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NATURAL RESOURCE CLASSIFICATION FROM
LANDSAT DATA USING A FILM RECORDER

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The results of this study show that a film recorder can be used in classification of MSS data in a quasi-level slice mode. Multiple channels can be used and hard copy output can be produced. The film recorder affords the user an opportunity to utilize the digital data with more gray levels and higher resolution. The film recorder is easy to operate and does not require expertise in computer programming which limits many potential users of the digital LANDSAT data.

ABSTRACT

Development of new applications of the digitally recorded LANDSAT data has surfaced questions concerning how to most efficiently analyze the data. Machine processing systems have been in use for a number of years, utilizing primarily three types of classification schemes: (1) level slice, (2) Euclidean distance, and (3) maximum likelihood. All three of these have traditionally been implemented on central purpose computers. Recently interactive special purpose computer display systems came into use. As this technology developed, it became apparent that line printer output was not adequate as a final form for the classification results. Film recorders have been developed to meet the need for hard copy pictorial output from digitally analyzed imagery. However, the film recorder has in the past only been used to generate final products.

In this study a film recorder was used to actually perform the classification. The data consisted of a LANDSAT scene for eastern Montana. A histogram was produced for a portion of the scene and the analyst manually "sliced" the distribution into ranges hypothesized to represent several natural resource classes. Each numerical range of "class" was displayed as a different color. Iteratively, the ranges were modified so that the colors displayed represented a reasonable classification of the natural resources in the study area. This required approximately five hours and several iterations.

Thematic maps were produced by double thresholding as well as false color composites, utilizing various combinations of channels. The resulting classifications were evaluated and found to be better than those done on the bulk imagery by traditional photointerpretation techniques. The classification accuracy was higher on the digitally processed imagery and the resolution was higher. Furthermore, more classes were definable when the digital data was used.