



IEEE

# DIGEST

VOLUME I



1981 INTERNATIONAL GEOSCIENCE AND  
REMOTE SENSING SYMPOSIUM (IGARSS '81)





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# 1981 IEEE INTERNATIONAL GEOSCIENCE & REMOTE SENSING SYMPOSIUM

## DIGEST

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## **WELCOME**

On behalf of the IEEE Geoscience and Remote Sensing Society and the IGARSS'81 Executive Committee, welcome to the 1981 International Geoscience and Remote Sensing Symposium. IGARSS'81 is sponsored by the IEEE Geoscience and Remote Sensing Society and is cosponsored by numerous professional and governmental organizations with vigorous interest in and commitment to the field of remote sensing. The year 1981 marks the twentieth anniversary of the founding of the IEEE Geoscience and Remote Sensing Society, and the strong technical program published in this Digest indicates the breadth and vigor of recent activity in this important field. The theme of IGARSS'81, "Recent Advances in Remote Sensing," reflects the recognition of the rapid rate of development of remote sensing techniques and their applications for monitoring the earth's environment, surface and sub-surface.

For remote sensing research to become of general use to mankind, we need to integrate our knowledge of and perspectives on the various geoscientific disciplines; instrumentation systems and data processing techniques; and the physical models of the sensor interaction with natural surface and media. Successful integration of these elements of the remote sensing process relies heavily on the level of communication among the members of the various scientific and technological communities who together form the "remote sensing community." To enhance the effectiveness of these communication channels, the technical program of IGARSS'81 has been structured to provide a comprehensive review of progress in virtually every geoscientific disciplinary area which uses remote sensing techniques, earthborne and spaceborne sensor systems, and theoretical methods applicable to data processing, analysis, and interpretation.

The technical program of IGARSS'81 has been divided among 30 technical sessions dealing with recent scientific programs and instrumentation approaches in oceanography, geology, agriculture, meteorology, hydrology, and other geoscientific disciplines as well as major remote sensing systems programs and theoretical modeling approaches. Many of these sessions have been highlighted by a Feature Paper, given by a universally recognized authority in the appropriate disciplinary area. These Feature Papers provide a broad-brush portrait of recent progress in geoscience and remote sensing and will outline future challenges for the engineering and scientific community. In addition to the Feature Papers, approximately 50 percent of the

papers given have been invited from authorities selected to give IGARSS'81 attendees more detailed reviews of recent work in specific technical and scientific investigations. The remaining papers have been carefully selected to provide the best possible technical balance for IGARSS'81, and report on many of the major geoscientific and instrumentation efforts currently in progress both in the United States and abroad.

IGARSS'81 is truly international in flavor and a vigorous effort has been made to insure participation by the world geoscientific and remote sensing community in technical planning as well as technical reporting at IGARSS'81. Readers will find of particular interest papers dealing with remote sensing activities in Canada, France, Germany, Denmark and other countries. The strong European participation in IGARSS'81 is appropriate in view of the fact that IGARSS'82 will be held at the University of Munich.

The breadth and balance of the IGARSS'81 technical program is the result of the work of the Technical Program Committee and the Session Chairmen, many of whom spent a substantial portion of their time in planning for the best possible papers. Of course, the primary debt of gratitude is owed to the authors of those papers herein, who have realized the significance of publishing important, timely results in this Digest of the 1981 International Geoscience and Remote Sensing Symposium.



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## TECHNICAL SESSIONS



## P L E N A R Y   S E S S I O N

June 8, 1981  
9:45 a.m. - 12:00 noon  
Grand Ballroom

Chairman: Fawwaz T. Ulaby  
Remote Sensing Laboratory  
University of Kansas

## KEYNOTE ADDRESSES:

1. NEW ADVANCES AND FUTURE CHALLENGES IN MARINE GEOPHYSICAL TECHNOLOGY

Manik Talwani  
Director, Lamont-Doherty Geological Observatory of  
Columbia University

2. THE FUTURE OF SATELLITE REMOTE SENSING

David S. Johnson  
Chairman, Satellite Task Force  
National Oceanic & Atmospheric Administration

E. Larry Heacock  
National Earth Satellite Service  
National Oceanic & Atmospheric Administration

3. EUROPEAN SATELLITE REMOTE SENSING ACTIVITIES OF THE 1980's

A. M. Hieronimus  
Head, Applications Program Department  
European Space Agency

Session No. 1

ADVANCED SENSORS

June 8, 1981  
1:30 - 5:30 p.m.  
GBR Room B

Chairman: Kiyu Tomiyasu  
General Electric Co.  
Valley Forge Space Center, PA

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