

Purdue University
Purdue e-Pubs

LARS Symposia

Laboratory for Applications of Remote Sensing

1-1-1980

Computer Aided Hydrologic Land Use Mapping Using Satellite and Aircraft Sensed Data: Indian Case Studies

S. Thiruvengadachari

Follow this and additional works at: http://docs.lib.purdue.edu/lars_symp

Thiruvengadachari, S., "Computer Aided Hydrologic Land Use Mapping Using Satellite and Aircraft Sensed Data: Indian Case Studies" (1980). *LARS Symposia*. Paper 367.
http://docs.lib.purdue.edu/lars_symp/367

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact epubs@purdue.edu for additional information.

Reprinted from

**Symposium on
Machine Processing of
Remotely Sensed Data
and
Soil Information Systems
and
Remote Sensing and Soil Survey**

June 3-6, 1980

Proceedings

The Laboratory for Applications of Remote Sensing

Purdue University
West Lafayette
Indiana 47907 USA

IEEE Catalog No.
80CH1533-9 MPRSD

Copyright © 1980 IEEE
The Institute of Electrical and Electronics Engineers, Inc.

Copyright © 2004 IEEE. This material is provided with permission of the IEEE. Such permission of the IEEE does not in any way imply IEEE endorsement of any of the products or services of the Purdue Research Foundation/University. Internal or personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution must be obtained from the IEEE by writing to pubs-permissions@ieee.org.

By choosing to view this document, you agree to all provisions of the copyright laws protecting it.

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

S. THIRUVENGADACHARI

National Remote Sensing Agency, India

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 computer 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.

CH1533-9/80/0000-0241 \$00.75 ©1980 IEEE