XBED, A SPREADSHEET TEMPLATE

FOR THE ROTATION OF PALEOCURRENT

MEASUREMENTS USING *QUATTRO PRO*

by

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April, 1991

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INTRODUCTION

A spreadsheet template, *XBED.WQ1*, was developed to facilitate bed-tilt and fold-plunge correction of crossbed paleocurrent measurements utilizing Borland's *Quattro Pro* (1989) software. This template will permit recording of important data associated with each paleocurrent measurement such as formation member, type of crossbedding and bed thickness, and by use of a macro will output the data into a file for use in the Rose Diagram Program (*ROSE.EXE*) written in FORTRAN 5 by Shirley Liss (1991, PDF 91-15B) which is also available from DGGS. My inspiration for developing a *Quattro Pro* template came from a series of templates developed by Peter S. Mustard for *Lotus 1-2-3* (Mustard, 1989). Mustard's *Lotus 1-2-3* templates allow rotation of planar and linear data along with calculation of statistics including vector mean (ibid.).

Current research necessitated a large spreadsheet that could maintain records which include fields for unit member, crossbed type and thickness. *XBED.WQ1* permits sorting of crossbeds by bedform type and the weighting of crossbed data according to bed thickness for use in the associated rose diagram program of Liss (ibid.). The importance of weighting crossbed data in an effort to eliminate statistical bias was introduced by Iriondo (1973) who proposed a volume factor for use in computations. Determining areal extent of beds in order to compute unit volume is often difficult and I have therefore chosen to use the easily-measured thickness of each crossbed set for statistical weighting. If a single crossbed has more than one measurement the weight based on thickness should be divided proportionately. Figure 1 exhibits the visual difference in an unweighted and weighted pair of rose diagrams drawn using the same data set.
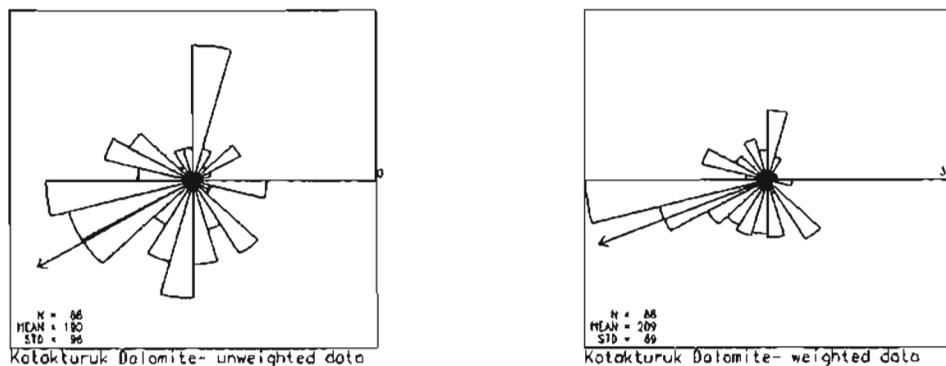
FIGURE 1. Unweighted and weighted data using the Rose Diagram program of Liss (1991).

The present version (1.0) of *XBED.WQ1* does not perform statistical analysis of paleocurrent data within *Quattro Pro*. This is accomplished in the rose diagram program of Liss (1991) or by using Mustard's *Lotus 1-2-3 VECTMEAN.WK1* template (Mustard, 1989) which will run in *Quattro Pro* without the use of some macros. Later versions of *XBED.WQ1* may allow the export of data to a statistical template, however this can be easily achieved by persons familiar with *Quattro Pro*

A second version of the crossbed rotation template, *XBED.WQI*, is provided without macros for use in *Quattro Pro*. A third template version without macros, *XBED123.WK1*, is provided for possible use with Ashton Tate's *Lotus 1-2-3* Version 2.0 (1985) for geologists interested in sample weighting by bed thickness for use in the associated rose diagram program of Liss (1991).

INSTRUCTIONS

XBED.WQ1

Copy the *XBED.WQ1* template (with DOS commands or another utility software program) into a directory accessible by *Quattro Pro*. Begin *Quattro Pro* and **open** *XBED.WQ1*. After loading the *XBED.WQ1* file into *Quattro Pro*, the following instructions for using the template macros appear beneath the title beginning in Row 11:

1. If file name at lower left is XBED.WQ1, then execute macro B. To do so type **Alt+B**. B is for BEGIN. You will fill in a new file name and some identification. Then the macro will automatically resave the file under new name and position the cell pointer so you can start entering data.
2. Enter the data and periodically save file.
3. When data entry is finished you will want to execute macro **W**. To do so type **Alt+W**. **W** is for WRAP-UP. This macro will save the file, then fill in all the calculations in the columns to the right of data. Titles will be unlocked and it will copy columns I and D below it and write that to a print file. This print file can be input directly into the Rose Diagram Program. This file will have the same name as the Quattro Pro file but have a **.prn** extension.
4. When you return to the file to add more data, you can either execute macro A - type **Alt+A** or do without it. Macro A will lock titles and position you at the end of current data. You do not need to use macro B again. When you are done adding more data, execute macro **W** again.
5. Do not erase macros or eliminate any rows or the macros will not work.

Be sure to enter **dip direction** for bedding and cross bedding and not the strike direction. For crossbeds the rotated paleocurrent results appear in columns I and J. For imbrications the results appear in columns K and L.

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<u>*XBED123.WK1* and *XBED.WQ!*</u>

      Begin *Lotus 1-2-3* or *Quattro Pro* and **retrieve (open)** the respective file *XBED123.WK1* or *XBED.WQ!*. Enter Filename, Year, Location, Group, and Formation in row 10 columns A through E. Enter data beginning in row 16, columns A through H. Be sure to copy the formulae in row 16, columns I through AA to as many corresponding rows below as there is data entered.

      In *XBED123.WK1* and *XBED.WQ!* crossbed rotations are performed by pressing the **calculate** function key, **F9**. When the file is saved, rename it as the Filename listed in cell A10 in order to maintain the original file (*XBED123.WK1* or *XBED.WQ!*) free of data.

REQUIREMENTS

      Borland's *Quattro Pro* (any version) and a hard disk are required to run this template. *Quattro Pro* runs on the IBM XT, AT, PS/2 and fully compatible computers and requires the operating system DOS 2.0 or later (1989, p. 5).

ACKNOWLEDGMENTS

      Shirley Liss, DGGS, wrote the macros for *XBED.WQ1* which facilitate data output to the Rose Diagram Program available as Public-data File 91-15B. I am also indebted to Dr. Peter S. Mustard, Carleton University, who provided me with his *Lotus 1-2-3* templates which in turn inspired this *Quattro Pro* template to meet my particular research needs.

DISCLAIMER

      NEITHER THE STATE OF ALASKA DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS NOR ANYONE ELSE WHO HAS BEEN INVOLVED IN THE CREATION, PRODUCTION, OR DELIVERY OF THIS SPREADSHEET TEMPLATE SHALL BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ARISING OUT OF THE USE, THE RESULTS OF USE, OR INABILITY TO USE THIS PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

REFERENCES

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Liss, S.A., 1991, Rose Diagram Program: Alaska Division of Geological and Geophysical Surveys, Public-data File 91-15B, software and 17 p. manual.

Lotus 1-2-3, Release 2.0, 1985, Lotus Development Corporation, Cambridge, MA.

Mustard, P.S., 1989, Bed-tilt, fold-plunge correction and statistical analysis of paleocurrents using Lotus 1-2-3: Geobyte, v. 4, p. 15-22.

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