

Dips 6.0

Graphical & Statistical Analysis of Orientation Data

rocs science software tools for rock and soil

Dips is designed for the interactive analysis of orientation based geological data. The program is capable of many applications and is designed for the novice or occasional user, and for the accomplished user of stereographic projection who wishes to utilize more advanced tools in the analysis of geological data.

Input Data

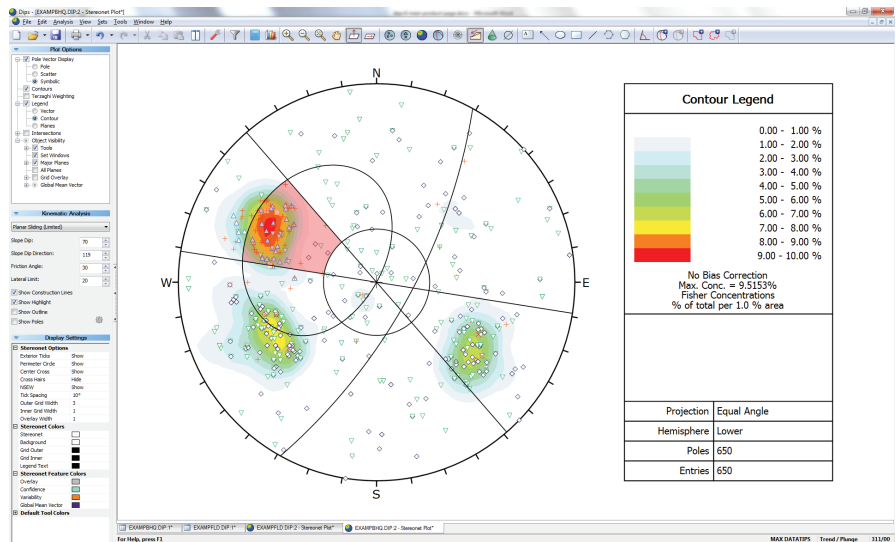
Orientation data can be entered in several common formats – dip/dip direction or strike/dip (planar data), trend/plunge (linear data), or oriented core. Mixed orientation formats can be included within a single *Dips* file. Extra columns allow you to record any additional qualitative or quantitative information, with convenient spreadsheet entry and unlimited file size.

Stereonet Plots

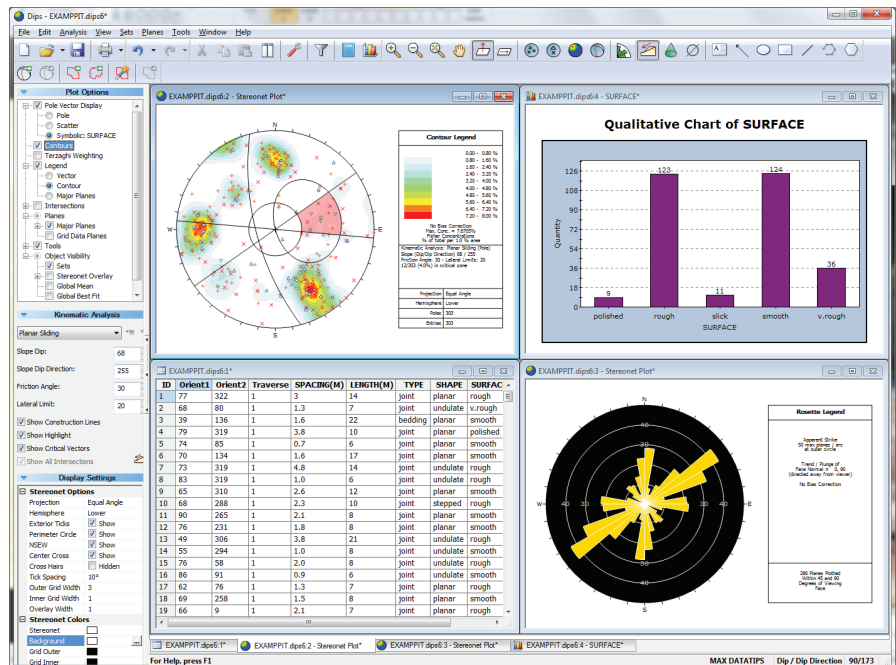
Stereonet plots include pole, scatter, contour and planes plots. Contour plots provide statistical contours of orientation clustering. Symbolic pole plots are used for feature attribute analysis. User defined set windows allow the selection of orientation clusters on the stereonet. Joint sets can also be determined from cluster analysis. Mean orientations are calculated and set statistics such as confidence and variability cones can be displayed.

Kinematic Analysis

For rock slope stability analysis, *Dips* includes a comprehensive kinematic analysis toolkit for quick evaluation of planar sliding, wedge sliding, flexural toppling and direct toppling. Input the slope orientation and friction angle, and *Dips* will automatically display an interactive overlay for the chosen failure mode. The number of poles within critical regions will be highlighted and a complete analysis report can be generated. For safety factor analysis joints can be exported to *Swedge* or *Unwedge*.



Kinematic analysis, planar sliding using pole vectors, daylight envelope, 30 degree friction angle, 70 degree slope angle.



Dips file showing input data spreadsheet, contour plot with overlaid symbolic pole plot, rosette plot and chart.

Input Data

- integrated spreadsheet
- linear/planar orientation data
- quantity column for multiple identical data entries
- declination for magnetic/azimuth correction
- unlimited number of columns for additional data

Orientation Formats

- dip/dip direction
- strike/dip (right or left hand rule for strike)
- trend/plunge (linear data)
- oriented core (alpha/beta)
- multiple formats in one file using traverses

Traverses

- linear (e.g. scanline)
- planar (e.g. wall map)
- borehole (oriented core)
- clinorule
- bias correction (Terzaghi weighting)

Stereonet Plots

- pole plot
- symbolic plot
- scatter plot
- contour plot
- planes plot
- pole or dip vector mode
- view intersections
- overlay of contours, poles, planes, intersections
- rosette plot
- customize display options

Projections

- equal angle, equal area
- upper/lower hemisphere

Statistical Analysis

- user-defined set windows for orientation (pole) clusters
- fuzzy cluster analysis for automatic detection of joint sets
- mean vector calculation
- confidence and variability cones
- statistics listed in Info Viewer
- Fisher distributions for contour plots
- global mean vector
- best fit plane through poles (fold analysis)

Kinematic Analysis

- planar sliding
- wedge sliding
- flexural toppling
- direct toppling
- poles, dip vectors, intersections
- lateral limits
- highlight critical zones
- export results to Excel

Stereonet Toolkit

- polar/equatorial grid overlay
- user defined trend/strike reference line
- add planes (rubber plane for interactive data analysis)
- plot lineations on planes
- small circles about any axis (e.g. friction circles, toppling bounds)
- daylight envelopes for sliding analysis in slope design
- onscreen pole identification
- data rotation about arbitrary axis
- onscreen angle measurement
- drawing tools, text annotations

Filtering/Attribute Analysis

- powerful database query, easily create data subsets
- create charts or symbolic pole plots based on any data column in the file
- plot qualitative/quantitative data
- edit symbols, create symbol master list
- histogram, line or pie charts
- filter by set

File Output

- save processed file
- export to Excel
- JTDIST utility program – define up to five synthetic joint sets, generate a Dips file

Viewing Options

- current view state saved with file
- global undo / redo
- sidebar for quick access to display options
- interactive graphical editing
- improved printing with customizable headers and footers
- save plots to .bmp, .jpg, metafile, DXF