This dataset contains data and scripts used in the associated PhD thesis to investigate fault roughness along the Campo Felice fault in the Italian Apennines.

The data folder contains fault surface scans taken in 14 locations along the fault, and one scan of the length of the fault - more details on the data in each folder below.

The scripts folder contains matlab scripts required to process and analyse the surface roughness and its fractal properties.

This folder also contains an 'example' folder, to show how each script runs. More details on the scripts below, and help for each function gives detailed information.

The data in this database have been contributed by L. Gregory, L. Wedmore, A. Hooper, H. Goodall, J. Woodman, M. Wilkinson, and K.J.W. McCaffrey.

The 'wholefault' data set only contains the processed scan. Please contact M. Wilkinson (see publication below) if the raw fault scan is required.

Wilkinson, M, Roberts, G.P., McCaffrey, K., Cowie, P.A.,Faure Walker, J.P., Papanikolaou, I., Phillips, R.J., Michetti, A.M., Vittori, E., Gregory, L., Wedmore, L., Watson, Z.K.,

Slip distributions on active normal faults measured from LiDAR and field mapping of geomorphic offsets: an example from L'Aquila, Italy, and implications for modelling seismic moment release

Geomorphology, 237, 2015, https://doi.org/10.1016/j.geomorph.2014.04.026

Content of data zip container

Each folder (A to N) contains data taken at each scan site.

Each folder contains:

- A photograph of the scan location (.jpg)

- A GPS location of the site in UTM, Zone 33 T (.txt)

- Raw laser scan(s), either a terrestrial laser scan (TLS) or laser profilometer (LP) (.txt)

- Processed laser scan, ready for use with scripts found in the 'scripts' folder (.grd)

- Image of the processed laser scan (.png)

- Average point spacing used in the gridding - required for script 'do_fft.m' (.txt)

- Upper wavenumber cutoff in parallel direction - required for script 'do_fft.m' (.txt)

- Upper wavenumber cutoff in perpendicular direction - required for script 'do_fft.m' (.txt)

Note that Site D and J also each have three laser profilometer (LP) scans, and associated files.

And each file in a folder has a prefix saying which site it's taken at, i.e. all the data in the 'A' folder will begin 'siteA'

The 'wholefault' data set only contains the processed scan. Please contact M. Wilkinson (see publication below) if the raw fault scan is required.

Wilkinson, M, Roberts, G.P., McCaffrey, K., Cowie, P.A.,Faure Walker, J.P., Papanikolaou, I., Phillips, R.J., Michetti, A.M., Vittori, E., Gregory, L., Wedmore, L., Watson, Z.K.,

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Content of scripts zip container

This folder contains the scripts used to process a raw laser scan and compute fourier transform.

The contents of this folder are:

- first_orientate_fault.m (matlab script)

- second_orientate_to_groove.m (matlab script)

- third_grid_pointcloud.m (matlab script)

- fourth_final_clean.m (matlab script)

- do_fft.m (matlab script)

- Example (folder). This is a folder of an example scan and intermediates produced, ready for use with the above scripts.

- mbin (folder). These are additional sub-functions required to run the above scripts.

Each script has its own description that can be read by typing

    help name_of_sript.m

in the matlab terminal.