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COMPUTER AIDED HYDROLOGIC LAND USE MAPPING USING SATELLITE AND AIRCRAFT SENSED DATA: INDIAN CASE STUDIES

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This paper presents the results of two studies on computer analysis of Landsat-derived and aircraft based multispectral scanner data towards hydrologic land use mapping, necessary for effective water resources planning and management. The analyses were performed on the interactive Multispectral Data Analysis system (MDAS) at the National Remote Sensing Agency (NRSA) headquarters in Hyderabad, India.

The first study involved automated generation of hydrologic land use information to support regional ground water exploration programmes in the Semiarid Southern parts of Tamil Nadu State in India. The accuracy of comptuer categorisation was estimated through stratified random sampling techniques to be around 70 percent. At 95 percent confidence level, the accuracy estimate ranged from 66 to 88 percent.

Computer analysis of airborne 11 channel scanner data, to be optimum, requires that minimum number of channels of data be used commensurate with information requirements. The results of a test study indicate that for a typical MDAS analysis involving 36 spectral groups (8 flood plain land use categories) there can be a reduction of about 130 minutes in CPU time when four channels of data are used instead of all the 11 bands. The discmemory space for 4 channel analysis is only about 50 percent of that needed for 11 channels of data. The categorisation accuracy was comparable even with four channels of data. Further the uncategorised area was 15.7 percent with 11 channels of data compared to 1.14 percent with 4 channels of data. Thus, in this regional level flood plain land use categorisation effort only 4 out of 11 channels needed to be used to obtain comparable results but at a significantly lower computer cost.