# NASA TECH BRIEF

## *Lyndon B. Johnson Space Center*

## Multispectral Data Analysis: LARSYS III

**The problem:**

Multispectral remote-sensing systems require the handling and interpretation of large quantities of data.

**The solution:**

A multispectral data analysis system (LARSYS III) has been developed which uses machine-processing techniques for the application of remote sensing.

**How it's done:**

The LARSYS III system uses pattern recognition and interactive data-handling techniques applied to remotely-sensed multispectral and/or multitemporal data. The primary input data to LARSYS are multispectral data in image orientation. Such data are obtained from aircraft or spacecraft multispectral scanners. These images of the Earth's surface are either recorded in or converted to digital data for input to LARSYS III.

The basic analysis concept of LARSYS III consists of locating data points which are believed to be representative of classes of interest. A class of interest may be certain crops, beaches, woods, and geological features. Gaussian statistics of these data points are calculated, and data sets are classified by spectral similarity. Next, the classification results are evaluated. Thus, there are four basic concepts to the analysis: (1) the location of data points, (2) statistical calculations, (3) classification, and (4) process evaluation.

LARSYS III has found application in the areas of agriculture, geology, hydrology, and geography. However, the system has facilitated the application of remote sensing for researchers in other disciplines as well.

**Notes:**

1. This system was developed using FORTRAN IV and Assembler on the IBM 360.
2. Inquiries concerning this program should be directed to:
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