Downloading Digital Elevation Models with fetch_dem

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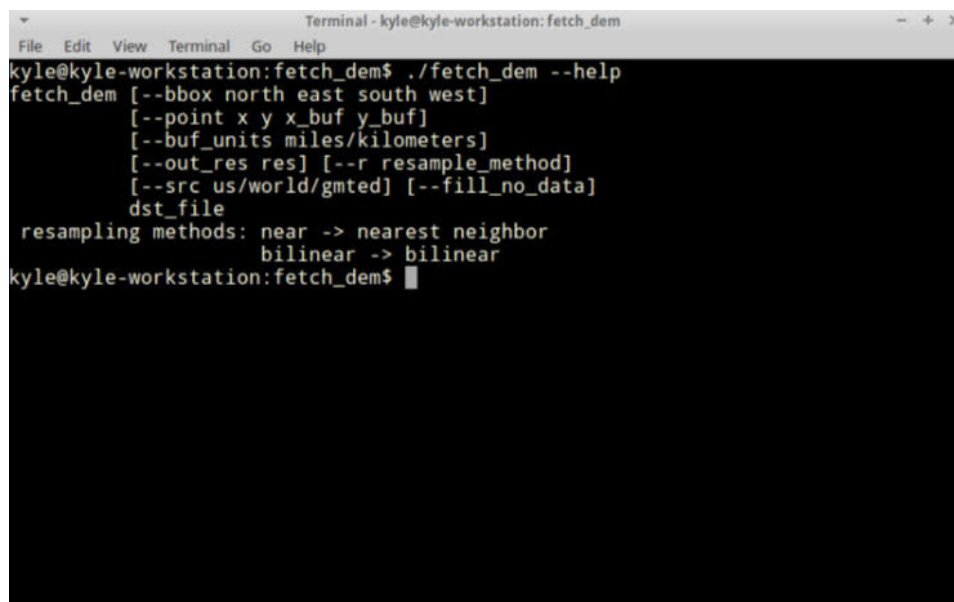June 5, 2024

1 Introduction

WindNinja is now distributed with a simple command line client to download digital elevation models (DEM) from the Internet. This application may be useful for programmers and advanced users to automate tasks and model runs using a command line and scripting. Most standard users **will not** use this tool, and will instead use the graphic user interface (GUI) version, which is described here. This command line client downloads geotiff elevation files from a USGS server. The command line tool is called `fetch_dem.exe` and is located in `C://.../WindNinja/WindNinja-2.x.x/bin/`.

2 Available options

The available options with descriptions can be viewed by typing:

`fetch_dem --help`

A list of the available options should be shown and look similar to:

Figure 1: fetch_dem help message

3 Required arguments

There are three two different ways to specify the area to download. They are:

Argument	Note
`--bbox`	a user specified bounding box in latitude and longitude in north, east, south, west order.
`--point`	a user specified point with a user specified buffer
`--geocode`	a user specified placename with a user specified buffer

Examples of each are below.

This example will download a DEM that falls within the bounds of the box provided.
`fetch_dem --bbox 47 -113.5 46.5 -113.75 --src gmted my_dem.tif`

This example will download a 10x14 kilometer DEM with a center point at the specified latitude and longitude. The values entered for the DEM size are the "buffer" size, which is the distance from the DEM center to the edge in the east-west and north-south directions. So this is half the total size in each direction (so 5 and 7 for this example). Note the order of all parameters are always specified in (x, y), so it would be longitude, latitude, east-west buffer size, north-south buffer size:
`fetch_dem --point -113.5 47.0 5 7 --buf_units km --src world my_dem.tif`

This example will download a 20x20 mile DEM with the center at Mackay, ID. It also uses the "buffer" convention:
`fetch_dem --geocode ''Mackay, ID'' 10 10 --buf_units miles --src us new_mackay.tif`
Note the quoted placename.

Other arguments are listed below:

Command	Valid options	Default	Notes
`--buf_units`	miles, kilometers	None	needed for point and geocode methods.
`--out_res`	positive integer	30	desired output resolution in meters
`--r`	near, bilinear	near	Method used to resample the original data
`--src`	us, world, gmted	None	The data source to extract DEM data from. The world is 30 m resolution (the GL1 product) SRTM data, respectively. GMTED is 250m global data.
`--fill_no_data`	true, false	false	fill in the missing values (mostly for SRTM shadows). This should be used in most cases.
`dst_file`	filename	None	file name to write DEM data.

DEM files are always saved in best fit UTM zone with a WGS84 datum. They are geotiff files.