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THE USE OF NEGATIVE SPECTRAL BANDS IN PHOTOINTERPRETATION AND CLASSIFICATION

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The negative of each spectral band of some satellite images was found with a general purpose computer, assigning to each pixel value its corresponding complement value. The new negative bands were added to the original ones and the resulting compound image was classified using an interactive processing system. For this study four Landsat images of some Mexican states were used. The resulting classifications were evaluated and found to be better than those using only the original bands. In the preclassification stage an algorithm was used to find the optimum divergence channel set and some of the negative bands were chosen by the computer. The classification accuracy was higher on the compound images, specially on those classes that are very similar. In order to define training fields needed for the classification, triplets of bands were displayed on a screen using three colors. Photointerpreters found that the use of negative bands affords the user an opportunity to distinguish control points as different classes in an easier manner. This method simplifies the selection as also the localization of the training fields. Some interesting results were found:

- i) Crops and woods are usually shown in a same color and sometimes it is very difficult to distinguish them. Displaying the corresponding negative bands, they do not appear in different intensity but in different colors.
- ii) Water quality is sometimes difficult to be noticed because of its slightly different dark tones. Using the negative bands the difference between light tones, and therefore the different water qualities, were easily detected.
- iii) On some zones where cities are located, the streets are easily identified on the negative displayed image. A high-road was only seen on the negative displayed image.

The results of this study show that the use of both positive and negative bands allow the photointerpreters to extract more information of an image than using the conventional bands.