Integrated Software for the Analysis and Presentation of Directional Data, with Spherical Projections, Bootstrap Statistics, Kinematic Analysis, Cluster Partitioning, and Data Visualization

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Abstract

Orient is a free, professional directional data analysis and spherical projection program, with a user-friendly interface and simple data input. Orient has been in development since 1989, and introduced robust Kudo conforming, Point Gridle Random, and other directions.

In 2015, Orient 3.0 brought a new level of accuracy and speed, with interactive data analysis, Spherical plots, concessions, digitization, and integration with Microsoft Excel, LibreOffice, Adobe Illustrator, Inkscape, CorelDRAW, and Google Earth. Features include spherical scatter and contour plots with azimuth and sector, vector, vector, and grid directions. Kinematic data over calculations and deformations (vectors, radial, and ellipse directions) and natural log data. Cylindrical projections of points and symbols, color gradient plots, and vector graphics.

New updates through version 3.4 have added bootstrap analysis, Kudo distributions, and polar, polar, and small circles, cluster partitioning for area, vector, and grid directions. Kinematic data over calculations and deformations (vectors, radial, and ellipse directions) and natural log data. Cylindrical projections of points and symbols, color gradient plots, and vector graphics.

Orient 3.4

- Simple spreadsheet I/O, vector and raster graphics output
- Interface with Excel, LibreOffice, Adobe Illustrator, Inkscape, CorelDRAW, Google Earth
- Fast, professional, easy to use
- Free (as in beer)

LibreOffice

Interface

The Data Window shows the current data set which can be exported or opened from a spreadsheet file. Points can be saved as graphics or vector images. Data selected in one window is highlighted in the other.

Kinematic Analysis

Orient provides a kinematic analysis using the plane and normal tensor methods. The kinematic analysis is used to determine the orientation of a plane using the normal tensor.

Point-Girdle-Random Plots

Scatter plots, equal distance, and equal area distances to the frequency polygon (FP) diagram of directional or unlabeled data.

Spherical Plots

Spherical scatter and contour plots with azimuth and sector, vector, vector, and grid directions. Kinematic data over calculations and deformations (vectors, radial, and ellipse directions) and natural log data. Cylindrical projections of points and symbols, color gradient plots, and vector graphics.

Google Earth Integration

Linear and planar data symbols plotted in Google Earth. Simulated data shown on submap of Gym on the Davaarshika Riggs, New York.

Latitude, Longitude / UTM Conversion

Latitude, longitude to UTM and UTM to latitude, longitude conversions.

Web Map Integration

Show data locations in Google Maps, topographic and satellite, Bing, AZHIE, Google, Bing, and Geo. Maps, WMS, Nears, etc.

Orientation Fields

Maturity listed rotation data from Dovrefjell Mountains, Norway, showing scatter and contoured Schmidt plots, and new orientation map, subdomain, and orientation field.

Domain Analysis

Cylindrical domain analysis of related ticks.

Confidence & Bootstrap Statistics

Paths, Sinh, Watson, and bootstrap statistics and confidence circles for area and vector data.

Conical & Small Circle Data

Central cluster partitioning of vector and scalar data, and ellipse partitions of circular and non-circular circles.

Cluster Partitioning

Central cluster partitioning for vector and scalar data, and ellipse partitions of circular and non-circular circles.