup**.
5. Tap **GNSS Correction Source** and choose **WAAS/EGNOS**. Then tap:

6. On the *WAAS/EGNOS* screen, tap **Satellite.**
7. On the *Satellite* screen, tap the PRN currently broadcasting corrections. Then tap:

Receiver: JOHN DEERE SF 3000

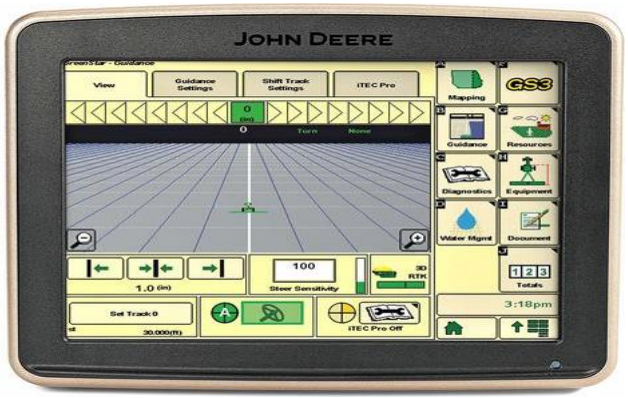
Model: StarFire 3000

- EGNOS OS enabled
- GPS/EGNOS receiver integrated in the antenna
- Greenstar 3 display



SF3000
EGNOS OS configuration

1. After startup, the Greenstar 3 display homescreen layout is shown:

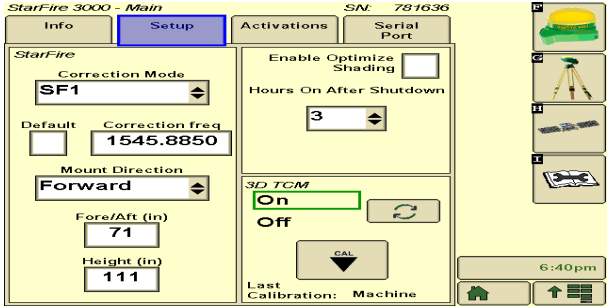


2. To start the EGNOS OS setup, tap: 

Menu

3. At the *Menu* screen, tap: 

4. Then choose the **Setup** tab and in **Correction Mode** select **OFF:**



Selecting OFF inhibits the StarFire receiver from receiving SF1 or SF2 correction signals, but it still receives WAAS/EGNOS correction signals.

Receiver: Outback GUIDANCE A631

Model: A631

- EGNOS OS enabled
- GPS/EGNOS receiver integrated in the antenna
- Rebel console
- Performance and repeatability over SBAS
- Can be used with other ISOBUS market displays

A631
EGNOS OS configuration

1. After startup, in the main menu select: **Settings > GPS Settings > Correction Type, and select SBAS**

2. To configure the SBAS operational satellites go to: **Settings > GPS Settings > SBAS Settings**

3. For each SBAS settings select **AUTO** or the specific PRN **GEO operational numbers**
(see this link for active EGNOS Geos)

3. Select save, then close the panel.
4. **The A631 is ready to use EGNOS Augmentation signal**

Receivers: TeeJet TECHNOLOGIES RX520

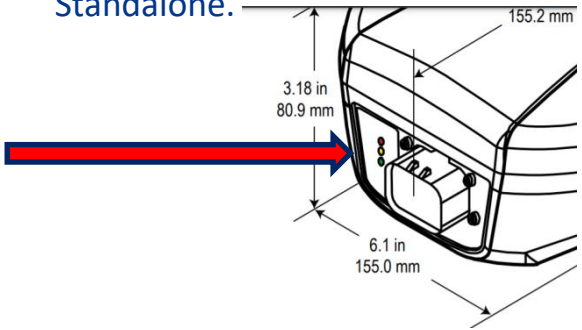
Model: RX520

- EGNOS OS enabled
- GPS/EGNOS receiver integrated in the antenna
- Any console

RX520
EGNOS OS configuration

1. The three led´s at the rear of the antenna will indicate the PVT status:
   Green, **Yellow** and **Red**

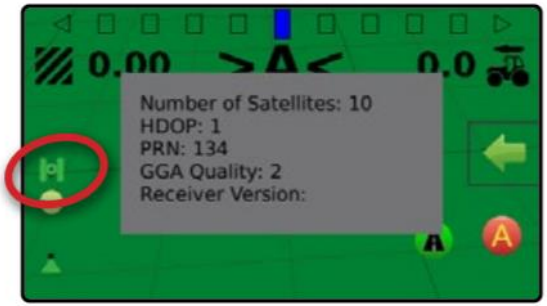
2. The RX520 will automatically use the best accuracy; first EGNOS if not GPS + GLONASS; if not GPS Standalone.



✓	Green	Position Valid
!	Yellow	Error
	Red	Power

3. Some consoles, i.e.: Matrix 430, beside the LED´s on the antenna, the display will show the best signal available used:

GNSS Status	
	Red = no GNSS
	GPS only
	Green = DGPS



4. When satellite icon is green, the antenna is using EGNOS signal

Receivers: HEXAGON T1 & T5

Model: T1 & T5

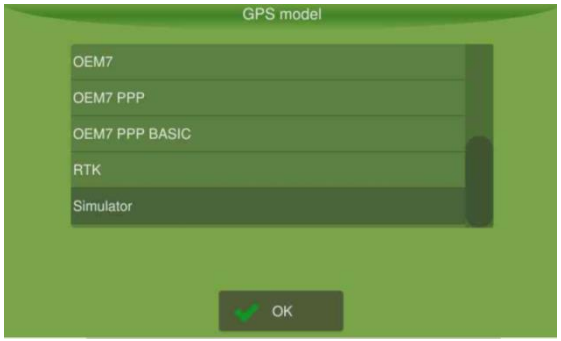
- EGNOS OS enabled
- GPS/EGNOS nmea input available
- Any receiver with ISOBUS or NMEA output
- ISOBUS

T1 & T5
EGNOS OS configuration

1. Once the device is on, configure the GNSS settings: **Configuration > GNSS Config.** In **PORT** select where is the GNSS signal coming from **Internal** or **External**.

2. Select the **Model** of the receiver on your device. The model provides L1+SBAS;
   - **Novatel SBAS**: L1+SBAS
   - **OEM7 SBAS**: L1+ SBAS

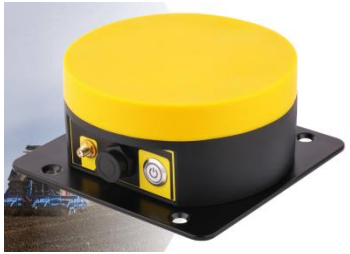
3. System is ready to use EGNOS signal



Receivers: FieldBee precision for every farmer L1

Model: L1

- EGNOS OS enabled
- GPS/EGNOS integrated in the antenna
- Any Wi-Fi console can get connection with L1 receiver
- Fieldbee APP runs on android devices

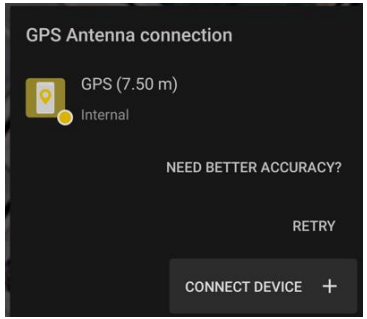


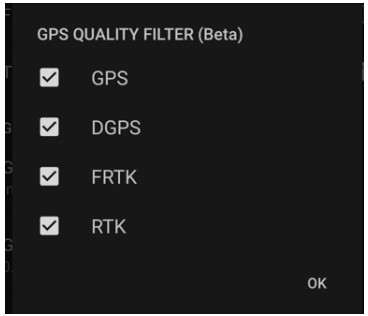
L1
EGNOS OS configuration

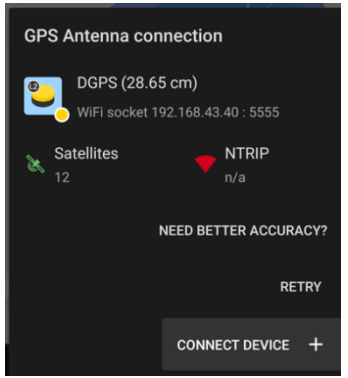
1. Download **Fieldbee App** from Play store.
2. Open the app. After create the Wi-Fi connection let the device obtain PVT from GPS.
3. Go to **settings > need better accuracy** and select **GPS** and **DGPS** from the menu. **Select OK**

Note: If FRTK and RTK are selected it will not work unless RTK/Ntrip signal are configured.

4. The app will automatically set the best available accuracy; first RTK/NTRIP, if not, EGNOS, then GPS + GLONASS; if not GPS Standalone. If no RTK/Ntrip is selected the Fielbee receiver will start to use EGNOS signal and will show the horizontal Position Error.
5. System is ready to use EGNOS signal.







Consoles certified with ISOBUS

1. *What is it?* Is a standard communication protocol that interconnects several certified equipment to use different functionalities. I.e., The PVT geolocation from the receiver.
2. Certified ISOBUS receivers have TC-GEO in order to apply automatically EGNOS correction signal to the console.

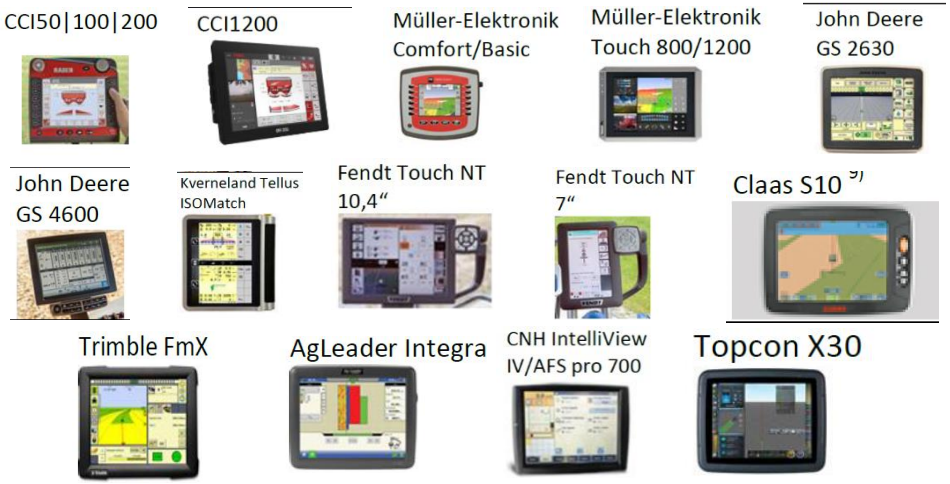
TC-GEO – Task Controller geo-based (variables)

Additional capability of acquiring location-based data – or planning of location-based jobs, as for example by means of application maps.

TC-GEO

AEF

2. Most of the medium-high price market receivers are ISOBUS compatible. It means it can be connected to any certified isobus console in order to apply EGNOS signal.



Summary

Summary

How to access to EGNOS corrections for agriculture:

To use EGNOS signal the receiver must be GPS/SBAS capable

A wide variety of manufacturers offers GPS/EGNOS capable receivers

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 operational signal and do not hesitate to contact EGNOS support in this link**

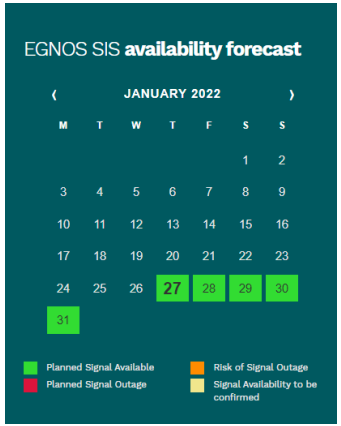
Summary

EGNOS & EDAS[1] provide free GPS Augmentation corrections for agriculture:

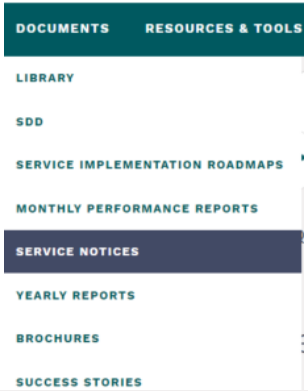
EGNOS OS is a free of charge real time SATELLITE based correction servicie enhacina GPS acorace (<30cm pass-to-pass) for agriculture throughout Europe

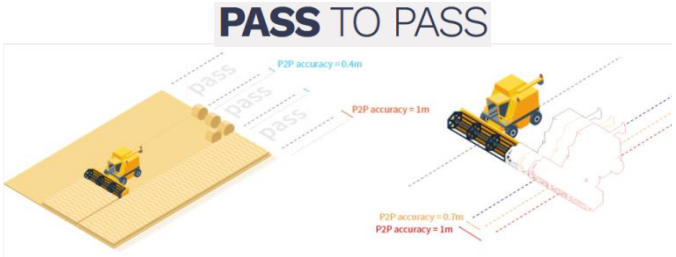
1. The EGNOS Data Access Service (EDAS) offers ground-based access to EGNOS data through the Internet https://egnos-user-support.essp-sas.eu/new_egnos_ops/services/about-edas

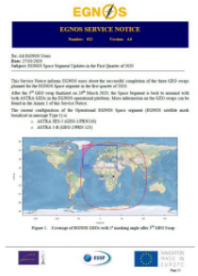
Useful information about EGNOS



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





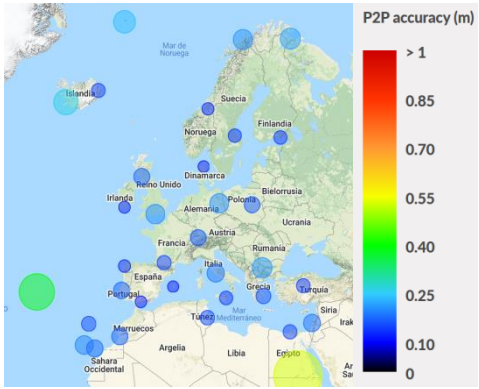


Service Notice #22 EGNOS Space Segment Updates in the First Quarter of 2020 - (In Force)

Service Notices | Friday, March 27, 2020

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 ammendment to the EGNOS Service Definition Documents.

service_notice_22.pdf



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Corporate Video

Thank you!