



**U. S. DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY**

**EARTH RESOURCES  
OBSERVATION SYSTEMS  
(EROS) PROGRAM**



**12TH AND 13TH INTERNATIONAL  
REMOTE  
SENSING  
WORKSHOPS**

with emphasis on multidisciplinary  
and interdisciplinary uses of  
Landsat satellite imagery  
and other remote sensing data

**APRIL 30-MAY 25, AND  
SEPTEMBER 10-OCTOBER 5, 1979**

**EROS DATA CENTER  
SIOUX FALLS, SOUTH DAKOTA**

DIRECT INQUIRIES TO:  
U. S. Geological Survey  
917 National Center  
Reston, Virginia 22092

# TENTATIVE SCHEDULE

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## 12th and 13th International Remote Sensing Workshops

This schedule shows the general content and structure of a typical International Remote Sensing Workshop. Any particular workshop will vary in arrangement or emphasis as a function of the choice of field work location and imagery examples.

### First Week

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Orientation and introduction to the EROS Data Center  
Fundamentals of image formation  
The Landsat satellite system  
Principles of image analysis  
Regional pattern analysis

### Second Week

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Discipline applications overview: geology, hydrology, land use, vegetation (agriculture, forestry, and rangelands)  
Environmental data base preparation (Landsat/aerial photography) and multidiscipline team analysis

### Third Week

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Field verification trip  
Introduction to radar and infrared thermal sensing systems and imagery

### Fourth Week

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Discipline studies: vegetation (agriculture, forestry, rangelands), geology/hydrology, land use  
Independent study of Landsat imagery of participants' countries  
EROS Program overview and discussion of international aspects of the Landsat program

Closing ceremony

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This cover can be unfolded and used as a poster for announcing the workshops.



ANNOUNCEMENT

TWELFTH AND THIRTEENTH INTERNATIONAL REMOTE SENSING WORKSHOP

EROS DATA CENTER, SIOUX FALLS, SOUTH DAKOTA

MAY AND SEPTEMBER 1979

In response to continuing interest in the use of remote sensing technology for Earth resources inventory and assessment, the U.S. Geological Survey presents a program of remote sensing workshops for non-U.S. scientists, engineers, and managers. These workshops are held at the EROS Data Center (EDC), Sioux Falls, South Dakota, during May and September each year, demand and schedule permitting. The dates for the 1979 Workshops are:

Twelfth International Workshop: April 30 - May 25, 1979

Thirteenth International Workshop: September 10 - October 5, 1979

OBJECTIVE AND GENERAL METHODOLOGY

The workshops, which are introductory in nature, are designed to give participants some familiarity with various remote sensing systems-- i.e., their characteristics, limitations, advantages, applications-- as well as some experience in analyzing several forms of imagery to produce an environmental data base or other useful product. Emphasis will be placed on the analysis of Landsat imagery. Attention will also be given to other image forms, such as aerial photography, thermal infrared imagery, and radar imagery.

In addition to discipline-oriented studies, the workshops will provide instruction in interdisciplinary uses of remote sensing data. Candidates for the workshops should have backgrounds or assignments in one or more of the following disciplines: agriculture, engineering site selection and evaluation, forestry, geography (including land use planning and demography), geology, hydrology, range management, and soil science.

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The workshops are designed to present the basic principles of manual techniques of analysis. The workshops will not include advanced theoretical work or computer-aided image analysis, and thus are not appropriate for those persons seeking training in computer-assisted applications.

#### GENERAL DESCRIPTION OF WORKSHOP PROGRAM

The four-week workshop program consists of classroom lectures, demonstrations, workshop exercises, homework, and field work in the analysis of images from Landsat and other remote sensor systems. Workshop exercises include the study of imagery and its applications to North American environments as a basis for studying Landsat imagery of the participants' countries. A field trip provides experience in field data collection and an opportunity to verify many of the interpretations made during the workshop exercises. In addition, participants will work with Landsat data for areas of their choosing. Attendees should bring with them any reference material needed for their individual projects. This would include thematic maps and supporting documentary material (geology, land use, soils, vegetation, etc.) of their study areas.

During the workshop, optical equipment at the EROS Data Center will be available for use by the attendees. Center services, such as the Library and the Visitor Assistance Facility (microfilm browse file), will also be available.

#### LANDSAT IMAGERY OF AREA TO BE SELECTED BY CANDIDATE

An important part of the workshop is the interpretation of Landsat imagery of an area selected by the attendee, preferably an area in which the attendee is working or has worked. Because this imagery must be ordered in advance of the workshop, each applicant must specify the desired geographic study area and state the objective(s) of the proposed analysis on the application form. One may choose to study a static condition, for example the geologic character, the status of land use, the distribution of surface water, or of vegetation at a single, specific time; or, one may want to study the applicability of repeated Landsat coverage to the analysis of changing conditions or their usefulness in refining the analysis of environmental conditions on the basis of clues that are inherent in seasonal conditions. Therefore, the applicant should specify either (1) repetitive (seasonal) coverage--for temporal analysis of an area which is contained on one Landsat scene, or (2) scenes obtained at a single observation time over a larger area. In either case, the imagery ordered will not exceed a total of three scenes.



As image availability, quality, and cloud cover may limit the extent to which a request can be filled, the applicant should identify alternate areas to be used if adequate imagery does not exist for the primary area. The geographic location of the areas for which imagery is requested should be specified in the appropriate space on the application; the specific Landsat image identification numbers (if known) should be listed.

#### COST

Payment of \$1,600 workshop fee must be made prior to the start of the workshop. This fee includes the cost of instruction, training materials, and workshop bus travel.

An advance deposit of \$400, which is not refundable, is part of the \$1,600 fee and is required within six weeks after receipt by the candidate of notification of acceptance (refer to time schedule in the next section).

Bank checks or drafts made payable to the U.S. Geological Survey in U.S. dollars should be forwarded to:

Chief, Office of International Geology  
U. S. Geological Survey  
National Center (917)  
Reston, Virginia 22092  
U.S.A.

Please do not send cash or traveler's checks.

Approximately 40% of the \$1,600 fee covers items which the attendee will retain upon completion of the workshop. The \$400 advance includes the cost of the Landsat imagery of the attendee's study area which must be prepared by EDC prior to the start of the workshop. If the accepted candidate does not attend the workshop, the imagery will be forwarded to address cited on the application.

The cost of international travel to and from Sioux Falls and living expenses for attendees during the workshop are to be met by the sponsoring entities. At this time a per diem rate of \$40 (U.S.) is sufficient to cover living expenses at Sioux Falls. However, this might change by the time the course commences. The USGS will provide pertinent information at least one month before the course is scheduled to begin. It is recommended that sponsors provide attendees with one-third or more of the funds required for living expenses at the time of their departure for the United States, and the remainder in the form of a letter of credit with the Northwestern National Bank in Sioux Falls.

A statement is required for each attendee that all hospital and health costs not covered by any insurance will be paid by the sponsor. A form for providing this statement is included with the application.

## PROCEDURE FOR APPLICATION

Applicants are required to use the enclosed Application Form (facsimiles or machine copies are acceptable). Candidates sponsored by a university, private company, or a non-national governmental entity must submit their applications through their national governmental agency. All applications should be sent to:

Chief, Office of International Geology  
U. S. Geological Survey  
National Center (917)  
Reston, Virginia 22092  
U.S.A.

### Schedule pertinent to the Twelfth (May) International Workshop:

January 2, 1979	Deadline for receipt of application (applications must be received by this date in order to be eligible for consideration).
January 16, 1979	Notification by USGS to those selected for the workshop.
March 1, 1979	The advance deposit of \$400 is due.
April 30, 1979	Twelfth International Workshop begins. \$1,200 balance due.

### Schedule pertinent to the Thirteenth (September) International Workshop:

May 14, 1979	Deadline for receipt of application (applications must be received by this date in order to be eligible for consideration).
May 29, 1979	Notification by USGS to those selected for the workshop.
July 9, 1979	The advance deposit of \$400 is due.
September 10, 1979	Thirteenth International Workshop begins. \$1,200 balance due.

Because the workshops are intensive, and to ensure adequate instructor-attendee interaction, enrollments will be limited to approximately 25 persons. A balance will also be maintained among geographic areas and discipline subjects represented; therefore, attendees for any given country may be limited. Application deadlines must be met to allow time for ordering needed imagery and materials and for planning workshop details. As all lectures and discussions will be in English, attendees

must be able to understand, speak, and read this language. If possible, applicants should provide English language facility test scores. Interpreters cannot be provided.

Nominations have exceeded capacity for earlier workshops. Therefore, if multiple nominations are submitted, they should be arranged in priority order. Candidates who are accepted but cannot be accommodated in the particular workshop will be given priority in a succeeding workshop.

Additional information about the workshop program, the EROS Data Center, and the city of Sioux Falls will be forwarded approximately one month prior to the beginning of the workshop to candidates who are accepted for attendance.

Many participants augment their trip for attendance at the International Remote Sensing Workshop in Sioux Falls with visits to other U.S. Government agencies and university research centers related to their fields of interest. Some assistance in planning these activities can be provided if specific agencies, personal contacts, or types of activities are designated by the applicant.



GENERAL OUTLINE

## International Remote Sensing Workshops

This sample schedule shows the general content and structure of a typical International Remote Sensing Workshop. Any particular workshop will vary in arrangement or emphasis as a function of the choice of field work location and imagery.

First Week

Orientation and introduction to the EROS Data Center

Fundamentals of image formation

The Landsat satellite system

Principles of image analysis

Regional pattern analysis

Second Week

Discipline applications overview: geology, hydrology, land use, vegetation (agriculture, forestry, and rangelands)

Environmental data base preparation (Landsat/aerial photography) and multidiscipline team analysis

Third Week

Field verification trip

Introduction to radar and infrared thermal sensing systems and imagery

Fourth Week

Discipline studies: geology/hydrology, land use, vegetation (agriculture, forestry, rangelands)

Independent study of Landsat imagery of participants' countries

EROS Program overview and discussion of international aspects of the Landsat program

Closing ceremony



APPLICATION FORM

Twelfth and Thirteenth International Remote Sensing Workshops

Indicate Workshop applying for by check mark  in appropriate box.

Twelfth International Remote Sensing Workshop, April 30 - May 25, 1979

Thirteenth International Remote Sensing Workshop, September 10 - October 5, 1979

1. Name (Mr., Mrs., Miss; please underline name of family):
  
  2. Birth date: \_\_\_\_\_ (month, day, year)
  
  3. Official address (Organization, Street, City, State or Province, Country):
  
  
  4. Present position (give title and brief description of duties and responsibilities):
  
  
  5. Discipline(s) of active interest:
  
  
  6. Education (please summarize your educational background in the spaces below):  

<u>Institution and Location</u>	<u>Dates of Attendance</u>	<u>Degrees Earned</u>	<u>Fields of Study</u>
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  7. Experience (please include specific experience in remote sensing, including photo interpretation and other forms):
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8. English language facility (please indicate good, fair, poor, or type of test and test scores):

Speaking: \_\_\_\_\_ Reading: \_\_\_\_\_ Writing: \_\_\_\_\_ Type of Test: \_\_\_\_\_  
Test Scores: \_\_\_\_\_

9. Please describe any association with the Landsat program (as a principal investigator, a co-investigator, or in any other capacity):

10. What are your objectives in attending this Workshop? Please be as specific as possible:

11. A limited amount of Landsat imagery of a portion of your country will be ordered for study during the Workshop. For this purpose, please list the geographic coordinates (using latitude and longitude) of your primary study area (maximum size, 6,000 km<sup>2</sup>) and include a location map. Also, provide coordinates and maps for second and third priority areas and list any specific Landsat imagery identification numbers and/or specific dates or month(s) of the year which are preferred. These requests will be accommodated, if possible. Finally, please specify whether you wish sequential coverage of one area or one-time coverage of several areas:

<u>Area</u>	<u>Coordinates (Degrees and Minutes)</u>	<u>Specify Desired Month(s), Image Identification Numbers (if known), etc.</u>
First priority		
Second priority		
Third priority		
I prefer: (check one)		
_____ Sequential coverage for the area covered by one Landsat scene. Please check whether images should be from a single year <input type="checkbox"/> / or successive years <input type="checkbox"/> .		
_____ One-time coverage of several areas.		

Please summarize briefly the objective(s) of your study of this imagery:

12. How will your attendance be financed?



MEDICAL EXPENSES

To Whom It May Concern:

The person named below is a candidate for the U.S. Geological Survey International Remote Sensing Workshop program at Sioux Falls, South Dakota. This statement certifies that any medical expense incurred by the candidate during his stay in the United States, and not covered by insurance, will be paid for by his sponsor.

Candidate

Sponsor

\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

Date: \_\_\_\_\_

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ITINERARY

Please complete this page if you wish assistance in scheduling other activities in connection with your attendance at the International Remote Sensing Workshop.

ARRIVAL IN U.S.

Date:

Place:

ARRIVAL IN SIOUX FALLS

Date:

OTHER INSTITUTIONS TO BE VISITED IN U.S.

Name and Location

Desired Dates

DEPART FROM U.S.

Date:

Place:

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