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A SELECTED BIBLIOGRAPHY: REMOTE SENSING APPLICATIONS
FOR TROPICAL AND SUBTROPICAL VEGETATION ANALYSIS

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FOR TROPICAL AND SUBTROPICAL VEGETATION ANALYSIS

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ABSTRACT

This bibliography contains 425 citations of selected technical reports, journal articles, and other publications covering the general subject of tropical and subtropical vegetation analysis. Functionally related topics that include vegetation analysis are included for completeness, and citations have been organized under the following subheadings for ease of reference: remote sensing application overviews, vegetation (general), forestry, grasslands/savannah/shrublands, agriculture, land use/thematic mapping, and integrated surveys/multiple resource analysis/land systems. The terms "tropics and subtropics" are used in the widest context to include applications related to a broad range of equatorial environments. The bibliography contains selected citations published between 1924 and 1978. Many foreign language and non U.S.-source items are included.

INTRODUCTION

In recent years, there has been a proliferation of documented applications of remote sensing techniques to many resource inventory and analysis problems. However, the majority of these applications have been demonstrated in the temperate climates of the world where remote sensing technology has been developed. Because the demand for resource information is increasing in the developing nations, resource specialists in these nations are now turning to the remote sensing literature to determine which existing techniques might be most useful to them.

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Unfortunately, the environmental conditions of many developing nations often differ significantly from those in the countries where the utility of many remote sensing techniques has been demonstrated. For example, the agricultural practices and patterns in Latin America bear little resemblance to the wheat-growing lands of the United States where crop identification techniques are being developed. Similarly, the complexity of mixed tropical forests has little parallel in the conifer forests of North America where much early research and demonstration of remote sensing applications took place. Because of differences such as these, much of the existing literature has little direct application for many persons with a great need for the technology.

The body of literature that addresses remote sensing applications in the developing nations is growing, however. The author's contact with persons from developing countries, as well as his growing exposure to this literature, have encouraged him to attempt to organize and document references that deal with remote sensing applications to vegetation studies in tropical environments.

The only other attempts at a comprehensive bibliography of this type known to the author were prepared by Lutz (1966) and Wacharakitti and Miller (1975). Lutz's work contains a critical and descriptive review of 80 references. Because remote sensing technology has very recently expanded to include Earth resources satellites and airborne imaging radar systems, two large subject areas of potential application in the tropics not extensively investigated by 1966, it seemed timely to attempt to update this work to include both the many uses of conventional aerial photography as well as these new technologies. Wacharakitti and Miller (1975) provide a good narrative overview of pertinent remote sensing literature, and a bibliography of over 250 references. However, at least one-third of their citations are of studies in non-tropical environments.

Although many of the works cited here are published in journals and other sources that are relatively unfamiliar to American scientists, they may be more accessible to resource specialists in other parts of the world than are proceedings and journals published in the United States. For this reason the author has chosen to include citations that might be considered little-known in this country, as well as those that are published in languages other than English.

The vegetation cover of the Earth is often subdivided into arbitrary classes according to use by man—such as forest, rangeland, and agricultural land. It seemed reasonable to use one such group of categories as a basis for subdividing the body of literature being considered. With this rationale in mind, the following categories were selected:

1. Remote sensing application overviews--summary statements of international applications of remote sensing, or general papers relating to applications in the tropics
2. Vegetation (general)--papers addressing vegetation mapping as a general subject or that include more than one of the single subjects (3-7) that follow
3. Forestry
4. Grasslands/Savannah/Shrublands and related non-forest wildland vegetation cover
5. Agriculture
6. Land Use/Thematic Mapping
7. Integrated Surveys/Multiple Resource Analysis/Land Systems, including land resource analysis and classification, soil/land capability, environmental analysis, and natural resources surveys.

The reader is cautioned that this organization may result in the partitioning of the literature in a manner that does not correspond to his needs. For example, remote sensing studies of marginal forest and shrubland areas might appear under either of those headings, whereas the reader's interest may lie instead with their suitability for agricultural production. Nevertheless, it is hoped that this breakdown will provide a generally useful basis for subdividing the citations which follow.

In a similar fashion, the terms tropical and subtropical environments are taken to mean that portion of the Earth falling within or adjacent to the Tropics. Several systems of world vegetation classification are currently in use, each of which carefully names and subdivides the world's vegetation. To accept any particular system as the basis for organizing this bibliography would be to acknowledge that one system best serves the needs of the potential user of the bibliography. It is the author's belief that the broad definition given above is most satisfactory for the purposes of screening candidate bibliographic citations.

However, he also recognizes that there are common elements in the broadest vegetation categories of various world systems. Within the tropic and subtropic regions, most systems include tropical rain forest, semideciduous forest (light rain forest), tropical moist and dry deciduous forests, tropical scrub forest, and savannah/tropical grasslands. These general classes comprise the environments for which remote sensing applications are sought. The author's central concern is to exclude the main body of literature covering applications in temperate climates that is always referred to when the subject of "proven or demonstrated remote sensing techniques" is discussed. His main hope is that this effort will bring certain heretofore little-known works to the attention of interested specialists.

The earliest citation is dated 1924, and the most recent citations were published in 1978.

OBTAINING COPIES OF CITED DOCUMENTS

Publications, reports and documents cited in this bibliography may be procured from a variety of sources. Authors will often provide copies or reprints of their published materials; institutions, corporations, and university departments or libraries can often provide copies of required documents on loan or in exchange for copying costs.

Certain items in this bibliography are followed by an accession number with an "N" prefix. This number is a purchase order number for documents available from the National Technical Information Service (NTIS) of the U.S. Department of Commerce. NTIS is a centralized source for the public sale of U.S. Government-sponsored research, development, and engineering reports and other analyses prepared by Federal agencies and their contractors or grantees. Documents are available in either paper copy or microfiche format.

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