

SHORT NOTES

TRILOT: AN APL PROGRAM FOR PLOTTING TRIANGULAR DIAGRAMS

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Triangular diagrams are used widely in geology to display data in terms of three components. This program was written to facilitate the plotting of large groups of data in a single ternary system, and aside from more speed and accuracy has several features which are advantageous to hand-plotting. Being written in APL, the program is used at an on-line terminal with immediate results. The APL system can be used to store data which can be split easily into the components desired for this plot as well as for the statistical and other programs stored in the system. In addition to not being written in FORTRAN, the program differs from Lumsden's (1973) in that several groups of data, each with designated symbols, can be plotted on the same diagram. The problem of overlapping points from various groups is overcome by an explanation table, and labels for the triangle corners, symbols with group names, and the numbers of points in the first eight groups also are printed.

Basically the function works by assigning the values to a matrix 50 lines high by 100 spaces wide, after correcting the horizontal placement to make the points fall within the triangle area. Because 2500 spaces are available within the triangle, accuracy is sufficient for most uses. The number of overlapping points is limited to 26 and the number of overlaps per group to 9. The

triangle is delineated by plus signs which are at 10 per cent distances, as labeled at the bottom. The function recalculates the three values for each point to 100 per cent, so it is not necessary to do so beforehand.

The APL workspace is called TRILOT with the working function named PLOT. It is customary to include another function termed DESCRIBE which gives a brief explanation for the use of the principle function(s). Table 1 lists the PLOT function and Figure 1 presents an actual example using four groups of 40, 30, 20, and 10 numbers generated randomly from 1 to 50. When the PLOT command is given, the function leads the user through the necessary steps, so that the user need not be familiar with APL or the function. If large numbers of points are to be plotted for a single data group, it is best to assign the data as a variable-specification vector outside of the PLOT function. In this capacity, a separate data workspace serves well. Those users unfamiliar with APL should refer to a basic guide such as Pakin (1973) which explains such procedures.

REFERENCES

- Lumsden, D. N., 1973, TRI: A FORTRAN subroutine to plot points on a triangular diagram: *Geol. Soc. America Bull.*, v. 84, no. 5, p. 1765-1768.
- Pakin, S., 1973, APL: A short course: Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 157 p.