

DEVELOPMENT OF GEOGRAPHIC INFORMATION SYSTEMS
FOR POORLY MAPPED AREAS OF THE WORLD

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Mr. MacRae has been working for more than twelve years in the processing of multispectral data for use in earth resources analysis and applications studies. Formerly with Bendix Aerospace Systems Division where he managed and participated in the software development program for the Bendix M-DAS system. Conducted training programs in use of image analysis systems in Japan, Egypt, India, Argentina, and Brazil. Past responsibilities have included implementation of a geographic information system for the Government of Peru to provide land use/resource management assessment and management capability for the entire country.

ABSTRACT

Recent advances in both hardware and software have opened up an exciting new area for the application of GIS technology - land assessment and resource management for areas of the world where current cartographic information does not exist or is inadequate.

Through the use of satellite doppler receivers and state of the art geometric correction software, Landsat satellite data can be used to generate planimetric base maps and digital data bases meeting national map accuracy standards at scales of 1:200,000 or smaller.

The consequence for GIS technology from this ability to generate planimetric maps utilizing Landsat data is the capability to provide land resource managers with a tool to assess and control future resource utilization in areas where no viable alternative exists. The Landsat derived map becomes the base map onto which the manually interpreted data is transferred. In addition, computer-assisted land cover classification of the Landsat data may be merged with the manually interpreted data in the GIS data base.

The new capability means that third world or underdeveloped countries may generate a set of maps conforming to national map standards, produce digital data bases corresponding to the map format, and produce land assessment and resource management decisions which may be referenced directly to the national map series. This ability to achieve GIS technology transfer to nations which are very much in need of the technology for a relatively low cost in a short time-frame is a most exciting aspect of the GIS future potential.