

## Free maps for your Garmin Edge

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Eleven years ago I did the personal computer equivalent of cutting the cord: I dumped the Windows operating system and replaced it with the free and open-source Linux Mint. Since then, I've had no regrets, although I've had to deal with the occasional inconvenience of not being able to run a necessary piece of software on my computer.

Like *Garmin Express*.

About every six months, Garmin updates the routable maps for their Garmin Edge GPS cycling computers. Unfortunately, the only way you can get those maps onto your Edge is by using *Garmin Express* which, even more unfortunately for me and other Linux users, is only available in Windows and MacOS versions. As I've suggested several times to Garmin support, the company could solve this problem easily by letting registered owners of their devices download the maps directly from the company's servers to their PCs and then transfer them to their Garmin device, but so far they have been unwilling to do this.

Then I made an important discovery: I don't even *need* the Garmin maps. In fact, the "Garmin" maps are actually routable OpenStreetMap (OSM) extracts, versions of which are freely available from a number of websites.

Incidentally, what I'm about to tell you is useful even if *Garmin Express* does run on your computer. For example, if you're planning a cycling tour abroad, you can get maps of the countries you're visiting for free instead of buying them from Garmin. Even if you're not planning to go abroad, you can load customized maps onto your Edge device that are more up-to-date, give you more detail than the official Garmin maps, and even take up less storage on your Edge, leaving more room for things like course and activity files.

Before I go on, a caveat: I am NOT a Garmin expert. The information I give you here is based on my own personal experience with a Garmin Edge 830 and on what I've learned from several websites. However, as far as I know, none of what I'm about to tell you will void the warranty on your Garmin Edge.

There are a number of websites that offer routable OSM extracts for download, including [BBBike](#), [OpenTopoMap](#), [GMapTool](#), [OpenMapChest](#) and others. Although the maps are free, all of these sites, which are maintained by volunteers, welcome donations. The best site -- by far, in my opinion -- is [BBBike](#). This is where I get the routable maps for my Edge 830, and is the site I will be using in my examples. It is better than the other sites because of the large variety of map formats available, and because it gives you the ability to customize the size and shape of the region you want your map to cover.

After clicking the [BBBike](#) link you are taken to a welcome page. A popup screen tells you most of what you need to know to create and extract a custom map. Basically, you move the screen to the desired region; zoom out or in, depending on the size of the area you want to extract; select a format; click the "Here" button to create a bounding box; click to create additional buttons to change the shape and size of the area, enter your email address and click "extract". After a few minutes you'll receive an email giving you a link to click to start your download.

However, there are a few things you need to watch out for. To select a format, click on the drop-down list at the top of the page, and go down to the "Garmin" header, under which you'll see a list of about 20 formats, half followed by "(latin 1)" and the other half by "(UTF-8)". You DO NOT want any of the UTF-8 formats. Several years ago, as part of a botched anti-piracy effort, Garmin changed the firmware on their Edge devices so they would not display non-Garmin maps with Unicode. This was an error -- it is NOT illegal to load Unicode-based maps on a Garmin device -- but Garmin hasn't been in any hurry to fix the error. On the other hand, this is not a serious drawback. It just means that if you're biking in a country like Greece or Israel that doesn't use the Latin alphabet, street names on your Garmin device will be spelled out in Latin letters instead of Greek or Hebrew characters -- and usually these countries include the Latin spelling under the native spelling on their street signs anyway.

When you highlight a format, an example of the map will appear below. My personal preference is *Garmin Openfietsmap Full (latin 1)* ("Fiets" is Dutch for bicycle). It is the most detailed map and is especially helpful if your cycling route takes you through cities and towns. As you move and resize the bounding box, the area to the right of the drop-down list and text boxes will display the approximate size of the zip file to be downloaded (a warning message will appear if your download exceeds the size limit) and the time required to extract it. You then enter a name for the area to extract and your email address. Give it a unique descriptive name; in my case I used "midatlantic".

When you get your email, just click on the link provided to download the file to your computer. Notice that I said *computer*, NOT your Garmin Edge. Create a directory on your computer and download the *.zip* file to that directory. Using your favorite archiving tool (e.g. *7-zip*) unzip it into its own subdirectory. The subdirectory should have the following files:

- basecamp-macros.sh
- CHECKSUM.txt
- gmapsupp.img
- logfile.txt
- README.html
- README.txt

The only file you need to worry about is *gmapsupp.img*. This is the one you will copy onto your Garmin Edge -- but not just yet.

Now, connect your Garmin Edge *via* USB cable to your computer. Your computer will "see" the Garmin Edge as an external storage device. If you have a Garmin Edge with a microSD card, it may, depending on your operating system and Garmin Edge model, see it as two devices or two volumes. Since my Edge doesn't have an SD card slot, I can't tell you much about that except what I have read on line. More on that below.

When you open your Garmin Edge in a file manager or explorer, you'll see a directory or folder named *Garmin*. Before going any farther, you should back up this directory to your computer. Actually, you should do this even if you are updating your maps through *Garmin Express*. You always want to leave yourself a path back to where you started in case something goes wrong. If you have a microSD card, you may have a *Garmin* directory on it, too. If not, create one and give it the name *Garmin* with the "G" capitalized.

Next, you need to check how much free storage you have available on your Edge. It should be enough to accommodate your downloaded map plus your Courses, Activities and other files you want to keep. If not, you're going to have to delete one or more files -- *but make sure you've backed them up first!*

Garmin repeatedly warns users: "If you do not know the purpose of a file, do not delete it." (However, nowhere in their manuals or on-line documentation do they tell you the purpose of the files.) Map files all have the suffix *.img*. By convention, *.img* has been used to mean a disk image file -- a file that is to be burned onto a CD or DVD. However, Garmin uses this suffix for map files. The Garmin-provided map files on my Edge 830, along with their descriptions, are:

D7786080A.img	GARMIN Cycle Map NA, Middle America
D9946010A.img	GARMIN Cycle Map NA, Canada/Alaska
gmapbmap.img	GARMIN AMR Standard Autoroute Basemap, NR
gmapdem.img	GARMIN DEM Map North America
gmapgc.img	GARMIN Geocode Map North America
gmapprom.img	GARMIN Cycle Map NA, US
gmapprom2.img	GARMIN Trailforks
gmaptz.img	GARMIN Time Zone Map

Some of these files are quite large. If you don't have enough free storage to accommodate the *gmapsupp.img* file you downloaded, you're going to have to delete one or more of these files. If you are replacing, rather than supplementing, a map Garmin has installed on your Edge, the map being replaced is a definite candidate for deletion -- even if you don't delete it, you'll have to disable it (more on that below).

The three *Cycle Maps* (US, Middle America, Canada/Alaska) are the actual routable maps. If you're doing all of your riding locally -- *i.e.*, in the lower 48 states -- you are using *gmapprom.img*; the other two can be deleted or disabled with no problems. The *DEM* (digital elevation model) is really only needed if you want your display to show contour lines. I have contour lines turned off on my Edge, and Climb Pro works just fine with or without *DEM* enabled when I'm using *.fit* files exported from RideWithGPS. The *Geocode* file is for navigating to specific addresses. The keypad on my Edge display is so tiny that this feature is basically useless to me. *Trailforks* is for mountain bikers, and is useful only if you have a Trailforks account, the Trailforks app installed on your smart phone, and an active Bluetooth connection -- which will quickly drain the batteries on both your phone and your Edge. I don't use this feature, either.

You may notice some additional files having the same name as the map files, but with suffixes like *.sum*, *.unl* and *.gma*. The *.sum* files are checksums to assure file integrity during map updates. The *.unl* and *.gma* files are DRM (digital rights management -- *.unl* stands for "unlock" and *.gma* stands for "garmin map activation") files needed to use the Garmin-supplied maps. (You don't need DRM files to use the OpenStreetMap files downloaded from BBBike.org or other OSM websites.) You may also notice some *.unl* and *.gma* files that don't have *.img* files associated with them. I have no idea what these are for. I suspect they are orphaned files from earlier versions of the Alaska/Canada and Central America maps that have been replaced. They don't take up much storage, so you may as well just leave them there.

I had plenty of free storage available on my Edge 830, so I didn't have to delete any of the Garmin-supplied maps. However, if you need to free up some space, just delete *gmapprom.img* (assuming this is the one you're replacing). You can free up even more space by deleting *gmapdem.img* and substituting a DEM map from BBBike that covers the same area as your downloaded main map. To do this, open the email with the link to your downloaded map. Go down to the line that begins with "Script URL:" followed by a very long link. Click on the link. This will take you to the download page, with the area covered by the main map already selected. Click on the "Format" drop-down list and go down to the heading "Contours (SRTM)" (*SRTM* stands for Shuttle Radar Topography Mission). Select *SRTM World Contours Garmin (40m)*. Since this covers the same area as the main map, I just left the area name "midatlantic" in place. Enter your email address and wait for the download. When you get the .zip file, unzip it into its own directory. The files will have the same name as your first download. You will have to change the name of *gmapsupp.img* so it won't conflict with the *gmapsupp.img* file from your first download when you copy it to your Garmin Edge. I just changed mine to *gmapsupp1.img*.

Now, copy *gmapsupp.img* to the *Garmin* directory on your Garmin Edge. (If your Edge has a microSD card and you're short on internal storage, you can copy it to the *Garmin* directory on the card.) If you downloaded the *SRTM* map, copy that one over, too (after first making sure you have changed its name from *gmapsupp*).

Once the maps are copied over, safely disconnect your Garmin device from your computer. Turn on your Edge if it is not already on. If you have a touchscreen Edge, tap on the three bars at the bottom of the screen (≡) then select **Activity Profiles>ROAD>Navigation>Map>Map Information (Select Map)**. If you don't have a touchscreen, select **Menu>Settings** then follow the same path.

You'll see a scrollable list of maps, beginning with *AMR Standard Basemap, NR*, each preceded by the word *Enabled* or *Disabled*. At this point, all of your Garmin-provided maps will be enabled, while any custom .img maps you copied into your Edge will probably be disabled. If one of the maps you copied onto your Edge covers ANY of the area covered by one of the Garmin maps, YOU MUST DISABLE THAT GARMIN MAP. For example, my "midatlantic" map, shown in the list as *midatlantic openfietsfull/latin1 BBBike...* covers some of the same area covered by *Garmin Cycle Map NA, US...*. To disable the Garmin map, select it and then select "Disable", then select your custom map and select "Enable". Having two maps that cover the same area may confuse your Edge and result in unpredictable behavior. Because I installed the OSM *SRTM* map on my Edge, I also disabled *Garmin DEM Map North America...* and enabled *midatlantic SRTM/ASCII BBBike.org...*

Actually, I went even farther than that. I wanted so see which Garmin maps were absolutely essential, so I disabled ALL of them. And guess what? Everything worked perfectly without any of the Garmin maps. Garmin support tells users not to delete *AMR Standard Basemap, NR*. This is a barebones map of North America that only has interstates and other major highways on it -- in other words, roads cyclists never ride on -- so it doesn't appear to be very useful. Apparently, the reason Garmin says not to delete it is that during updates through *Garmin Express* it won't be reinstalled on your Edge. However, if you've backed up your *Garmin* directory, you can just copy it back to your Edge if you need it. Personally, I've found that disabling it makes no difference in the functioning of my Edge.

I've also found that *Garmin Geocode Map North America..* is not necessary. With just *openfietsfull* enabled, I've been able to find the shortest route back to the ride start, get directions to the nearest Sheetz, and even get directions to a specific street address (using a stylus while

sitting at my desk -- the keypad on the Edge screen is just too tiny to be useful on the road), although the latter function works a little differently than it does with Garmin geocode enabled.

Likewise the Garmin-provided time zone map, *gmaptz.img*, which I believe is for displaying local time instead of GMT. It doesn't show up in the list of maps under **Map Information** (neither does the Trailforks map, *gmapprom2.img*), so you can't disable it. But you can delete it, which I did, and found that my Edge continued to display local time with only *openfietsfull* enabled. Apparently, *openfietsfull* incorporates Geocode and time zone information, but I can't say this with certainty about other OSM formats.

I've been using OSM extracts from BBBike.org for almost two years now with no problems -- or, at least no problems that I don't also get using the supplied Garmin maps. If you've been using a Garmin Edge for awhile, you no doubt know that it sometimes gets road names wrong (so does RideWithGPS). Because Garmin uses OSM, your Edge most likely will get the same road names wrong if you're using an OSM extract downloaded from BBBike.org or one of the other websites mentioned above. The same goes for the location of points of interest. For example, the search function on my Edge places the Myersville, MD, Volunteer Fire Department on top of Cove Mountain west of Mercersburg PA (with no road access!) no matter what maps I'm using. OpenStreetMap is maintained by hundreds of thousands of users worldwide, and some of them are bound to make mistakes.

Still, anything the Edge will do using the Garmin-supplied maps, it will also do using OpenStreetMap extracts from BBBike -- and it will do some things better. Not only can you get more detailed maps customized for your needs, but the maps are updated weekly, whereas Garmin maps are updated twice a year.