CONTOUR MAPPING USING A MICROCOMPUTER-- TECHNIQUES FOR IMPROVING THROUGHPUT

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ABSTRACT

There are three basic steps to contouring by microcomputer: control point data analysis, generating a regular grid of estimated values, and contouring. Because each of these steps require a significant amount of time and computer resource, techniques have been developed to improve the likelihood of correct gridding parameter selection, speed gridding, and edit computer generated countour maps.

Grid cell size is a critical parameter used during the gridding stage of computer mapping and must be selected with consideration given to the control point distribution. A control points-per-grid cell histogram is a simple graphical presentation that illustrates the effectiveness of the selected grid increment at producing the desirable grid characteristic of having one control point per grid cell before gridding is actually performed.

Gridding is accomplished in two steps at every node: gathering the control points to be used for the estimation, and the actual calculation. Using such simple collection and estimation techniques as nearest-neighbor searches and inverse-distance moving weighted averaging, several hundred nodes can be calculated in a few minutes.

Often, the generated grid (contour map) is satisfactory with exceptions in one or two subareas. Using an interactive computer technique known as contour editing, geological knowledge and experience can be infused into the map. When contour editing, the computer mapper indicates the way he would like the contours to behave. The values input immediately replace the old grid nodes (without regridding the whole map area) so that when the grid is recontoured, the new contours have the desired behavior.

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