

TreeSoft DEM_2_SRTM

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DEM_2_SRTM was written by Paul Rowntree, who retains all copyright control over the program and its sources. Although Rowntree believes it works well, no guarantees are given for its use in any application.

Change Log

February 2013	- First release version written
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Disclaimer

By downloading, installing and using this program you are accepting full responsibility for any and all consequences. CNC machinery is potentially dangerous, and the user is 100% responsible for ensuring that the output of **Topo** is safe to use on any CNC equipment, and that it will have the desired effects.

As always with CNC equipment, think many times before running code, and doing air cuts is often a good idea with new files. In Mach3, verify the Z limits of the loaded files before cutting to ensure that you are not going to destroy your table top, or spindle, or both.

Play safely.

What is DEM_2_SRTM ?

DEM_2_SRTM is a program that reads binary elevation data in Digital Elevation Model format (DEM) and outputs 2000 individual files that resemble the standard SRTM files used by **Topo** and **BigTopo**. The DEM data was measured by the SRTM shuttle mission STS-99 in 2000, and is combined with other data sources called GTOPO30. It extends all around the world, but the files for the Antarctica region have a different structure and cannot be loaded by **DEM_2_SRTM**. The data in the DEM files, and the SRTM-30 files that this program creates, have data points separated by ~1 km. The elevation resolution is 1m in all files. Each of the standard DEM files covers 50 degrees of latitude, and 40 degrees of longitude.

These DEM data files are free downloads from http://dds.cr.usgs.gov/srtm/version2_1/SRTM30, but notice that they are in separate directories for each region. The regions are named by the North-West corner of the map (unlike the standard SRTM-1 and SRTM-3, which are labeled by the South-West corner). Another difference is that SRTM30 filenames start with the Longitude, while SRTM-1 and SRTM-3 names start with the Latitude. **DEM_2_SRTM** takes care of this stuff. An example is the W60N40 dataset, which covers W60 to W20, N40 to S10. Each directory has a lot of supporting files, but the only one you need is the AxxxByy.DEM.ZIP. You should get one of these now.

DEM_2_SRTM will read the DEM file, verify that it is structured correctly, and will produce the sub files and save them where you need them for use.

DEM_2_SRTM is part of the **Topo Package**, which is a free download from PaulRowntree.weebly.com. It may be used for any personal and commercial applications, although Rowntree accepts no responsibility

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for its use or misuse. If you feel that the **Topo/BigTopo/DEM_2_SRTM** package is worthy of your support, donations from the web site will be gratefully accepted. These donations also demonstrate community interest, and encourage further developments and updates. Donations of \$25 or more will remove the NagScreen, and you will be informed directly of updates.

Using DEM_2_SRTM

The **Topo** download package includes the Windows executable files (Topo.exe, BigTopo.exe, DEM_2_SRTM.exe), the three 'Manuals', and some raw data files to get started with. It does not include any DEM files, so you will have to get them yourself. All files are in a standard ZIP file, which can be extracted into the directory of your choice using WinZip (commercial program)7-ZIP (free program). Please do a virus scan on the downloaded ZIP file and the unzipped contents before running **DEM_2_SRTM**. There is no installation per se, and when you are done with the program you can simply delete the files. There are no Windows registry entries to worry about.

I suggest that you create sub-directories SRTM_1, SRTM_3, SRTM_30 and DEM within the directory that you use for **Topo/BigTopo**. These are the names that **BigTopo** expects to find. A possible structure would be as shown below in this table.

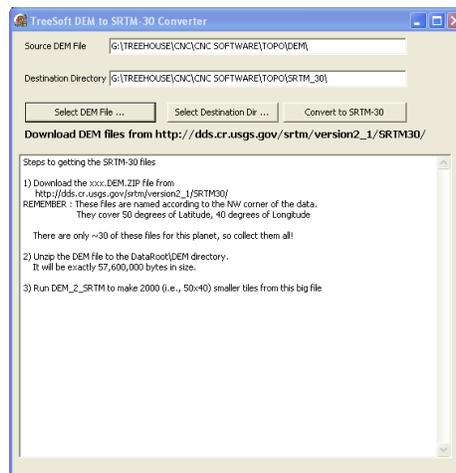
Windows Path	Function and Contents
C:\TreeSoft\Topo\	this is the DataRoot, The Topo Package is easiest to use if Topo.exe , BigTopo.exe , DEM_2_SRTM.exe are installed here
C:\TreeSoft\Topo\DEM\	this is where the ~56MB DEM files go e.g., e140s10.DEM for New Zealand
C:\TreeSoft\Topo\SRTM_1\	this is for the ~25MB SRTM-1 files (continental US only) e.g., N46W123.hgt for Mount St. Helens (Washington State)
C:\TreeSoft\Topo\SRTM_3\	this is for the ~2.9 MB SRTM-3 files (available for most land areas) e.g., N44W081.hgt for Christian Island (Georgian Bay, Ontario)
C:\TreeSoft\Topo\SRTM_30\	this is for the ~29 KB SRTM-30 files (created from DEM files by DEM_2_SRTM) e.g., N19W156.hgt for part of Hawaii

While the **BigTopo** and **DEM_2_SRTM** don't *have* to be installed in the DataRoot directory, it is easier if they are. If they aren't there, you will need to use command-line arguments and Desktop shortcuts to tell the codes where to find the data. For example, if you have the above structure for the data files, but have installed the executable files (**Topo.exe**, **BigTopo.exe** and **DEM_2_SRTM.exe**) into c:\exe, then run **DEM_2_SRTM** using the command line or shortcut

```
C:\exe\DEM_2_SRTM.exe DataRoot="C:\TreeSoft\Topo\"
```

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When ready to go, run **DEM_2_SRTM.exe**, and you should see a screen that looks like this. The text box gives the steps involved in using the program, so look it over.



The topmost edit field points to the DEM file (already unzipped) that you want to use, and the second edit field is the directory that you want to put the SRTM-30 files into.

When the program runs, you have to pick the DEM file you want. Press the ‘Select DEM File’ button, and pick the file you want. The text box will show the checks on the DEM file, and if the file is good, it will load it into memory. Now pick where you want the SRTM-30 files to go, normally DataRoot\SRTM_30, since that is where **BigTopo** will look for them. If the destination directory does not exist, **DEM_2_SRTM** will give you the chance to create it.

If all looks good, press the ‘Convert to SRTM-30’ button, and watch the text box. It will fill up with the descriptions of each sub file that it creates, including the Z range. For ocean areas, there will be a lot of Z=0 to Z=0 regions. Each DEM file produces 2000 SRTM-30 files, named and constructed so that **Topo** and **BigTopo** can use them.

2000 files are a lot of files, and if you decompose multiple DEM files into one SRTM_30 subdirectory, it is going to get big very quickly. Don’t worry, Windows XP and later, with the FAT32 and NTFS file structures, will handle thousands and thousands of files in one directory; just avoid the FAT file systems of some SD cards and USB drives.

Making the SRTM-30 files is very fast (faster than it takes Windows to erase them, for example). If you need to recover the disk space, just blast the entire SRTM_30 directory, and regenerate the files with **DEM_2_SRTM** when you need it. That is why the DEM files are stored in a separate directory, DataRoot\DEM.

Tips for Using DEM_2_SRTM

There really aren’t any tips. It just works, so you don’t have to (as much).

Cheers!

PR