

How to: Enable Your Geode GNS2 or GNS3 to use SouthPAN SBAS Service

This guide is intended for users who wish to utilize SouthPAN, a Satellite-Based Augmentation System (SBAS) capability provided by Geoscience Australia and Toitū Te Whenua Land Information New Zealand, on their Geode GNS receiver.

1. Download one of the following Geode Connect utility software options. Screenshots in this guide are from the iPhone/iPad app, but the other app versions have a very similar user interface.

<u>Note</u>: there has been reported issues of inconsistent SouthPAN corrections when configuring a Geode with Microsoft Windows software. Users are advised to configure their Geode receivers with the mobile app.

- a. Geode Connect app for iPhone and iPad from the Apple App Store
- b. Geode Connect app for Android from Google Play Store
- c. <u>Geode Connect for Microsoft Windows PC</u>
- 2. Connect with your Geode receiver from the Geode Connect app
 - a. Ensure your smartphone or laptop's Bluetooth is enabled. If this is your first time connecting with your specific device, click **Discover Nearby Devices** at the bottom of the screen. Note that if you are using the Windows PC application, you may need to add your Geode from your computer's Bluetooth setting first. Additionally, make sure that your Geode is only attempting to connect to one instance of Geode Connect (e.g., if you are using the mobile app, make sure that your PC isn't also trying to connect via Bluetooth).

< Back	Connect Device				
Select a c	Select a device below to connect (pull refresh)				
8 G	Seode 02285				
	Discover Nearby Devices				



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- b. In the **Select An Accessory** dialog, select your Geode device based on the serial number. Your Geode receiver's serial number is located on the bottom of the receiver.
- c. On the Connect Device page, select your Geode device to connect
- d. Once pairing is successful, a green banner will appear showing that Bluetooth configuration is successful. You can now use the Geode Connect app to modify your Geode receiver's configurations. The top of your Geode Connect screen will also display your Geode's serial number.

Bluetooth Configuration Successful Successfully configured Geode on port 302285					
👬 Latitude	Longitude				
-	-				
II Altitude	Estimated Horizontal Error				
-	-				
👯 Fix Info	Speed				
-	-				
Heading	Satellites In Fix				
-	0/34				
PDOP	Correction Type				
-	-				
Home Skyplot Po	ints Terminal More				

Your Geode receiver's Bluetooth icon light will also turn on and stay solid blue once paired succesfully with Geode Connect





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- 3. Review SBAS settings
 - a. Click on the **More** tab at the lower right corner of the screen. If using Geode Connect on a Windows PC, click on the triple line tab icon at the top left of the screen.

g	Geode 302285
\oslash	Preferences
Ð	Connect Device
\$ <u>}</u>	Receiver Configuration
Ģ	Help/Feedback
í	About



b. Click on Receiver Configurations -> Advanced

K Back C	onfigurations	Save
GSV GNSS satellites in view		
RMC Recommended minimum	specific GNSS data	
RRE Range residual message		
VTG Course over ground and	ground speed	
ZDA UTC time and date inform	nation	
Enable and disable the ava	ilable NMEA sentences	
Update Rate	1 hz	ection/port
Advanced		>
NTRIP Configuratio	n	>



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c. Scroll down to SBAS section

<	Configurations Advanced Save
	SBAS
	Auto
	Sets the SBAS satellite signal to use for an SBAS corrected solution. Default is Auto. Auto Auto-tune mode to set the appropriate SBAS PRNs based on the autonomous GPS position (Default)
	EGNOS European Geostationary Navigation Overlay Service (Europe SBAS): PRN 136,123,126
	GAGAN GPS Aided GEO Augmented Navigation (India SBAS): PRN 127,128,132
	MSAS MTSAT Satellite Augmentation System (Japan SBAS): PRN 129,137,139
	SDCM System for Differential Correction and Monitoring (Russia SBAS): PRN 125,140,141
	SouthPAN Southern Positioning Augmentation Network (Australia and New Zealand SBAS): PRN 122
	WAAS Wide Area Augmentation System (North America SBAS): PRN 131,135,133
	None SBAS corrections disabled

d. The default setting is Auto, which will select an SBAS satellite signal based on the GNSS position. This section also lists the description of all the available SBAS options and their respective PRN (Pseudo Random Noise) numbers. Clicking on the orange-outlined button will display all the SBAS services available. To change the SBAS service, click on the desired service to use. Click **Done** to close the options, and click **Save** on the upper right hand corner of the screen to save your configuration changes.



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Configure	ations	Advanc	ed		Save
NMEA Pred	cision				
7					
Specify the nun GNS messages	nber of dec	imal places to	o output in	the GGA	, GLL, and
Mask Angle	e				
10					
Sets the elevation	on mask ar	ngle cutoff for	the receiv	/er	
Any satellites below this mask angle cutor for the receiver Selectable value of 0 to 59 degrees. The default angle is 5° as satellites below this angle may have significant tropospheric error					available. ° as c error
*SBAS					5
*SBAS		SouthPr	AN		ŝ
*SBAS Sets the SBAS s Default is Auto. Auto Auto-tune autonomous GP	satellite sig mode to se	SouthP/	AN an SBAS (riate SBAS	corrected PRNs ba	solution.
*SBAS Sets the SBAS i Default is Auto. Auto Auto-tune autonomous GP EGNOS Europei SBAS): PNN 136	satellite sig mode to se 'S position an Geostati 5,123,126	SouthP/ nal to use for at the approp (Default) onary Naviga	AN an SBAS o riate SBAS tion Overla	corrected i PRNs ba ay Service	solution. ased on the e (Europe
*SBAS Sets the SBAS : Default is Auto. Auto Auto-tune autonomous GP EGNOS Europei SBAS): PRN 136 Cancel	satellite sig mode to sr S position an Geostati 5,123,126	SouthP/ nal to use for et the approp (Default) onary Naviga	AN an SBAS of riate SBAS tion Overla	corrected ; PRNs ba ay Service	solution. sed on the e (Europe Done
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*SBAS Sets the SBAS : Default is Auto. Auto Auto-tune autonomous GP EGNOS Europer SBAS): PRN 136 Cancel	satellite sig mode to s S position an Geostati 5,123,126	SouthP/ nal to use for t the approp (Default) onary Naviga	an SBAS (riate SBAS tion Overla	corrected : PRNs ba	solution. sed on the e (Europe
*SBAS Sets the SBAS to Default is Auto. Auto Auto-tune autonomous GP EGNOS Europet SBAS): PRN 130 Cancel	mode to se position an Geostati 3,123,126	SouthP/ nal to use for to the approp (Default) onary Naviga MSAS SDCN	AN an SBAS of riate SBAS tion Overla tion Overla A	orrected PRNs ba	solution. esed on the e (Europe
*SBAS Sets the SBAS s Default is Auto. Auto Auto-tune autonomous GP EGNOS Europes SBAS): PRN 136 Cancel	satellite sig mode to se S position an Geostati 5,123,126	SouthP/ nal to use for et the approp (Default) onary Naviga onary Naviga SDCN SouthP	AN an SBAS (riate SBAS tion Overla tion Overla A A AN	corrected PRNs ba	solution. sed on the a (Europe Done
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Usually, the Auto selection is sufficient because the various SBAS services cover different geographical areas. However, if the Geode is not automatically getting quality 2 in SouthPAN region, you may manually change the setting to SouthPAN. By doing so, SBAS will **only** work in the Australia/New Zealand region.

Note that the Auto selection is not recommended in regions where SBAS coverage overlaps because the receiver may jump back and forth between two different services. Switching between different reference datum may cause significant error between points of data.

There is no overlap in the Australia/New Zealand region. If you plan to use your Geode in another country, be sure to change your Geode's SBAS setting back to Auto or the appropriate service.

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If you purchased your Geode receiver through SonTek, there is no need to change other configurations in order for your Geode to work with your ADCP.

- 4. Alternate option- send direct commands via the terminal
 - a. Click on the Terminal icon at the bottom to access the terminal page, which displays the live NMEA sentences the Geode is receiving
 - b. Click **Send Command**. Note that you can click **Show Logging** to hide the live NMEA sentences

Timestamps	Pause
\$GLGSV3.3.09.87.07.241 1*4E \$GAGSV2.1.08.01.16.21.2,07.31.050.061 \$GAGSV2.2.08.21.16.2.07.26.54.221.27.3 \$GAGSV2.2.08.21.63.207.26.54.221.27.3 \$GAGSV2.2.08.21.63.207.26.54.221.27.3 \$GAGSV2.2.08.21.63.207.26.54.221.27.3 \$GAGSV2.1.08.01.76.25.097.211.20.194.25 \$GPGGSM	28,099,13,17,164,1*7E 36,039,30,06,035,1*7D 12,14,143,214,43,000,1*72 11,157,.09,01,105,1*67 12,355,142,2039,1*6D 5,143,204,4224,1*61 *6C 8,029,16,12,53,021,1*7A 8,028,24,51,188,1*79 38,039,30,60,635,1*7D 12,14,143,214,43,000,1*72 11,157,.09,01,105,1*67 12,145,142,5039,1*6D 5,143,204,224,1*61 *6C 14,255,021,1*7A 18,028,72,53,021,1*7A 18,028,72,53,021,1*7A 18,028,72,53,021,1*7A 18,028,72,53,021,1*7A 18,028,72,53,021,1*7A 18,028,72,53,021,1*7A
Show logging Show/Hide NMEA string visibility in ter	minal
Send custom Displays a prompt to allow entry of a c	ustom ASCII/Binary
JSHOW Show the current receiver configuration	ns
Cancel Command	Clear
n % 9	



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9 23%	Geode 302285	
Timestam	ips	Pause
\$GLGSV,3,3,09,87,07, \$GAGSV,2,1,08,01,16, \$GAGSV,2,2,08,21,63, \$GBGSV,1,1,04,205,25 \$GPGGT,,*57 \$GPGGA,,0 M M \$GPGAS	2411*4E 21207.31.05008,08,099, 20726,34,221,.27,58,039, 5,097211.20,194212.14,1	,13,17,164,,1*7E ,30,06,035,,1*7D 43,,214,43,000,,1*72
SGPVTG,,T	Send Command	
SGPRMC, V SGPGSV,4, SGPGSV,4, SGPGSV,4, SGPGSV,4, SGLGSV,3, SGLGSV,3, SGLGSV,3,	put a command to send the receiver and	*67 *60 *61 *7A *79
\$GLGSV,3,3 \$GAGSV,2, \$GAGSV,2,2, \$GBGSV,1,1,04,205,25 \$GBGSV,1,1,04,205,25	ncel Se	nd *7E .1*7D 43,,214,43,000,,1*72
\$GPGGA,,0,,M,,M, \$GPGNS,,N,,U*7 \$GPVTG,,T,,M,,N,,K,N \$GPRMC,,V,N,U*	*66 A *2C *2A	
\$GPGSA,M,1, \$GPGSV,4,1,14,02,06, \$GPGSV,4,2,14,11,35, \$GPGSV,4,3,14,15,11, \$GPGSV,4,4,14,24,21,	,1*0F 283,,05,64,330,,06,11,157,, 199,,12,16,210,,13,21,355,, 331,,17,15,102,,19,25,143,, 278,,30,03,036,,1*6C	09,01,105,,1*67 ,14,25,039,,1*6D ,20,84,224,,1*61

c. Click Send Custom. In the entry, type in \$JWAASPRN, 122

d. Send the command. When the Geode accepts the command, it will respond with \$>. If you send the \$JWAASPRN command, the terminal will respond with the current PRN code value. If you manually navigate to the SBAS setting under Receiver Configurations, the SBAS setting will also be updated to reflect the direct command



Now your Geode is ready to receive SBAS corrections from SouthPAN in the Australia and New Zealand region. If you plan to use your Geode in another region, be sure to change your SBAS setting back to Auto, or a specific SBAS provider if you will be in a region where SBAS service coverage overlaps. If you have questions or need assistance, please reach out to the SonTek technical support team at support@sontek.com.