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A STUDY OF THE HAOR AREAS OF SYLHET-MYMENSING DISTRICTS WITH ERTS IMAGERIES(WINTER CROP ESTIMATION)

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A STUDY OF THE HAOR AREAS OF SYLHET-MYMENSING DISTRICTS WITH ERTS IMAGERIES(WINTER-CROP ESTIMTION)

The advent of Space Age has opened a new era in the exploratin of the earth. In the beginning the emphasis was more on the studying the heaven from above the earth's atmosphere. But it has been found that we can study the earth also better from heaven. Since the 1st Sputnik was launched on 4th October, 1957, more than 1400 spacecrafts have been thrown into space. Of all the direct application satellite systems envisaged, those for measuring the resources of the earth show by far the greatest promise of benefit to the world.

ERTS Programme

The meteorological satellites became operational in early sixties. These satellites and the manned space flight programmes namely Mercury, Gemini and Apollo demonstrated that not only the weather of the earth but various features of the earth can be detected by means of suitable sensors placed on board the satellite. To realise this end, NASA launched the first ERTS (Earth Resources Technology Satellite) later named Landsat on July 23, 1972. Landsat-2 was launched on 22 January, 1975. The method is often called Remote Sensing as the information which is obtained about an object or phenomenon is not in direct contact with the information gathering device. Both these satellites have got seven channels or bands as they are called. The frequency ranges are as follows:-

RBV (Return Beam Vidicon)

	Wave length in micrometer
Band 1	0.475-.575
Band 2	0.580-.680
Band 3	0.690-.830

MSS (Multispectral Scanner)

Band 4	0.5-0.6
Band 5	0.6-0.7
Band 6	0.7-0.8
Band 7	0.8-1.1

Bangladesh has drawn up a plan of participating in the ERTS Programme in the following sectors (1) Agriculture (2) Water Resources (3) Forestry (4) Fisheries and Oceanography (5) Geology (6) Cartography (7) Meteorology (8) Interpretation Techniques Development. Presently the Programme is sponsored by the Planning Commission.

Data Interpretation

All objects like water, vegetation, soil etc radiate electromagnetic energy and receive radiation from their surroundings. The electromagnetic energy radiated depends on the area, nature and temperature of the radiating surface. This can be detected by means of suitable sensors on board the satellite and is called the spectral signature of the body. This property of physical objects forms the basis of multispectral data analysis in Remote Sensing. (SLIDES)

Spectral response of a particular object is not unique. Thus there may be an overlap in the spectral signature of two bodies. The measurement vector corresponding to a particular ground resolution element from one part of a field will not correspond exactly to the measurement vector corresponding to another ground resolution element from the same field. Vectors from the same class tend to form a cluster of points. In the multispectral approach, if there are n channels, we get n number of measurements for a particular ground resolution element.

They define a point in n dimensional Euclealean Space called Measurement Space, represented by a vector $X=(x,x_2,\ldots x_n)$. This n dimensional measurement vector is converted into an n dimensional feature vector $Y=(y_1,y_2,\ldots y_n)$. This feature vector is then assigned a class based on Statistical Decision Theory. Each point in the feature space is assigned a class based on some oriterion depending on the spectral characteristics.

Analysis of the Sylhet-Mymensingh Haor Frame

The satellite takes picture from a height of 560 miles. Each frame covers a distance of 115 x 115 miles. Same spot is repeated after every eighteen days. The slides show the SYLHET-MYMENSINGH Haor area in Bands 5 and 7.

We have chosen this area as an experimental site for winter crop estimation. We have visited a few test sites just to find out what tone represents what in the actual field in different bands. This process is called finding the ground truth. We have selected band 7 and band 5 for 27th March, 1975. The boro crop was identified in both the bands. A very rough estimate gives an acrage of 11.5 acres. The Agriculture Department Figure for 1973 is 12.3 acres. Our estimate is about 93% of the 1973 figure which is available to us. Perhaps we have not taken into account very small fields. Plots less than five acres cannot be identified in ERTS imageries. This shows the feasibility of objective crop estimation with the help of satellites. This has been done roughty with the unaided aye. With the help of computers, it is possible to get an accuracy of 98% or more.

Jahangirnagar University and the ERTS group have undertaken a joint programme with the Environmental Research Institute of Michigan (ERIM) for mapping this region with the help of their computer and when we get their results, we shall be able to compare the results. We will also visit the test areas again in April just to check our results.

Haor area is a very resourceful area but very undeveloped. A study of the area with the satellite data will be very helpful for the optimal utilization of this area.

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