



MATTERCLIFF - SOFTWARE FOR THE ANALYSIS OF SPATIAL DISTRIBUTION OF DISCONTINUITIES IN CLIFFS

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MATTERCLIFF is a freeware software program providing simple new tools for geometrical characterization of discontinuity sets and rock slopes stability analysis. This software is a multiple-document application composed of six modules which performs:

- (1) Digitization of discontinuities from pictures or outcrop sketches that allows the automatic characterization of their average spacing. This value is obtained by using a sampling window, rectangular or otherwise. Estimates of persistence and spacing are performed by various methods. Spacing can also be calculated by drawing scanlines through the window. Results are exported to the module described on point 2.
- (2) Statistical analysis of spatial distribution of discontinuity sets using spacing histograms and variograms. The apparent spacing can be converted to true spacing.
- (3) Stereographic representation of structural data. This tool allows the representation of wedges on a Wulff or Schmidt stereonet.
- (4) Simple geomechanical models (plane failure and wedge failure).
- (5) Angle conversions, dip-direction to x-y-z coordinates, transformation and opposite, intersection of planes, angles between planes or axes.
- (6) Average volume estimates generated by 2 or 3 discontinuity sets, using spacing distribution, or density of intersection and connectivity of 2 or 3 discontinuity sets.

As rock instabilities are caused mainly by discontinuities, this software provides new tools for the interpretation of field observations necessary for the detection of rock instability. Results can be used to estimate density of discontinuity sets on topographic surfaces, leading to a pre-zoning of rockfall hazard. This computer program can be freely downloaded from: <http://www.crealp.ch/download/>