

Oriana

Version 4

Version 4 addendum to the Users' Manual

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1 Introduction

Welcome to the manual addendum for Oriana version 4, the circular statistics program for Windows. This addendum will describe the new features in version 4 of the program. It is meant to help existing users of version 3 to explore the new features of the new version.

New Features in Version 4:

General features

- New data type: lunar
Data are entered as dates but are treated as circular data based on the lunar month. This is useful when studying phenomena that might be related to lunar phase (e.g. turtles laying eggs during the full moon).
- Analyzing frequency data
Data can now be entered directly into the data editor as a frequency table, with one variable being the circular data and an associated Linear variable giving the frequency (number of observations for that circular measurement). These can then be used to produce histograms and basic stats.

Statistical analyses

New statistics:

- Hotelling's paired multisample test
- Moore's paired multisample test (nonparametric)
- Hotelling's test for weighted data
- Moore's modified Rayleigh test for weighted data
- Second order statistics:
 - Grand mean angle, length and confidence limits
 - Hotelling's one sample second order test
 - Moore's modified Rayleigh test for second order analyses
 - Hotelling's two sample second order test
 - Mardia's two sample second order test (nonparametric)
 - Hotelling's paired sample second order test
 - Moore's paired sample second order test (nonparametric)

Data handling

- Added option to save means and mean vector lengths to a file for further second order analysis
- A new data transformation facility was added. Data entered or imported in radians can be converted to degrees for analysis. Also, linear data can be standardized and log or square root transformed.
- New function to merge several Oriana data files.

New graph options

- Added an option for circular plots to plot only the data between 0-180°, but spread around the full circumference of the circle. This type of graph is used in fields such as ophthalmology (doubled-angle plots).
- Added an option on circular-linear plots to plot the weighted mean as a centroid, along with an ellipse depicting the standard deviation of the data along the two major axes of the plot. This also is used in ophthalmological studies.
- Added option to have the degree symbol printed after the angle labels on graphs
- Added a new option for number of minor divisions on circular graphs (every 15°)
- Added plotting of the grand mean vector when subgroup means are included in histograms.

Features recently added to version 3

- Data import and export now supports Excel 2007/2010 file format (.XLSX and .XLSM files). Export of results can now also be done to the newer Excel format.
- New Excel import routines more reliably detect times and dates in various international formats.
- Added a Guess Column Names option to find most likely row in an Excel file that contains column names.
- Selection of worksheet to import from Excel now done with tabs at the bottom of the preview grid rather than a drop-down box as before.
- Three new visual themes have been added: Office 2010 Blue, Silver and Black.
- Most simple information, warning and error dialog boxes now use Windows Vista/7-style Task Dialogs.

2 Oriana concepts

2.1 Oriana Data Types

Oriana 4 has a new data type:

Lunar

This data type is designed for people working with data that might be related to the phases of the moon (e.g. laying of eggs by turtles). The data are entered as dates. However, when circular statistics are calculated or circular graphs produced these dates are converted into angular data by calculating the length of the lunar month and the day of the lunar cycle. For example, a date of 3 April 2011 will be plotted on a circular histogram at the top, in the 0° position, since that is the date of a new moon, and 18 April 2011, a full moon day, will be at the 180° position.

Note that all dates are based on the Gregorian calendar, in accordance with ISO standard 8601. This is the calendar that was adopted in 1582 by the Vatican and many Catholic countries, 1752 by the British Empire, 1918 in Russia, and numerous other dates in other countries around the world. If you are working with dates that were recorded under the Julian calendar before these years they will need to be converted to the Gregorian calendar for the moon phase to be calculated correctly. This can be done by adding a certain number of days depending on the date range. A table in the Wikipedia topic on the Proleptic Gregorian Calendar gives the required number of days.

Note too that you can specify the time zone in which the lunar dates were recorded. The exact point in time at which the moon phase becomes new or full is the same all over the world, but because of differing times zones the clock time and perhaps the date will be different. For example, a new moon occurred on 4 March 2011 at 20:46 UTC. Thus the date of the new moon would have been 4 March in Great Britain. However, when that new moon occurred it was 07:46 on 5 March in Sydney, Australia. The difference in dates can affect how graphs are drawn and statistics calculated.

By default Oriana will use the time zone specified in the Windows system on which it is running (which can be changed through the Control Panel or the clock on the Task Bar). If you

are regularly analyzing data from a different time zone you can change the zone that Oriana will use through the **Default Time Zone** option on the **Lunar Phases** tab of the **Options | Preferences**^[22] dialog. You can also change the time zone for individual variables through the **Data | Change Variable Type** dialog. The time zone for each variable is saved in the data file, so if you send the file to a colleague in a different time zone the original time zone will still be used.

The **Options | Preferences**^[22] dialog also allows you to customize the names used for different phases of the moon. These names are used on the graphs and the basic statistics output.

Please note that no correction is made for local summer or daylight savings time differences when calculating the dates of the moon phases.

Oriana 4 also has a new use for the Linear data type:
Linear

This data type is also used for specifying the frequency of different values when data are being entered in a frequency table format^[4], and for specifying the r value when means and mean vector lengths are being input for second order statistical analysis^[14].

2.2 Data Structure

Data within Oriana can be structured in several different ways, described in the main manual. The new structure type in Oriana 4 is Frequency Data, entered directly in the spreadsheet.

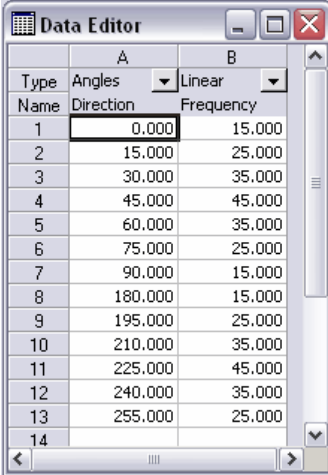
Frequency Data

Often data are collected or provided in the form of a frequency table, where the number of times a particular direction was observed is recorded as the frequency, for example:

Direction	Frequency
0.000	15
15.000	25
30.000	35
45.000	45
60.000	35
75.000	25
90.000	15
180.000	15
195.000	25
210.000	35
225.000	45
240.000	35
255.000	25

Oriana has two ways of dealing with data like this.

1. The first is a special data editing mode called Frequency Editing, which allows you to enter and edit data in this fashion. To enter data in this method you would first create a new data file as normal, then select a cell in the appropriate column of the data editor and choose the **Data|Edit Frequencies** menu command. This will open a dialog box with a frequency table like the one above, allowing you to enter the observations and their frequency. Once you are done the column of the data editor will be filled with data representing all the observations summarized in the frequency table, in a single column.
2. You can also enter frequency data directly in the data editor. To do this you need to have two variables, the first being one of the circular types and the other a Linear type variable. You can then enter the data in the same form as the table above, as in this example:



Type	A	B
Name	Direction	Frequency
1	0.000	15.000
2	15.000	25.000
3	30.000	35.000
4	45.000	45.000
5	60.000	35.000
6	75.000	25.000
7	90.000	15.000
8	180.000	15.000
9	195.000	25.000
10	210.000	35.000
11	225.000	45.000
12	240.000	35.000
13	255.000	25.000
14		

When this method is used for entering frequency data you must specify that the data are in frequency format on the Select page ⁽¹⁹⁾ of the Analyses or Graphs dialog boxes.

Note that the second method can only be used for basic statistics and histograms. If you need to do multisample comparison tests then you will need to use the first method, or use **Data|Change Data Structure** to convert the frequency table to raw data.

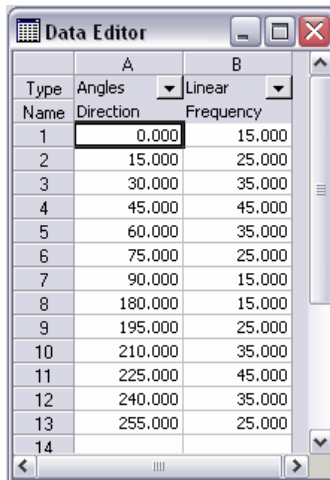
3 Tutorial

Some new tutorials have been added, and others updated, to describe how to use some of the new features.

3.1 Entering frequency data

In most cases you will be entering raw data, the individual measurements collected in your study. However, in some cases you may be provided with data that are in the form of a frequency table, where the number of measurements of each unique data value are recorded (e.g. 25 observations of the angle 45°). Data in this format can also be entered directly in Oriana by creating two variables, one for your circular data and one, of the Linear type, that is used for entering the frequencies.

You can set up such a data file using **Files|New**. Using the New File Wizard, first choose your data type, then on the next page, where different data file layouts are described, choose the **Frequency** option. Following through the rest of the wizard will result in a file similar to that below, where you can enter your data in the left-hand column and the frequencies in the right.



The screenshot shows a window titled "Data Editor" with a table containing 14 rows of data. The table has two columns: "Direction" and "Frequency". The "Direction" column contains values from 0.000 to 255.000 in increments of 15.000. The "Frequency" column contains values from 15.000 to 45.000, repeating in a pattern of 15, 25, 35, 45, 35, 25, 15, 15, 25, 35, 45, 35, 25, 15.

	A	B
Type	Angles	Linear
Name	Direction	Frequency
1	0.000	15.000
2	15.000	25.000
3	30.000	35.000
4	45.000	45.000
5	60.000	35.000
6	75.000	25.000
7	90.000	15.000
8	180.000	15.000
9	195.000	25.000
10	210.000	35.000
11	225.000	45.000
12	240.000	35.000
13	255.000	25.000
14		

When analyzing and graphing these data you will need to choose the Frequency option (rather than the Raw option) on the Select page of the analysis or graph dialog box. See the end of

the tutorial about Calculating Statistics^[8] for more details.

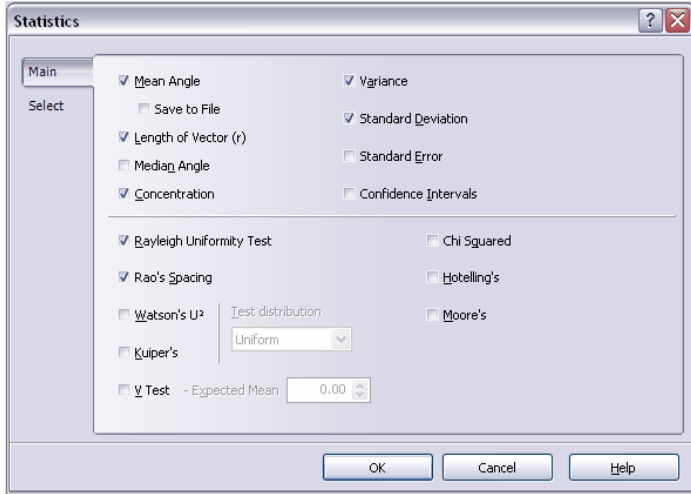
Note that this method can only be used when calculating basic statistics and plotting histograms. If you need to do multisample comparison tests then you will need to convert the frequency data into raw data (columns of individual observations). You can do this using the **Data|Change Data Structure** command to convert the frequency tables to raw data. You can also use the **Data|Edit Frequencies** option to enter data as frequencies but have them saved as columns of raw data.

3.2 Calculating statistics

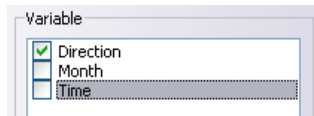
Once a data file has been created or loaded you can then perform analyses. The **Analyses**^[19] menu lists the various types of analyses available. Selecting any one of these will cause a dialog box to be displayed, giving the various options for the analysis. When the OK button is pressed a new page will be added to the Results window and the analysis will be performed.

Here is an example of the steps required to calculate basic statistics:

1. Open a data file (the Wind2002.ori example data file distributed with Oriana can be used).
2. Select **Analyses|Stats**^[20] from the menu. A multi-page dialog box, with tabs along the side, will appear. The first page contains options to select the basic statistics you want calculated.



3. To discover what each option does you can press the large button labeled **Help** to display a help page describing all the options.
4. By default all circular variables in the file are included in the analyses. If you wish to drop some of the variables go to the **Select** page of the dialog. All the circular variables will be listed on the left, with a tick mark before each. To drop a variable just click the box containing the tick mark so that it is cleared. We want to calculate statistics on just the Direction variable, so clear the check marks on the other variables. (Hint: You can clear all check marks by right clicking on the list and choosing **Deselect All** from the context menu.)



5. Press **OK**. The Results window will open, if it isn't already visible. A new page will be added, to which the results will be written.
6. Once the analysis is finished you can look at and print the results or export them to a file for inclusion in another program.

Note: if you are working with frequency data (where the data

file contains a frequency table summarizing your data) then you will need to select the **Frequency** option on the **Select** page, rather than **Raw**. Then ensure that the variables selected in the Variable and Frequency sections of the page are the desired ones.

The image shows a software interface with two radio buttons at the top: 'Raw' (unselected) and 'Frequency' (selected). Below these are two sections, each with a title and a list of options:

- Variable**:
 - Direction A
 - Direction B
- Frequency**:
 - Frequency A
 - Frequency B

4 Analyses

4.1 Statistics

4.1.1 Basic Statistics

Oriana 4 adds new statistical tests for weighted data.

Weighted Statistics

If your data consist of vectors (where both the angle and the length have been recorded) and you have defined vector pairs using the **Data|Define vector pair** command, then a weighted mean vector will also be displayed. This is the angular mean, but weighted by the lengths of the vectors. The length of this mean vector is also given, first in the native units of the weighting variable, then scaled 0-1 like the unweighted r . This is followed by the X and Y components (sin and cosine) of the standard deviation ellipse. This is an ellipse depicting the standard deviation that can be drawn around the weighted mean centroid on circular-linear graphs^[22]. Basic statistics about the weighting variable will also be displayed.

Also displayed are two hypothesis tests. **Hotelling's test** (Batschelet, 1981, p. 144) tests whether the centroid of the end points of the weighted vectors differs from the origin - effectively, whether the weighted angles have a significant mean direction. The null hypothesis is that there is no mean direction. A probability less than your chosen significance level (usually 0.05) indicates that there is a common mean direction to the population. It is assumed that the data are not grouped, and that they conform to the bivariate normal distribution. Note that the test is particularly sensitive to departures due to skewness.

Moore's Modified Rayleigh Test (Zar, 1999, p.639-641) is a nonparametric analogue of the Rayleigh test for testing if angles are uniformly distributed around the circle. The null hypothesis is that the data are uniformly distributed. If the p value is less than the chosen significance level (usually 0.05) then the alternative hypothesis that the data are not uniformly distributed is accepted.

4.1.2 Second Order Statistics

If two or more circular variables are present in the file, or if a subgrouping variable is being used to analyze sets of data, then second order statistics are also calculated. These are statistics that focus on further analyses of the basic statistics for each variable.

Second Order Statistics	
Grand Mean Vector (GM)	171.64°
Length of Grand Mean Vector (r)	0.505
Number of Means	14
95% Confidence Interval (-/+) for GM	217.706°
	175.987°
99% Confidence Interval (-/+) for GM	190.341°
	176.758°
Hotelling's Test (F)	19.776
Hotelling's Test (p)	1.59E-4
Moore's Modified Rayleigh Test (R ²)	1.018
Moore's Modified Rayleigh Test (p)	0.1 > p > 0.05

The first statistics are the calculation of the **grand mean vector**, or the mean of means. This is calculated in a similar way to the mean of each variable, with the means for each variable being used as the data rather than the original angles. Also, each mean is weighted by its r value (the length of the mean vector). The result is a grand mean angle and its resulting length r. Also provided are the **95% and 99% confidence limits**, calculated using the method of Batschelet (1981), also described in Zar (1998, p. 611). Note that, unlike the confidence intervals for the sample means, these are not necessarily symmetric around the grand mean. Also, the confidence intervals often cannot be calculated when the number of means are small (e.g. less than 4-5).

Two hypothesis tests are also calculated. **Hotelling's one sample test** (Zar, 1998, p. 638; Batschelet, 1981, p. 144) tests whether the whole population has a significant mean direction. The null hypothesis is that there is no mean direction. A probability less than your chosen significance level (usually 0.05) indicates that there is a common mean direction to the population. It is assumed that the data are not grouped, and that they conform to the bivariate normal distribution. Note that the test is particularly sensitive to departures due to skewness.

A nonparametric test is also available. **Moore's modified Rayleigh test** (Zar, 1998, p. 641) is an analogue of the Rayleigh test that is based on weighting the mean angles with the rank order of the r values of each. The null hypothesis is that the means of the population are uniformly distributed around the circle. A significant probability indicates that the data are not distributed uniformly and that they show evidence of a preferred direction.

4.2 Multisample Tests

4.2.1 Hotellings Paired Test

Hotelling's Paired Test (Zar, 1999, p. 645) compares two samples of paired data using Hotelling's procedure. This tests whether the paired observations differ between the two samples. The null hypothesis is that there is no difference between the two samples. A probability less than your chosen significance level (usually 0.05) indicates that the pairs differ between the samples. It is assumed that the data are not grouped, and that they conform to the bivariate normal distribution. Note that the test is particularly sensitive to departures due to skewness.

Note that this test is for use with paired sample experimental designs and that it is assumed that each row in the matrix is for an individual case (for example, each row contains data for an individual organism before and after treatment or in two different situations). If one sample has more cases than the other all the extra cases will be treated as missing data and will be ignored.

4.2.2 Moore's Paired Test

Moore's Paired Test (Zar, 1999, p. 647) is a nonparametric alternative to Hotelling's Paired Test. This also tests whether the paired observations differ between the two samples, using Moore's modified Rayleigh test. The null hypothesis is that there is no difference between the two samples. A probability less than your chosen significance level (usually 0.05) indicates that the pairs differ between the samples.

As with Hotelling's, this test is for use with paired sample experimental designs and that it is assumed that each row in

the matrix is for an individual case.

4.3 Second Order Statistics

The Basic Statistics analysis in Oriana will provide second order stats (e.g. the grand mean) if there are more than one variable of raw data. It will do this by calculating the means and mean vector length for each variable, then calculating the second order statistics.

However, you may already have your data in the form of means and mean vector lengths, so may wish to calculate the second order statistics directly on those means. The analyses in Oriana's Second Order Statistics command will do this. To run these analyses your data file needs to have pairs of variables, one circular and one linear, which contain the polar coordinates of the mean vectors - the means and their associated lengths. You can have a number of pairs of variables, but Oriana will always assume that the first linear variable is associated with the first circular one, the second linear with the second circular, etc.

4.3.1 Basic Second Order Statistics

The first section of the Second Order Statistics output is similar to that produced when calculating the basic statistics^[12] on raw data. The grand mean and its length, the confidence intervals, and Hotelling's and Moore's tests are output. If the data file contains more than one pair of variables containing the means and lengths then a column of results is produced for each pair.

SECOND ORDER STATISTICS		
Data file - F:\StatData\Oriana\Ori2 Test Data\Zar2717.ori		
Analysis begun: 16 August 2011 16:18:07		
Variable	Means1 & Rs1	Means2 & Rs2
Number of Means	7	10
Grand Mean Vector (GM)	152.166*	123.82*
Length of Grand Mean Vector (r)	0.596	0.659
95% Confidence Interval (-/+)	121.423*	110.535*
95% Confidence Interval (-/+)	186.01*	140.566*
99% Confidence Interval (-/+)	96.366*	105.464*
99% Confidence Interval (-/+)	216.08*	149.262*
Hotelling's Test (F)	16.663	42.043
Hotelling's Test (p)	0.006	5.70E-5
Moore's Modified Rayleigh Test (R*)	1.428	1.697
Moore's Modified Rayleigh Test (r)	< 0.001	< 0.001

4.3.2 Two Sample Second Order Statistics

If there are two or more pairs of mean and mean vector length variables in the data file then two sample second order tests are also calculated. First in the table of results are the names of the two sets of means/lengths that are being compared, along with the number of means in each sample. This is followed by a number of test results.

Two sample second order statistics	
Variables	
1st sample means	Means1
1st sample vector lengths	Rs1
Number of means	7
2nd sample means	Means2
2nd sample vector lengths	Rs2
Number of means	10
Hotelling's two sample F	4.693
Hotelling's two sample p	0.028
Mardia's two sample U	0.158
Mardia's two sample p	0.1 > p > 0.05
Hotelling's paired F	2.564
Hotelling's paired p	0.171
Moore's paired R'	1.01
Moore's paired p	0.1 > p > 0.05
Number of pairs	7

Hotelling's two sample test (Zar, 1999, p.641-642; Batschelet, 1981, p. 150-154) compares the grand means of two populations. The null hypothesis is that the means of the two populations are equal. A probability less than the chosen significance level (usually 0.05) indicates that the two means differ. As with other variations on the Hotelling test, this assumes that the data are not grouped, and that the data are from a bivariate normal distribution with similar variances. However, this two-sample test is somewhat more robust to departures from normality than the one sample and paired tests.

A nonparametric alternative to the above is **Mardia's two sample test** (Zar, 1999, p.643-645; Batschelet, 1981, p. 154-156). With this test the differences between the individual means and the grand mean for both samples is further analyzed using one of the circular two sample tests. In Oriana Watson's U^2 is used for the analysis. The null hypothesis is that the two

samples come from the same population. The alternative hypothesis is that the populations that differ in some way (in the distribution, mean direction, or other parameter). This test cannot be used on grouped data.

These tests are followed by **Hotelling's paired two sample test**^[13], and **Moore's nonparametric alternative**^[13]. These are identical to the paired tests described above in the Multisample Test section, except that they are calculated on samples of means rather than raw data. As with those it is assumed that the data are paired (e.g. each row in the data matrix contains the means for the same population, but measured before and after some treatment or change in circumstances).

5 Menus

5.1 File

5.1.1 File|Merge Files

This option allows you to combine two or more Oriana files into a single one. When the dialog box is displayed you can use the “Folder” control to select the folder containing your files, then tick the box next to each file that you wish to combine. When you press the OK button you will be prompted for a name for the new file.

5.2 Data

5.2.1 Data|Change Data Structure

Oriana 4 adds two new options to this dialog box to allow manipulation of frequency data [4](#).

Converting raw data to frequency table

This will take a column of data and turn it into a frequency table, with one column containing the unique data values in the original data, and a second containing the frequency that each of those values occur. So, if the original variable has three 45° values the restructured data file will have one 45° in the data column, and a 3 in the frequency column.

If a data file has more than one variable then each of those will be converted to frequency tables.

If a subgrouping variable is found then that will be used to create a frequency table for each subgroup. The frequency tables will all occur in the same columns and a subgrouping variable will be created next to the frequency variable. For example, if the subgrouping variable has three subgroups, A, B and C, and each subgroup has a single value of 45° then the resulting frequency table will have three entries for 45°, one for each subgroup, with a frequency of 1 for each.

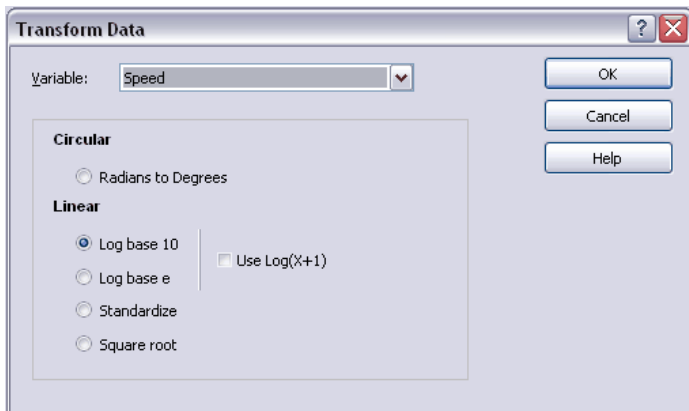
Converting frequency table to raw data

This option will be enabled if it appears that the file contains one or more frequency tables. To be recognized as a frequency table the file must have one Linear type variable holding the frequencies (which must all be positive numbers), one other data variable of any type, and optionally a subgrouping variable. If the file contains more than one frequency table the variables for all must be in the same order (e.g. if one has the data variable before the frequency one, then all of them must be the same).

When this option is selected each frequency table will be converted into a single data variable, using the frequency column to determine how many of each value are in the column. If a subgrouping variable is also found then a new one will be created and each data value will be assigned to the appropriate subgroup.

5.2.2 Data | Transform

This command allows you to perform various transformations on your data. You can transform a single variable by choosing the variable from the drop-down list (labeled “Variable” below), or transform all variables of the appropriate type (either Angles/Axial or Linear) by choosing the “All Variables” option at the top of the drop-down box.



For circular data the only available transformation is from radians to degrees. Oriana assumes that data in Angles or Axial variables are in degrees. However, you may already have data in the form of radians. This transformation will allow you to

import or paste radians data, then transform them to degrees so they can be analyzed.

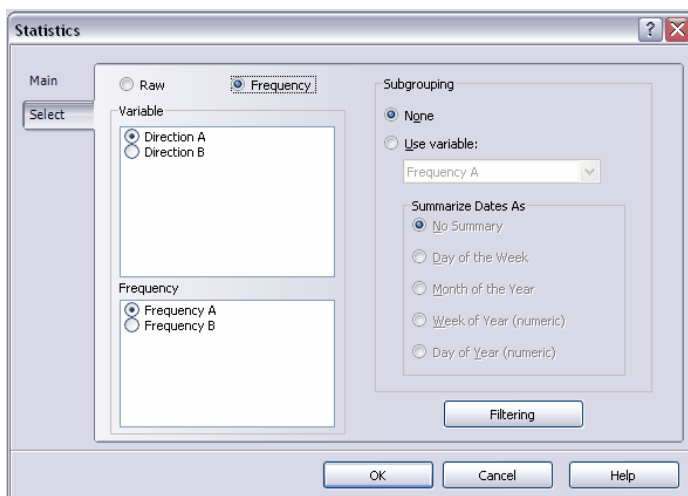
Linear data can have a variety of transformations applied, including logarithmic (base 10 and e), square root, and standardization.

When log transforming data, zero values can cause problems, as the log of 0 is undefined. If your data have zeros you can tick the “Use Log(X+1)” option to add 1 to all values, thus allowing the log transformation to occur. If any negative values are found, for either log or square root transformations, then the transformation will not be performed.

5.3 Analyses

5.3.1 Select page

The **Select** page on the dialog boxes displayed by the commands under the **Analyses** and **Graphs** menus have a new option to specify the data layout. Normally you would use the Raw data format, but if you are entering the data into the editor directly as frequency data [4] then you will need to specify this by selecting the **Frequency** option, then selecting the two variables with your circular data and the associated frequencies, like this:



Note that this option will only be available if the data file appears to have frequency table data (defined as pairs of variables, one of which is Linear and contains the frequencies). Also, only one pair of data and frequency variables can be selected at a time. This type of selection is not available for analyses and graphs that are used to compare two or more variables, such as multisample statistics or two sample scatterplots. If you need to do these you can use the **Data | Change Data Structure**^[17] option to convert the frequency data into columns of raw data.

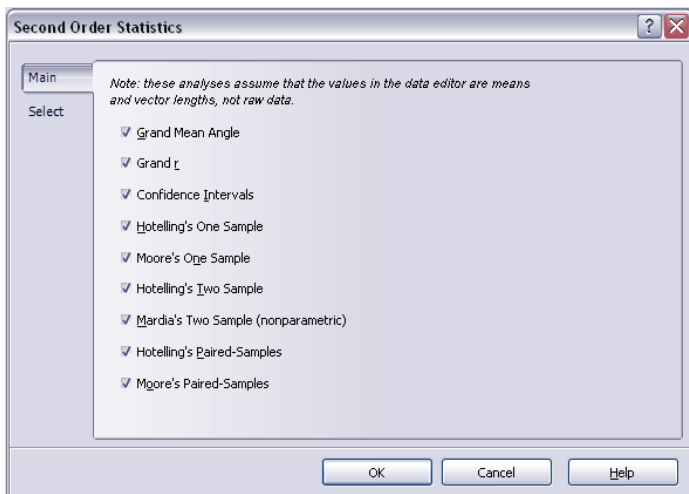
5.3.2 Analyses | Stats

Oriana 4 adds a new option to the Basic Statistics dialog box:

If you have ticked the **Save to File** checkbox then you will also be prompted to enter a file name. This file will be used to store the means and lengths of the mean vectors in a separate file. You can then use these for further second order analyses^[20] (in particular for two sample and paired tests).

5.3.3 Analyses | Second Order Stats

This option allows you to calculate second order statistics^[14] on your data. This will cause the following dialog box to be displayed.



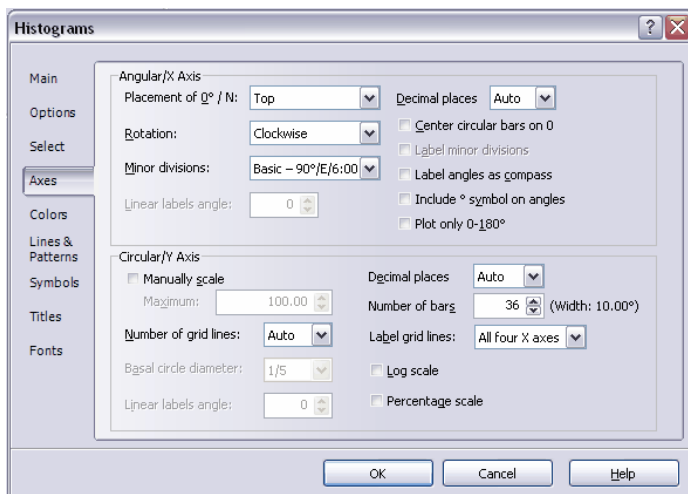
The analyses on this dialog box assume that the data consist of pairs of variables, one a circular variable that contains means calculated from samples of raw observations, and a linear variable that contains the length of each mean vector.

You can use these analyses when you have been supplied with data in the form of means, or have calculated them yourself. Note that if your data are raw observations you can use the Basic Statistics^[20] command to calculate the means for each set of observations (column in the data matrix). That dialog box has an option to save the means to a file, which can then be opened and analysed with this second order stats command.

5.4 Graphs

5.4.1 Graphs | Histograms

In Oriana 4 the **Axes** page of circular graph dialog boxes has two new options.



Angular/X Axis

The **Include ° symbol on angles** option determines whether the degree symbol is used when printing angles on the circular

scale.

The **Plot only 0-180°** option allows you to create a graph that only plots the data in the 0-180° range, but which cover the whole of the circular graph. This type of graph can be used in fields where data are always measured on a 0-180° scale, such as the axis in ophthalmology. Note that any data values greater than 180° will be ignored.

5.4.2 Graphs | Circular-linear

Circular-linear plots have a new option in Oriana 4.

The **Standard deviation ellipse** option plots the weighted mean as a centroid point, along with an ellipse that depicts the standard deviation of the data along the two major axes (the exact values of the centroid and standard deviations are given in the **Analyses | Stats** ^[20] output as the angle, length and SD of the Weighted Mean Vector). These are calculated from the weighted sines and cosines data. This option, along with the **Plot only 0-180** option on the **Axes** page, is commonly used in ophthalmological studies (see Holladay et. al, 2001).

5.5 Options

5.5.1 Options | Preferences

The Preferences dialog box has a new page in Oriana 4.

The Lunar Phases page contains options related to the Lunar variable type. The table at the top lets you customize the names used for the various lunar phases, in a similar way as the compass abbreviations above. The Default time zone option lets you change the time zone that Oriana assumes when calculating lunar phases (see the description of the Lunar variable ^[3] to find out why you might need to do this). This defaults to the current Windows time zone, but if you change it the new setting will be remembered next time you run Oriana.

