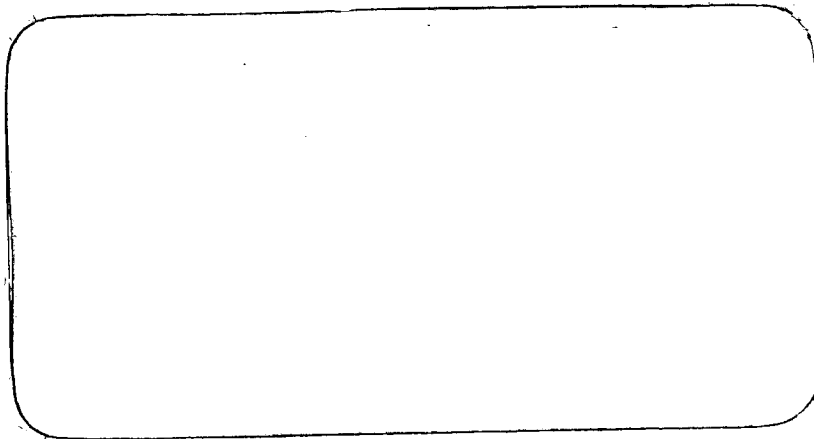




Institute of Geological Sciences

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Report on a Visit to
CAIRO

January 1982

by

F Habgood

Report No: 1982/1

INTRODUCTION

The visit was in order to attend the International Symposium on Remote Sensing of Environment, First Thematic Conference: "Remote sensing of Arid and Semi-Arid Lands". It had been postponed from early November 1981 owing to the murder of President Sadat and the period of national mourning which followed it. It was organised and conducted by the Environmental Research Institute of Michigan, Ann Arbor, in conjunction with the Remote Sensing Centre, Cairo, and was one of a series which, over the past 20 years, has done much to further the development and application of remote sensing technology.

The symposium was intended to be a major step in the establishment of a series of periodic in-depth reviews of the potential role of remote sensing in specific earth resources and environmental monitoring applications. The programme is attached as Appendix I whilst the essential content is given in the Summaries which are also attached. As is probably inevitable at such meetings, a few of the papers appearing in the Summaries were not presented whilst one or two that were do not feature there.

The organisers did not provide a list of the participants although a Cairo newspaper reported that they numbered 1000 and came from 45 countries. The impression gained was that the overwhelming majority of these were Egyptian and their large numbers made contact and discussion between the other participants more difficult. The American presence was considerable but most countries appeared to have up to half a dozen participants.

The technical sessions consisted of conventional sessions at which papers were presented formally and of poster sessions. At the conventional sessions the speakers were allowed only about 20 minutes for their presentation and this would have been insufficient for the detailed description of anything fundamentally new and for the questioning that would have arisen. However, the papers were, in general, of small scientific interest and the majority did not give rise to any questions. Many of the speakers had to contend with a microphone which generated banshee shrieks and with the assistance of a projectionist whose frenzied efforts to display the right illustration at the right time, the right way round and the right way up were rewarded less frequently than the laws of chance would appear to require. The poster sessions were more successful in allowing detailed discussion with the presenters.

THE SESSIONS

The opening session was largely non-technical. Greetings were followed by several speakers whose common theme appeared to be the need for technical aid to third world countries, particularly arid third world countries, and the value of remote sensing techniques within such programmes. The second session on National and Regional Remote Sensing programmes consisted of invited papers and gave an opportunity to the speakers to dilate on the excellence (or planned excellence) of their national remote sensing centres and programmes of work in environmental monitoring. There was nothing technically new.

Each of the conventional technical sessions had a common theme. Of the non-geological sessions the impression was gained (and this was confirmed by conversations with specialists in the disciplines covered) that such interest as the papers possessed lay principally in the problems being studied and only to a subordinate degree in the application of remote sensing techniques to these studies. In the vast majority of cases the remote sensing techniques employed were very simple: a few papers appeared to have no remote sensing content at all.

The session on geological mapping opened with an interesting paper on structural studies in Egypt. This was followed by a paper on the application of spectral data to mapping arid terrains and this contained nothing new being a historical review of work from that by Rowan et al in Nevada to the potential of narrow band filters in the visible, reflected and emitted infra-red portions of the spectrum. The third paper, on geochronology in the Sahara, was archeological and had only a small remote sensing content, whilst the final paper on the application of remote sensing in geological mapping was a review of work in Saudi Arabia: it was a practical demonstration of the value of Landsat in the mapping of an arid area.

The session on mineral and petroleum exploration opened with a paper by Nigel Press which does not appear in the Summaries. It was an extension of his poster presentation and was essentially his "Tectosat" studies applied to Africa and the Middle East and so is highly speculative. It was, however, the best presented paper at the conference. The second paper, on mineral discoveries which have resulted from the application of remote sensing techniques, was another historical review of generally well-documented

examples. The third paper, on the Gulf of Suez, was not presented whilst the final paper, on spectral reflectance analysis, was one of the very few geological presentations, either at the conventional or poster sessions, to rely heavily on spectral band ratioing.

The closing session of the conference consisted of expressions of thanks.

CONCLUSIONS

Remote sensing involves a number of techniques which can be applied with considerable effect in a variety of scientific studies but once these techniques become established they do not need to be discussed. Landsat applications predominated at this symposium and after ten years experiment Landsat interpretative techniques have become operational and it is perhaps not surprising that there was little that was new. Once the thematic mapper and SPOT become operational it is probable that further research will be stimulated into the interpretation of remote-sensed data. As a personal view, the symposium would have had an increased interest had there been more emphasis on aircraft-borne sensors and on microwave systems, but undoubtedly it was successful as a meeting place for those concerned in arid land studies.

APPENDIX I

PROGRAMME

TUESDAY

JANUARY 19

SESSION 2

(Main Conference Hall, National Democratic Party Building, Corneish El Nil, Cairo)

NATIONAL AND REGIONAL REMOTE SENSING PROGRAMS

Chairman: Gen. Eng. Saad Shaaban, Director, Office of the President, *Arab Republic of Egypt*

Co-Chairman: Mr. J.W. Jarman, Data Collection & Management Division, U.S. Army Corps of Engineers, Fort Belvoir, Virginia, *USA*

- 1:30 [8] THE APPLICATION OF REMOTE SENSING TO NATURAL RESOURCES INVENTORY IN EGYPT
Dr. Mohamed A. Abdel Hady, Director, Remote Sensing Center, Cairo, *Egypt*
- 2:50 [9] MONITORING OF DESERTIFICATION PROCESSES BY REMOTE SENSING
Dr. H.S. Mann, Director, Central Arid Zone Research Institute, Jodhpur, *India*
- 3:10 [10] POTENTIAL APPLICATION OF REMOTE SENSING TO THE STUDY OF ARID AND SEMI-ARID LANDS IN ARGENTINA
Brig. Gen. Miguel Sanchez Peña, Marcelo Guillermo Campi and Natalia Marlenko, Comision Nacional Investigaciones Espaciales, Buenos Aires, *Argentina*
- 3:30 [11] APPLICATIONS OF REMOTE SENSING TECHNOLOGY TO U.S. RESOURCE MANAGEMENT
Mr. Jim Weber, National Aeronautics & Space Administration, Washington, DC, *USA*
- 4:50 [12] JOINT U.S.-MEXICAN ACTIVITIES IN ARID LAND MANAGEMENT AND DESERTIFICATION CONTROL
Dr. J. Eleonora Sabadell, Bureau of Land Management, U.S. Department of the Interior, Washington, DC, *USA* and Dr. Miguel Caudra, Director, Programas Especiales, Mexico City, *Mexico*
- 4:10 [13] U.S. OPERATIONAL LAND AND METEOROLOGICAL SATELLITE PLANS AND DATA APPLICATIONS
Ms. Alice Hogan, External Affairs Office, National Oceanic & Atmospheric Administration, Washington, DC, *USA*
- 5:30 [14] SPOT AND REMOTE SENSING APPLICATIONS FOR ARID AND SEMI-ARID LANDS
Dr. C. Veillas, Centre National d'Etudes Spatiales, Paris, *France*

7:00 RECEPTION/OPENING OF EXHIBITS
(Sunrays Room, Holiday Inn Pyramids)

TUESDAY

JANUARY 19

SESSION 1

(Main Conference Hall, National Democratic Party Building, Corneish El Nil, Cairo)

OPENING REMARKS—KEYNOTE ADDRESS

Chairman: **Dr. Mostafa K. Helmy**, Minister of State for Education and Scientific Research, *Arab Republic of Egypt*
Co-Chairman: **Dr. William M. Brown**, President, Environmental Research Institute of Michigan, Ann Arbor, Michigan, *USA*

- 10:00 [1] **WELCOME ADDRESS**
Dr. Mohamed A. Abdel Hady, Director, Remote Sensing Center, Cairo, *Egypt* and Professor of Civil Engineering, Oklahoma State University, Stillwater, Oklahoma, *USA*
- 10:15 [2] **THE USE OF MODERN TECHNOLOGY TOOLS IN EGYPT**
Dr. Ibrahim G. Badran, President, Academy of Scientific Research and Technology, *Arab Republic of Egypt*
- 10:30 [3] **REMOTE SENSING IN THE GLOBAL MONITORING OF ENVIRONMENT**
Dr. Mostafa K. Tolba, Director, United Nations Environment Programme, Nairobi, *Kenya*
-
- 10:50 [4] **Message from the Secretary General of the United Nations**
BENEFITS OF INTERNATIONAL COOPERATION, delivered by **Mr. Abdel Hamid Abdel Ghani**, Senior Consultant, UN Outer Space Conference (UNISPACE-82), United Nations, New York, NY, *USA*
- 11:10 [5] **THE ROLE OF ADVANCED TECHNOLOGIES IN DEVELOPING COUNTRIES**
Dr. Mostafa K. Helmy, Minister of State for Education and Scientific Research, *Arab Republic of Egypt*
-
- 1:00 [7] **LUNCHEON** (Nile Hilton Hotel)
U.S. AID ACTIVITIES FOR TECHNOLOGY TRANSFER
Mr. Donald Brown, Director, U.S. AID Mission to Egypt, Cairo, *Egypt*

WEDNESDAY

JANUARY 20

SESSION 3

(Ballroom, Holiday Inn Pyramids)

GEOMORPHOLOGY AND TERRAIN ANALYSIS

Chairman: Dr. Bahey El Issawi, Geological Survey of Egypt, Cairo, *Egypt*
Co-Chairman: Dr. Farouk El-Baz, Smithsonian Institution, Washington, DC, *USA*

- 8:30 [15] **DESERT TERRAIN: THE VIEW FROM SPACE**
Dr. Farouk El-Baz, Center for Earth & Planetary Studies, Smithsonian Institution, Washington, DC, *USA*
- 8:55 [16] **DUNE FORMS IN SPACE IMAGES—A MORPHOMETRIC APPROACH TO THE STUDY OF DESERT SAND SEAS**
Dr. Monique Mainguet, Université de Reims, Reims, *France*
- 9:20 [17] **A STUDY OF GLOBAL SAND SEAS FROM SATELLITE IMAGERY**
Dr. Edwin D. McKee, U.S. Geological Survey, Denver, CO, *USA*
- 9:45 [18] **COMPARISON OF AEOLIAN FEATURES ON THE EARTH AND MARS**
Dr. Ted Maxwell, Smithsonian Institution, Washington, DC, *USA*
- 10:10 Break

WEDNESDAY

JANUARY 20

SESSION 4

(Ballroom, Holiday Inn Pyramids)

SOIL SURVEY AND CLASSIFICATION

Chairman: Prof. M.A. Abdel Salam, Director, Desert Institute, Matariya, Cairo, *Egypt*
Co-Chairman: Prof. V.I. Myers, South Dakota State University, Brookings, South Dakota, *USA*

- 10:30 [19] **CLASSIFICATION AND UTILIZATION OF ARID REGION SOILS**
Dr. H.E. Dregne, International Center for Arid and Semi-Arid Land Studies, Texas Tech University, Lubbock, TX, *USA*
- 10:50 [20] **RESOURCE INVENTORIES OF ARID AND SEMI-ARID LANDS USING LANDSAT**
Frederick C. Westin, Remote Sensing Institute, South Dakota State University, Brookings, SD, *USA*
- 11:10 [21] **SOIL DEGRADATION STUDY BY MULTITEMPORAL ANALYSIS OF LANDSAT IMAGERY ON A SEMI-ARID REGION OF THE MEXICAN HIGH PLATEAU**
Dr. Ricardo Garcia Lagos, Banco Nacional de Creditos Rurales, Mexico City, *Mexico*
- 11:30 [22] **LANDSAT DATA IN THE SAHEL: THEIR USE AND ACCURACY FOR SMALL-SCALE SOIL SURVEYS AND THEIR TIME AND COST EFFICIENCY**
Dr. Lucas van Sleen, International Institute for Aerial Survey & Earth Sciences, Enschede, *The Netherlands*

WEDNESDAY

JANUARY 20

SESSION 5

(Ballroom, Holiday Inn Pyramids)

LAND USE/LAND COVER MAPPING

Chairman: Gen. Eng. Hassan Kandil, Director, Military Survey Department, Abbasiya, Cairo, *Egypt*

Co-Chairman: Mr. Edward M. Risley, Bureau of Land Management, U.S. Department of the Interior, Washington, DC, *USA*

- 1:00 [23] **MAPPING CONTROL FOR REMOTELY SENSED DATA**
Dr. Frederick C. Doyle, National Mapping Division, U.S. Geological Survey, Reston, VA, *USA*
- 1:20 [24] **DYNAMIC MODELING OF VEGETATION CHANGE IN ARID LANDS**
Vincent B. Robinson, Jerry C. Coiner and Thomas H. Barringer, Hunter College, City University of New York, New York, NY, *USA*
- 1:40 [25] **YEMEN ARAB REPUBLIC: MONITORING OF SEASONAL AND YEARLY LAND USE CHANGES ON AERIAL PHOTOGRAPHS AND LANDSAT IMAGERY**
Dr. Rudolf Schoch and Dr. Harold Haefner, Department of Geography, University of Zurich, Zurich, *Switzerland*
- 2:00 [26] **REMOTE SENSING OF DESERTIFICATION PROCESSES—JORNADA TEST SITE**
Mr. Edward M. Risley, Bureau of Land Management, U.S. Department of the Interior and Dr. B. Musick, National Aeronautics & Space Administration, Washington, DC, *USA*
- 2:20 [27] **MONITORING URBAN CHANGE IN CAIRO**
Mr. Reinhard Goethert, Massachusetts Institute of Technology, Cambridge, MA, *USA*, Dr. Zakia Shafie, Faculty of Engineering, Cairo University and Dr. Mohamed A. Abdel Hady, and Eng. Ahmed S. Ayoub, Remote Sensing Center, Cairo, *Egypt*

WEDNESDAY

JANUARY 20

2:45

POSTER SESSION A

(Sunrays Room, Holiday Inn Pyramids)

- [A-1] **GEOLOGY AND STRUCTURES STUDY OF THE NUBA MOUNTAINS, SUDAN, USING LANDSAT IMAGES**
Amazls Samuel Andrawis, Remote Sensing Institute, South Dakota State University, Brookings, SD, *USA*
- [A-2] **LANDSAT AND THE SOUTHWARD DRIFT OF MADAGASCAR**
Claude M. Froldevaux, Phillips Petroleum Co., Bartlesville, OK, *USA*
- [A-3] **FAULTS AND BLOCK BOUNDARIES INTERPRETED IN THE WESTERN SIDE OF THE RED SEA BETWEEN SAFAGA AND UM GHEIG, EGYPT, AND THEIR SIGNIFICANCE**
E.M. El Shazly, Nuclear Materials Corp., Cairo; A.M. Zaghloul and F.A. El Nasharty, University of Mansoura, Mansoura, *Egypt*
- [A-4] **IMAGE RESOLUTION AND ACCURACY OF MEASUREMENTS OF SOIL MOISTURE WITH MICROWAVE SENSORS IN LOW EARTH AND GEOSYNCHRONOUS ORBITS**
Mostafa Afifi and Kiyo Tomiyasu, General Electric Co., Valley Forge Space Center, Philadelphia, PA, *USA*
- [A-5] **DESERT CONSTRUCTION SITING UTILIZING REMOTE SENSING TECHNOLOGY**
Timothy W. Foresman, Civil Engineering Laboratory, Port Hueneme and Ralph C. Brown, Jr., MCAGCC, Twentynine Palms, CA, *USA*
- [A-6] **ON ATTAINING SEMI-ARIDITY OF NORTH-BENGAL IN BANGLADESH AS VIEWED THROUGH THE LANDSAT IMAGERIES**
M.I. Chowdhury and A.F.M. Kamaluddin, Jahangirnagar University, Dacca, *Bangladesh*

- [A-7] APPLICATION OF REMOTE SENSING DATA TO HYDROGEOLOGICAL PURPOSES IN THE FEZZAN REGION (LYBIA)
A. Giovacchini and A. Spallacci, AQUATER S.p.A., San Lorenzo in Campo, *Italy*
- [A-8] A LANDSAT-BASED INVENTORY PROCEDURE FOR THE ESTIMATION OF IRRIGATED LAND IN ARID AREAS
Sharon L. Wall, Randall W. Thomas, Catherine E. Brown and Marian Erlicksson, University of California, Berkeley, CA, *USA*
- [A-9] VEGETATION CLASSIFICATION IN ARID ENVIRONMENTS: AN ALTERNATIVE APPROACH
Diana L. Rebel EG&G, Inc., Las Vegas, NV, *USA*
- [A-10] DESERT TERRAIN ELEVATIONS FROM SATELLITE RADAR ALTIMETRY
R.L. Brooks and B.B. Brooks, GeoScience Research Corp., Salisbury, MD, *USA*
- [A-11] SATELLITE MONITORING OF RECENT DESERTIFICATION IN THE YULIN REGION, THE PEOPLE'S REPUBLIC OF CHINA
Norman E. Hardy and Shlu-Hung Luk, Erindale College, University of Toronto, Mississauga, Ontario, *Canada*
- [A-12] USE OF SATELLITE IMAGES FOR DETECTING WIND DYNAMICS: SAND DEPOSITS, FIXED DUNES, WIND EROSION AND
DESERTIFICATION IN THE SAHEL, SOUTH OF SAHARA
M. Mainguet, Université de Reims, Reims, *France*
- [A-13] COMPUTER MAPPING OF SHORELINE FLUCTUATIONS BY SATELLITE
Merrill K. Ridd, John A. Merola and Richard A. Jaynes, University of Utah Research Institute, Salt Lake City, UT, *USA*
- [A-14] MAPPING OASES AND SOIL TYPES FROM LANDSAT MULTISPECTRAL SCANNER DATA—KHARGA DEPRESSION, WESTERN
DESERT, EGYPT
Raymond E. Arvidson and Patricia A. Jacobberger, Washington University, St. Louis, MO; Farouk El-Baz, Smithsonian Institution,
Washington, DC, *USA*
- [A-15] TECTONICS OF THE JEMEZ AND MORENCI LINEAMENTS, NEW MEXICO AND ARIZONA: A REMOTE SENSING AND FIELD STUDY
IN ARID AND SEMI-ARID AREAS
W.S. Baldrige, Y. Bartov and A. Kron, Los Alamos Scientific Laboratory, Los Alamos, NM, *USA*

- [A-16] REMOTE SENSING APPLICATIONS IN ROAD DEVELOPMENT PROJECT IN MAURITANIA, AFRICA—A VALUABLE TOOL FOR
PROJECTS IN ARID AND SEMI-ARID ENVIRONMENTS
Harold T. Rib and Richard L. Braida, U.S. Department of Transportation, Washington, DC, *USA*
- [A-17] URBAN EXPANSION IN THE NILE RIVER VALLEY AND DELTA
Michael Inglls and Thomas Budge, University of New Mexico, Albuquerque, NM, *USA*
- [A-18] THE APPLICATION OF A COLOUR TRANSFORMATION FOR THE ENHANCEMENT OF MULTISPECTRAL IMAGES AND FOR THE
COMBINATION OF MULTISENSOR DATA
R. Haydn, Zentralstelle für Geo-Photogrammetrie und Fernerkundung, München, *West Germany*
- [A-19] USE OF REMOTE SENSING TECHNIQUES TO STUDY GEOTHERMAL RESOURCES IN ARID AND SEMI-ARID ZONES IN CHILE
Mauricio Araya F., University of Chile and Raymundo Piracés L., Corporación para el Fomento de la Producción, Santiago, *Chile*
- [A-20] FRESH WATER SPRINGS DETECTION AND DISCHARGE EVALUATION USING THERMAL I.R. SURVEYS ALONG SEA SHORES IN
AREAS AFFECTED BY POOR PRECIPITATIONS
C.M. Marino and S. Annoni, Università Degli Studi Di Milano, Milano, *Italy*
- [A-21] THE NATURAL WEALTH OF THE FLORA OF SAUDI ARABIA: AN ECOLOGICAL FOUNDATION FOR A REMOTE SENSING SURVEY
M.A. Zahran, King Abdulaziz University, Jeddah, *Saudi Arabia*
- [A-22] THE IMPERIAL COLLEGE MULTI-CHANNEL ELECTRONIC IMAGE CLASSIFIER AND ITS APPLICATIONS TO THE CLASSIFICATION
OF SURFACE TYPES BY MULTI-SPECTRAL ANALYSIS
A.C. Bird, T.H. Williams and M.E. Barnett, Imperial College, London University, London; T.J. Munday and J. Townshend, Reading Univer-
sity, Reading, *England*

7:00 SPECIAL PERFORMANCE—"SON ET LUMIERE"
(Sound and Light Show; Pyramids)

SATURDAY

JANUARY 23

SESSION 6

(Ballroom, Holiday Inn Pyramids)

LAND RECLAMATION

Chairman: Dr. Ali M. Abu Zeld, Undersecretary, Ministry of Development, and State for Housing and Land Reclamation, Cairo, *Egypt*
Co-Chairman: Dr. J. Eleonora Sabadell, Bureau of Land Management, U.S. Department of the Interior, Washington, DC, *USA*

- 8:30 [28] PILOT PROJECT TO COMBAT DESERTIFICATION IN MEXICO
Dr. Manuel Anaya, Center of Edaphology, Chapingo College of Postgraduates, Mexico City, *Mexico*
- 8:50 [29] IRRIGATION AND LAND RECLAMATION IN PAKISTAN
Dr. Amir Muhammed, Agricultural Research Council, Academy of Sciences of Pakistan, Karachi, *Pakistan*
- 9:10 [30] RECLAMATION OF SALT-AFFECTED SOILS IN CALIFORNIA
Glenn J. Hoffman, Salinity Lab., U.S. Department of Agriculture and Jewell Meyer, University of California, Riverside, CA, *USA*
- 9:30 [31] SOIL CLASSIFICATION AND SOIL POTENTIAL IN THE SINAI PENINSULA DERIVED FROM LANDSAT IMAGES
Dr. A.G. Abdel El-Samie, Dr. T.M. Labid and Dr. M.A. Abdel Hady, Remote Sensing Center, Cairo, *Egypt*
- 9:50 [32] THE USE OF AERIAL PHOTOGRAPHY IN LAND RECLAMATION
Dr. M.A. Abdel Salam, Director, Desert Institute, Cairo, *Egypt*
- 10:00 Break

SATURDAY

JANUARY 23

SESSION 7

(Ballroom, Holiday Inn Pyramids)

AGRICULTURAL CROPLANDS
(IRRIGATED AND NON-IRRIGATED)

Chairman: Dr. A.G. Abdel Samie, Former Vice President, Academy of Scientific Research & Technology, Cairo, *Egypt*
Co-Chairman: Mr. William H. Wigton, Statistical Reporting Service, U.S. Department of Agriculture, Washington, DC, *USA*

- 10:30 [33] AGRICULTURE AND CROP-AREA ESTIMATES IN EGYPT USING DIGITAL LANDSAT DATA
Dr. M.A. Abdel Hady, Dr. A. G. Abdel Samie, Dr. I.A. El Kassas, Eng. A.S. Ayoub, and Dr. A. O. Saad, Remote Sensing Center, Cairo, *Egypt*
- 10:50 [34] DESERTIFICATION PROCESSES IN AGRICULTURE
Mr. W.H. Wigton, Statistical Reporting Service, U.S. Department of Agriculture, Washington, DC, *USA*
- 11:10 [35] QUANTIFYING AGRICULTURAL INDICATORS OF DESERT ENCROACHMENT
Dr. Hassan Serghini, Ministry of Agriculture, Rabat, Morocco and Dr. William Hance, U.S. Department of Agriculture, Washington, DC, *USA*
- 11:30 [36] MAN-INDUCED AND NATURAL RESOURCE ANALYSIS OF AN ARID REGION IN CALIFORNIA, USA
Dr. George May and Dr. Michael Craig, U.S. Department of Agriculture, Washington, DC, *USA*
- 11:50 [37] URBAN ENCROACHMENT ON AGRICULTURE LAND
Dr. A.B. Park, General Electric Company, Lanham, MD, *USA*

SATURDAY

JANUARY 23

SESSION 8

(Ballroom, Holiday Inn Pyramids)

ECOLOGY AND NATURAL VEGETATION

Chairman: Dr. Omar Draz, Senior Consultant, FAO and Member, Board of Directors, Desert Institute, Cairo, *Egypt*
Co-Chairman: Dr. Allan D. Marmelstein, Fish & Wildlife Service, U.S. Department of the Interior, Washington, DC, *USA*

- 1:00 [38] REMOTE SENSING IN RANGE MANAGEMENT
Dr. Omar Draz, Senior Consultant, FAO and Member, Board of Directors, Desert Institute, Cairo, *Egypt*
- 1:20 [39] APPLYING LANDSAT AND ANCILLARY DATA TO ARID LAND INVENTORIES (See also [C-20])
Dr. William J. Bonner, Jr., Bureau of Land Management, U.S. Department of the Interior, Denver, CO, *USA*
- 1:40 [40] THE DEVELOPMENT AND APPLICATION OF A LANDSAT IMAGE-BASED RESOURCE INFORMATION SYSTEM (LIBRIS) TO RANGELAND ASSESSMENT AND MONITORING IN SEMI-ARID AUSTRALIA [See also (D-8)]
Dr. R.D. Graetz, Dr. M.R. Gentle, Dr. R.P. Pech and Dr. J.F. O'Callaghan, CSIRO, Division of Land Resources Management, Deniliquin, *Australia*
- 2:00 [41] RAPID ASSESSMENT OF WILDLIFE HABITAT IN SEMI-ARID ENVIRONMENTS
Dr. Allan D. Marmelstein, Fish & Wildlife Service, U.S. Department of the Interior, Washington, DC, *USA*

SATURDAY

JANUARY 23

2:30

POSTER SESSION B

(Sunrays Room, Holiday Inn Pyramids)

- [B-1] SOIL RESOURCES AND POTENTIAL FOR THE BAHR EL JEBEL IN SOUTHERN SUDAN USING LANDSAT
A.A. Klingebiel, F.C. Westin and V.I. Myers, Remote Sensing Institute, South Dakota State University, Brookings, SD, *USA*; M. Abdel Hady, Remote Sensing Center, Academy of Scientific Research & Technology, Cairo, *Egypt*
- [B-2] GEOLOGICAL AND BIOLOGICAL PROCESSES AFFECTING INTERPRETATION OF MULTISPECTRAL IMAGES OF DESERT REGIONS
J. Adams, E. Bjorkman, D. Borns, B. Curtiss, D. Evans, T. Farr, F. Palmer, T. Roush, M. Smlth, J. Staley and S. Taylor-George, University of Washington, Seattle, WA, *USA*
- [B-3] USE OF LANDSAT IMAGERY FOR REGIONAL TECTONIC ANALYSIS IN N.E. AFRICA
W. Kampschuur, N. Press and W. Duncan, Tectonic Exploration System N.V., Amsterdam, *The Netherlands*
- [B-4] THERMAL INERTIA DETECTION OF PERCHED WATER TABLES IN IRRIGATED ARID LANDS
E. Ezra, F. Bonn and J.E. Estes, University of California, Santa Barbara, CA, *USA*
- [B-5] APPLICATION OF LANDSAT IMAGERY IN GROUNDWATER INVESTIGATIONS IN A SEMI-ARID HARD-ROCK REGION OF THE STATE OF GUJARAT (INDIA)
Baldev Sahai and R.K. Sood, Space Applications Centre, Ahmedabad; S.C. Sharma, Gujarat Water Resources Development, Corp., Gandhinagar, *India*

- [B-6] **PROCESSING OF REMOTELY SENSED DATA FOR MAPPING THERMAL INERTIA, SOIL MOISTURE, AND EVAPOTRANSPIRATION IN SEMI-ARID AREAS**
E. Carloni, et al., Centro Studi e Applicazioni in Tecnologie Avanzate, Bari and G. Tassone, et. al., Joint Research Centre, Ispra Establishment, Ispra, *Italy*
- [B-7] **ASSESSMENT OF SEDIMENTATION IN THE ASWAN RESERVOIR USING LANDSAT IMAGERY**
Scot E. Smith and K.H. Mancy, School of Public Health, The University of Michigan, Ann Arbor, MI, *USA*; A.F.A. Latif, The Egyptian Academy of Scientific Research & Technology, Cairo, *Egypt*
- [B-8] **USE OF VEGETATION INDICATORS FOR CROP GROUP STRATIFICATION AND EFFICIENT FULL FRAME ANALYSIS**
Claire M. Hay, Louis H. Beck and Edwin J. Sheffner, University of California, Berkeley, CA, *USA*
- [B-9] **MONITORING THE GROWTH OF CROPS USING DIGITAL LANDSAT MSS DATA**
E. Derenyi and R. Yazdani, University of New Brunswick, Fredericton, New Brunswick; R.A. Ryerson, Canada Centre for Remote Sensing, Ottawa, Ontario, *Canada*
- [B-10] **MONITORING ARID LAND CHANGES IN THE TURPAN DEPRESSION, PEOPLE'S REPUBLIC OF CHINA**
A.S. Walker, U.S. Geological Survey, Reston, VA, *USA* and Liu Shu, Lanzhou Institute of Desert Research, Academia Sinica, Lanzhou, *China*
- [B-11] **SAND DISTRIBUTION IN THE KHARGA DEPRESSION OF EGYPT: OBSERVATIONS FROM LANDSAT IMAGES**
P.L. Strain and Farouk El-Baz, Smithsonian Institution, Washington, DC, *USA*
- [B-12] **EOLIAN DYNAMICS IN THE WESTERN DESERT OF EGYPT AS REVEALED BY LANDSAT DATA**
M.C. Chemlin and M. Manguet, Université de Reims, Reims, *France*; Farouk El-Baz, Smithsonian Institution, Washington, DC, *USA*
- [B-13] **USES OF LANDSAT (SATELLITE) IMAGERY FOR MAPPING AND MONITORING SOIL SALINITY: EAST KHAIRPUR TILE DRAINAGE PROJECT, PAKISTAN**
John R. McKenna, Jr., The World Bank, Washington, DC, Thomas W. Wagner, Environmental Research Institute of Michigan, Ann Arbor, MI and Mathew Drosdoff, Cornell University, Ithaca, NY, *USA*
- [B-14] **USE OF LANDSAT MULTISPECTRAL SCANNER DATA IN GEOLOGIC MAPPING OF THE MAETIQ DOME, CENTRAL EASTERN DESERT, EGYPT**
Patricia A. Jacobberger, Raymond E. Arvidson, Rodey Batiza and Edward A. Guinness, Washington University, St. Louis, MO, *USA*
- [B-15] **LANDSAT AS AN AID IN CONSULTING PROJECTS IN THE MIDDLE EAST AND NORTHEAST AFRICA**
Ulf Kihlblom, VBB/SWECO, Stockholm, *Sweden*
- [B-16] **ENHANCEMENT OF SURFACE FEATURES IN LANDSAT IMAGERY FOR LAND USE PLANNING IN BANGLADESH**
M.A.H. Pramanik, Bangladesh Space Research & Remote Sensing Organization, Dacca; M.A. Bakr, Geological Survey of Bangladesh, Dacca, *Bangladesh*; John E. Colwell and Fabian C. Polcyn, Environmental Research Institute of Michigan, Ann Arbor, MI, *USA*
- [B-17] **APPLICATION OF MULTISPECTRAL AERIAL PHOTOGRAPHY IN LAND USE AND LAND COVER MAPPING OF A PART OF EL FAYOUM DEPRESSION NORTHWESTERN EGYPT**
A.G. Abdel Samic, M.A. Abdel Hady, A.O. Saad and I.A. El Kassas, Remote Sensing Center, Cairo, *Egypt*
- [B-18] **A SURVEY OF BRAZIL'S SEMI-ARID LANDS WITH THE USE OF REMOTE SENSING**
Lutz Henrique Aguiar de Azevedo, Instituto de Estudos da Terra, Rio de Janeiro, *Brazil*
- [B-19] **USE OF INFRARED REMOTE SENSING IN GEOLOGICAL STUDY OF THAR DESERT AND ITS ENVIRONS**
V.M. Dehai Kulkarni, K.J. Somaiya College of Science, Bombay, *India*
- [B-20] **THE APPLICATION OF REMOTE SENSING IN LOESS RESEARCH AND HARNESSING THE YELLOW RIVER**
Zheng Wei, Institute of Remote Sensing Application, Academia Sinica, Beijing, *China*
- [B-21] **LANDSAT SPECTRAL SIGNATURE—STUDIES WITH SOIL ASSOCIATION AND VEGETATION**
A.K. Sinha and P. Venkatachalam, Indian Institute of Technology, Bombay, *India*
- [B-22] **NATURAL WATER CONTAINMENT SITE IDENTIFICATION IN THE ARID MOUNTAINS OF DJIBOUTI**
Joseph E. Goebel, Resources Development Associates, Djibouti, *Republic of Djibouti*

7:00 SOCIAL HOUR AND BANQUET
HOLIDAY INN PYRAMIDS

SUNDAY

JANUARY 24

SESSION 9

(Ballroom, Holiday Inn Pyramids)

GEOLOGIC MAPPING

Chairman: Dr. E.M. El Shazly, Former President, Nuclear Materials Corporation, Cairo, *Egypt*
Co-Chairman: Mr. W.D. Carter, EROS Office, U.S. Geological Survey, Reston, Virginia, *USA*

- 8:30 [42] NEW GEOLOGICAL, STRUCTURAL LINEAMENTS AND DRAINAGE MAPS OF EGYPT BASED ON LANDSAT IMAGE INTERPRETATION AND FIELD INVESTIGATIONS
Dr. E.M. El Shazly, Dr. M.A. Abdel Hady, Dr. M.A. El Ghawaby, Dr. A.B. Salman, Dr. I.A. El Kassas, Dr. S.M. Khawassik, Dr. H. El Amln, Dr. M.M. El Rakalby, Dr. I.E. El Aassy, Dr. A.A. Abd El Megid and Dr. S.I. Mansour, Nuclear Materials Corporation and Remote Sensing Center, Cairo, *Egypt*
- 8:55 [43] SPECTRAL REMOTE SENSING OF ROCKS IN ARID LANDS
Dr. Anne B. Kahle, Jet Propulsion Laboratory, Pasadena, CA, *USA*
- 9:20 [44] GEOCHRONOLOGY OF THE EASTERN SAHARA
Dr. C.V. Haynes, University of Arizona, Tucson, AZ, *USA*
- 9:45 [45] APPLICATION OF REMOTE SENSING IN GEOLOGIC AND TECTONIC MAPPING
Dr. Glenn Brown, U.S. Geological Survey, Reston, VA, *USA*

SUNDAY

JANUARY 24

10:15

POSTER SESSION C

(Sunrays Room, Holiday Inn Pyramids)

- [C-1] FURTHER STUDIES ON THE MINERAL POTENTIALS OF BERENICE AREA BASED ON LANDSAT IMAGERY
M.A. Mussa, Geological Survey of Egypt, Cairo, *Egypt*
- [C-2] PHOTOLINEAMENTS IN THE GILF KEBIR PLATEAU, SOUTHWESTERN EGYPT
Amina H. Hamdan, Ain Shams University, Cairo, *Egypt* and Farouk El-Baz, Smithsonian Institution, Washington, DC, *USA*
- [C-3] GEOLOGICAL INTERPRETATION OF SEISMIC REFLECTION AND AEROMAGNETIC DATA IN DARS EL-RUBI—NASHFA AREA, WESTERN DESERT, EGYPT FOR PETROLEUM EXPLORATION
Ali H. Abdel Aatl, Assiut University, Assiut, *Egypt*
- [C-4] APPLICATION OF VISUAL INTERPRETATION AND DIGITAL PROCESSING OF LANDSAT DATA FOR THE PREPARATION OF A GEOLOGICAL INTERPRETATION MAP OF SOUTHWESTERN EGYPT AT A SCALE OF 1:500,000
F.K. List, H. Burger, E. Klitzsch, B. Meissner, G. Pöhlmann and H.-J. Schmitz, Freie Universität Berlin, Berlin, *Germany*
- [C-5] ANALYSIS OF BATHYMETRY AND SUBMARINE TOPOGRAPHY OF THE CENTRAL COAST OF TUNISIA BY USE OF LANDSAT MULTISPECTRAL DATA
P.A. Davis, Jr., P.T. Ellason, M.J. Groller and P.A. Schultejann, U.S. Geological Survey, Flagstaff, AZ, *USA*
- [C-6] POST-ASWAN HIGH DAM CHANGES OF THE NILE DELTA COAST, EAST OF RAS EL BAR, INTERPRETED FROM AERIAL PHOTOGRAPHS
Z.M. Zaghloul, F.A. El Nasharty and I.A. Isa, University of Mansoura, Mansoura, *Egypt*

- [C-7] INTEGRATING SATELLITE AND AERIAL DATA FOR HYDROGEOLOGIC STUDIES IN SEMI-ARID HARD ROCK TERRAIN—A CASE STUDY FROM TAMIL NADU, SOUTH INDIA
C.A. Srinivasan, Public Works Dept., Government of Tamil Nadu, Madras, *India*
- [C-8] OCEAN SURFACE STUDIES USING SEASAT SAR
J.O. Thomas and K. Wu, Blackett Laboratory, Imperial College, London, *England*
- [C-9] IRRIGATED AGRICULTURAL MAPPING AND WATER DEMAND ESTIMATION IN ARID ENVIRONMENTS FROM REMOTE SENSING
J.E. Estes, Jay Baggett and L.R. Tinney, University of California, Santa Barbara, CA, *USA*
- [C-10] SOIL DEGRADATION MAPPING FROM LANDSAT IN NORTH AFRICA AND THE MIDDLE EAST
C.W. Mitchell, University of Reading, Reading, *England*, J.A. Howard, Food & Agricultural Organization, United Nations, Rome, *Italy* and M. Malnguet, Université de Reims, Reims, *France*
- [C-11] THE NATURE AND EXTENT OF EROSIONAL AND DEPOSITIONAL FEATURES AND ROCK AND SOIL UNITS IN THE KHARGA OASIS REGION, EGYPT, AS DETERMINED FROM REMOTE SENSING
T.B. McCord, University of Hawaii at Manoa, Honolulu, HI; Farouk El-Baz, Smithsonian Institution, Washington, DC and John B. Adams, University of Washington, Seattle, WA, *USA*
- [C-12] TERRAIN ANALYSIS FOR GEOTECHNICAL ENGINEERING STUDIES RELATED TO A PART OF CHANDRAPUR DISTRICT, MAHARASHTRA, INDIA
G. Venkatachalam, P.R. Saraph and S.Y. Mhaiskar, Indian Institute of Technology, Bombay, *India*
- [C-13] AGRICULTURAL RESOURCE ASSESSMENT IN TROPICAL ARID DJIBOUTI
Abubaker Duale, Rural Engineering Service and Joseph E. Goebel, Resources Development Associates, Djibouti, *Republic of Djibouti*
- [C-14] DROUGHT-INDUCED WIND EROSION IN SOUTHWESTERN KANSAS, U.S.A.—INTEGRATION OF LANDSAT, SEASAT, AND AIRBORNE MULTISPECTRAL DATA
Patricia A. Jacobberger, Washington University, St. Louis, MO, *USA*
- [C-15] ANALYSIS OF STRUCTURAL DATA FROM LANDSAT IMAGES OF MOZAMBIQUE AND ITS APPLICATION IN MINERAL EXPLORATION PROJECTS
A. Fernandez and J. Marques, National Directorate of Geology, Maputo, *Mozambique*
- [C-16] EXPERIENCE WITH LANDSAT DATA IN THE ARID AND SEMI-ARID LANDS STUDIES IN KENYA
Simeon S. Kanani, President's Office, Republic of Kenya, Nairobi, *Kenya*
- [C-17] PASSIVE BATHYMETRIC MEASUREMENTS OF INLAND WATERS WITH AN AIRBORNE MULTI-SPECTRAL SCANNER
S.C. Jain, H.H. Zwick and W.C. Weidmark, MONITEO, Ltd., Concord; R.A. Neville, Canada Centre for Remote Sensing, Ottawa, Ontario, *Canada*
- [C-18] REMOTE SENSING AND ITS APPLICATION IN THE DYNAMICS OF SOIL USE AND OVERLAY IN THE "RASO DA CATARINA" IN BAHIA; A REGION OF BRAZIL WHERE SEMI-ARID TERRAIN IS MORE SHARPLY DEFINED
Jane Fonseca de Souza Pitanga, Instituto de Estudos da Terra, Rio de Janeiro, *Brazil*
- [C-19] DIGITAL METHODS FOR LINEAMENT ANALYSIS
B. Rinstad and B. Follestad, The Geological Survey of Norway, Trondheim, *Norway*
- [C-20] APPLYING LANDSAT AND ANCILLARY DATA TO ARID LAND INVENTORIES (See also [39])
William J. Bonner, Jr., Bureau of Land Management, U.S. Department of the Interior, Denver, CO, *USA*
- [C-21] MONITORING LAND USE AND LAND USE APPROPRIATENESS IN THE CENTRAL SUDAN: A COMBINATION OF LANDSAT DATA AND STATISTICAL ANALYSIS OF CLIMATIC DATA
Lennart Olsson, University of Lund, Lund, *Sweden*
- [C-22] EXAMPLE OF THEMATIC MAPPING IN ARID ZONES (TARGANT-REGION/ISLAMIC REPUBLIC OF MAURETANIA) ON THE BASIS OF COMPUTER ENHANCED LANDSAT IMAGERY
J. Bodechtel, R. Haydn and F. Jaskolla, Zentralstelle für Geo-Photogrammetrie und Fernerkundung, München, *West Germany*

SUNDAY

JANUARY 24

1:00

POSTER SESSION D

(Sunrays Room, Holiday Inn Pyramids)

- [D-1] MONITORING IRRIGATION IN THE LOWER NILE RIVER VALLEY USING NOAA-6 SATELLITE DATA
S.R. Schneider and M.A. Kuchinos, National Oceanic & Atmospheric Administration/NESS, Washington DC; C.J. Tucher and J.A. Gatlin, National Aeronautics & Space Administration/GSFC, Greenbelt, MD, *USA*
- [D-2] LANDSAT IMAGE INVESTIGATION OF MAJOR SURFACE STRUCTURES, TOPOGRAPHY, AND HYDROLOGY IN QATAR
M.A. Yehla, University of Qatar; I. Harhash, Ministry of Agriculture & Industry and M. Haruni, Industrial Development Technical Centre, Doha, *Qatar*
- [D-3] NATURAL RESOURCES INVESTIGATION IN WEST KHARGA OASIS PLAIN, WESTERN DESERT, EGYPT USING LANDSAT IMAGERY INTERPRETATION
E.M. El Shazly, M.A. Abdel Hady, A.B. Salman, M.M. El Rakaiby and I.E. El Aassy, Nuclear Materials Corp. and Remote Sensing Center, Cairo, *Egypt*
- [D-4] ASSESSMENT AND MANAGEMENT OF LAND AND WATER RESOURCES IN DROUGHT PRONE AREAS FROM SATELLITE DERIVED DATA—AN INDIAN EXAMPLE [See also (51)]
A.K. Chakraborty, Seelan S. Kumar and K.R. Rao, National Remote Sensing Agency, Secunderabad, *India*
- [D-5] LANDSAT INVESTIGATION AND TECTONIC INTERPRETATION OF THE LINEAMENTS OF THE CENTRAL EASTERN DESERT, EGYPT
Geza Kisvarsanyi, University of Missouri, Rolla, MO, *USA* and Mohamed E. Habib, University of Assiut, Assiut, *Egypt*
- [D-6] ANALYSIS ON THE SPATIAL DISTRIBUTION OF WATER QUALITY AND POLLUTION SOURCES OF A SHALLOW LAKE BY DIGITAL IMAGE PROCESSING
László Dávid, State Office of Technical Development and József Szabó, Institute for Coordination of Computer Techniques, Budapest, *Hungary*
- [D-7] DETECTION OF SOME GROUND-WATER RESERVOIR OF MIDDLE NIGER RIVER, BY THE MEANS OF LANDSAT IMAGERIES
P.A. Brivio, A. Muttoni and E. Zilioli, Istituto per la Geofisica Della Litosfera, Milano, *Italy*
- [D-8] THE UTILITY OF LANDSAT FOR MONITORING THE EPHEMERAL WATER AND HERBAGE RESOURCES OF ARID LANDS: AN EXAMPLE OF RANGELAND MANAGEMENT IN THE CHANNEL COUNTRY OF AUSTRALIA [See also (40)]
R.D. Graetz and R.P. Pech, CSIRO, Div. of Land Resources Management, Deniliquin, *Australia*
- [D-9] REMOTE SENSING INVESTIGATIONS ON SOME FRUIT ORCHARDS IN EL-FAYOUM GOVERNORATE, EGYPT
Hamdy Z. Abul-Eid, Ahmed G. Abdel Samie and Mohamed A. Abdel Hady, Remote Sensing Center, Cairo, *Egypt*
- [D-10] CLASSIFICATION OF SURFACE SEDIMENTS IN KUWAIT USING LANDSAT DATA
A. Asem and F. Khalaf, Kuwait Institute for Scientific Research; S. Attasi and F. Palou, IBM Scientific Center, Kuwait, *Kuwait*
- [D-11] GEOMORPHOLOGICAL EVOLUTION OF SAUDI ARABIA (INTERPRETED USING EXISTING INFORMATION AND LANDSAT IMAGERY)
Danilo Anton, Research Institute, University of Petroleum & Minerals, Dhahran, *Saudi Arabia*
- [D-12] A STUDY OF LANDFORM EVOLUTION IN A SAHELIAN REGION
M-F Courel and M-F Oudin, Scientific Center IBM France, Paris, *France*
- [D-13] CONTRAST ENHANCEMENT OF LANDSAT DATA FOR INVENTORYING GUAYULE FOR COMMERCIAL RUBBER PRODUCTION IN THE DESERTS OF MEXICO
Merrill K. Ridd, University of Utah Research Institute and Robert L. Power, University of Utah, Salt Lake City, UT, *USA*
- [D-14] THE APPLICATION OF LANDSAT IMAGERY TO GEOMORPHOLOGY AND SOILS MAPPING IN ETHIOPIA
Barry L. Henriksen, FAO/UNDP and Sultan Tilimo, Ministry of Agriculture, Addis Ababa, *Ethiopia*

- [D-15] **LAND USE CHANGES IN THE RANGELANDS OF NORTHWEST SOMALIA, 1972 TO PRESENT**
Eugene Jaworski and Ahmed A. Da'ar, Eastern Michigan University, Ypsilanti, MI, *USA*
- [D-16] **LAND USE MAPPING FROM LANDSAT IMAGERY APPLIED TO CENTRAL TUNISIA**
A. Hamza and A. Maml, Ministry of Agriculture, Tunis, *Tunisia*; F. Sadowski, U.S. Geological Survey, Sioux Falls, SD, *USA*
- [D-17] **MULTIDISCIPLINARY EVALUATION OF SATELLITE DATA, AN EFFECTIVE AND ECONOMIC TOOL FOR RECONNAISSANCE TYPE MAPPING OF SEMIARID REGIONS**
W. Kruck and R. Mühlfeld, Federal Institute of Geosciences & Natural Resources, Hannover, *Germany*
- [D-18] **PRE-PROCESSING AND PROCESSING OF THE DATA FROM LANDSAT D AND SPOT HARDWARE AND SOFTWARE FACILITIES**
L. Salter and G. Malncent, Societe Europeenne de Propulsion, Vernon, *France*
- [D-19] **MONITORING THE CHANGING AREAL EXTENT OF IRRIGATED LANDS—THE USE OF SATELLITE DATA**
John S. Latham and J.A. Allan, School of Oriental & African Studies, University of London, London, *England*; John E. Colwell and Emil Jebe, Environmental Research Institute of Michigan, Ann Arbor, MI, *USA*
- [D-20] **HYDROLOGICAL ANALYSIS OF THE MACHAR REGION BASED ON LANDSAT SATELLITE PROCESSED DATA**
Mohamed Hallm Salem and Hassan T. Dorrah, Cairo University, Giza, *Egypt*
- [D-21] **DIGITAL RATIO PROCESSING: A POWERFUL AND COST EFFECTIVE REMOTE SENSING TOOL FOR INVENTORY AND MONITORING THE RENEWABLE RESOURCE BASE IN ARID AND SEMI-ARID AREAS**
Jelle U. Hielkema, Plant Protection Service, FAO, Rome, *Italy*
- [D-22] **USE OF REMOTE SENSING FOR SAND DUNE STABILIZATION**
D.E. Tsurieff, Agricultural Research Organization, The Volcani Center, Haifa, *Israel*

SUNDAY

JANUARY 24

SESSION 10

(Ballroom, Holiday Inn Pyramids)

MINERAL AND PETROLEUM EXPLORATION

Chairman: Dr. A.S. Abdine, Exploration Manager, Gulf of Suez Petroleum Company, Cairo, *Egypt*
Co-Chairman: Dr. Michel T. Halbouty, Consulting Geologist, The Halbouty Center, Houston, Texas, *USA*

- 2:45 [46] **REMOTE SENSING: A SIGNIFICANT EXPLORATION TOOL FOR THE GEOSCIENTIST**
Dr. Michel T. Halbouty, The Halbouty Center, Houston, TX, *USA*
- 3:10 [47] **RECENT MINERAL DISCOVERIES BASED ON REMOTE SENSING OF DESERT REGIONS**
Mr. William D. Carter, EROS Office, U.S. Geological Survey, Reston, VA, *USA*
- 3:35 [48] **NEE-SSW FAULT SYSTEM IN PART OF THE GULF OF SUEZ AND ITS BEARING ON OIL EXPLORATION**
Dr. M.M. Khattab, United Arab Emirates University, Abu Dhabi, *United Arab Emirates*
- 4:00 [49] **DISCRIMINATION OF HALIDE, GYPSUM AND PHOSPHATE DEPOSITS BY SPECTRAL-REFLECTANCE ANALYSIS OF LANDSAT MULTISPECTRAL DATA**
Dr. M.J. Grolier, Dr. P.A. Davis, Jr., Dr. P.S. SchulteJann and Dr. P.T. Ellason, U.S. Geological Survey, Flagstaff, AZ, *USA*

7:00 RECEPTION/SPONSORED BY ACADEMY OF
SCIENTIFIC RESEARCH AND TECHNOLOGY (Location to be announced)

MONDAY

JANUARY 25

SESSION 11

(Ballroom, Holiday Inn Pyramids)

HYDROLOGY: SURFACE AND GROUND WATER

Chairman: Dr. Tharwat Fahmy, Undersecretary, Ministry of Irrigation, Cairo, *Egypt*

Co-Chairman: Mr. Morris Deutsch, Remote Sensing Institute, South Dakota State University, Brookings, South Dakota, *USA*

- 8:30 [50] SATELLITE HYDROLOGY IN ARID LANDS
Mr. Morris Deutsch, Remote Sensing Institute, South Dakota State University, Brookings, SD and Mr. Donald R. Wiesnet, Land Sciences Branch, National Oceanic & Atmospheric Administration, Washington, DC, *USA*
- 8:50 [51] ASSESSMENT AND MANAGEMENT OF WATER RESOURCES FROM SATELLITE DERIVED DATA—AN INDIAN EXAMPLE [See also (D-4)]
Dr. K.R. Rao, Director, National Remote Sensing Agency, Secunderabad, *India*
- 9:10 [52] ENVIRONMENTAL DATA COLLECTION VIA GMSS FOR WATER MANAGEMENT AND CONTROL [See also (E-4)]
Mr. J.W. Jarman, U.S. Army Corps of Engineers, Fort Belvoir, VA and Dr. Warren L. Sharp, U.S. Army Corps of Engineers, Vicksburg, MS, *USA*
- 9:30 [53] MONITORING OF WATER QUALITY AND ENVIRONMENTAL CHANGES IN THE ASWAN HIGH-DAM RESERVOIR FROM LANDSAT IMAGERY
Dr. K.H. Mancy and Mr. S.E. Smlth, School of Public Health, The University of Michigan, Ann Arbor, MI, *USA*; Dr. A.F. Abdel Latif, Academy of Scientific Research & Technology, Cairo, *Egypt*
- 10:00 Break

MONDAY

JANUARY 25

SESSION 12

(Ballroom, Holiday Inn Pyramids)

COASTAL STUDIES

Chairman: Dr. A.F. Abdel Latif, Vice President, Academy of Scientific Research & Technology, Cairo, *Egypt*

Co-Chairman: Dr. Lloyd Breslau, U.S. Coast Guard Research & Development Center, Groton, Connecticut, *USA*

- 10:20 [54] REMOTE SENSING OF COASTAL LAND AND WATER PROPERTIES
Dr. V. Klemas, College of Marine Studies, University of Delaware, Newark, DE, *USA* and Dr. A.M.F. Abdel Kader, Department of Geology, Faculty of Science, El-Mansoura University, El Mansoura, *Egypt*
- 10:40 [55] MAPPING LAND-SEA BOUNDARIES FROM LANDSAT IMAGERY; PROBLEMS OF DATA ACQUISITION IN A DYNAMIC COASTAL ENVIRONMENT
Dr. H.G. Gierloff-Emden, Geographisches Institut, Universitat München, München, *West Germany*
- 11:00 [56] SOME RESULTS FROM EXPERIMENTS ON REMOTE SENSING OF WATER QUALITY AND OIL POLLUTION IN THE MEDITERRANEAN SEA
Dr. B.M. Sorensen and Dr. B. Sturm, Joint Research Centre, Ispra Establishment, Ispra, *Italy*
- 11:20 [57] MAPPING WATER DEPTH AND LAND FEATURES IN THE COASTAL ZONE BY DIGITAL PROCESSING OF LANDSAT-MSS DATA
Dr. Robert H. Rogers, Earth Resources Data Center, Environmental Research Institute of Michigan, Ann Arbor, MI, *USA*

MONDAY

JANUARY 25

SESSION 13

(Ballroom, Holiday Inn Pyramids)

CULTURAL RESOURCES AND HUMAN ENVIRONMENT

Chairman: Dr. Farkhonda Hassan, Materials Science Department, American University in Cairo, Cairo, *Egypt*
Co-Chairman: Dr. Priscilla Reining, American Association for the Advancement of Science, Washington, DC, *USA*

- 1:00 [58] ANALYZING SHORT TERM AND SECULAR TRENDS IN DESERT ECOSYSTEMS THROUGH REMOTE SENSING
Dr. Christopher Hamlin, General Software Corporation, Landover, MD, *USA*
- 1:20 [59] APPROACHES TO DESERTIFICATION MONITORING IN THE SUDAN USING LANDSAT DATA—A TEST OF A GEOGRAPHICAL DATA BASE APPROACH
Dr. Ulf Hellden, Department of Physical Geography, University of Lund, Lund, *Sweden*
- 1:40 [60] LANDSAT DATA FOR MONITORING RURAL SETTLEMENT AND POPULATION—A TEST IN THE UMM RUWABA REGION, SUDAN
Dr. Mikael Stern, Department of Physical Geography, University of Lund, Lund, *Sweden*
- 2:00 [61] REFUGEE SETTLEMENTS AND VEGETATION CHANGE: A MULTI-STAGE, LANDSAT DATA ANALYSIS OF A SEMI-ARID AREA IN KENYA
Dr. Francis Conant, Department of Anthropology, Hunter College, City University of New York, New York, NY, *USA*
- 2:20 [62] THE ARCHAEOLOGICAL USES AND POTENTIAL OF REMOTE SENSING IN ARID AND SEMI-ARID LANDS
Dr. Michael Allen Hoffman, Archaeological Research Laboratory, Western Illinois University, Macomb, IL, *USA*

MONDAY

JANUARY 25

2:45

POSTER SESSION E

(Sunrays Room, Holiday Inn Pyramids)

- [E-1] LAND USE PLANNING IN W-AFRICA, MULTI-SOURCE SUITABILITY MAPS AS QUANTITATIVE DECISION AIDS USING LANDSAT COMPUTER TECHNOLOGY
Klaus Voelger, Institute for Applied Geosciences, Frankfurt, *West Germany*
- [E-2] PASSIVE MICROWAVE RADIOMETRY IN THE DESERT REGION
Teng Xu-yan, Changchun Institute of Physics, The Chinese Academy of Sciences, Changchun, *China*
- [E-3] DETECTION AND CLASSIFICATION OF MAJOR SOILS AND THEIR RELATED PROBLEMS OVER THE WESTERN PLAINS OF INDIA (ARID-REGION AND PART OF SEMI-ARID REGION), BASED ON THE VISUAL INTERPRETATION OF MULTISPECTRAL LANDSAT IMAGERY
H.S. Teotla, J.L. D'Hoore and R. Gumbeer, Katholieke University, Heverlee, *Belgium*
- [E-4] ENVIRONMENTAL DATA COLLECTION VIA GMSS FOR WATER MANAGEMENT AND CONTROL [See also (52)]
Warren L. Sharp, U.S. Army Corps of Engineers, Vicksburg, MS, *USA*
- [E-5] LANDSAT GEOLOGIC INVESTIGATION OF THE AREA BETWEEN BAGALS EL-URF AND EL-EREDIA DUE WEST OF SAFAGA, EGYPT
Mohamed E. Habib, University of Assiut, Assiut, *Egypt*
- [E-6] AUTOMATIC CLASSIFICATION OF LAKE OARUN WATER BY DIGITAL PROCESSING OF LANDSAT MSS DATA
M.A. Abdel Hady, I.A. El Kassas and A.S. Ayoub, Remote Sensing Center, Cairo, *Egypt*

- [E-7] ESTIMATION OF THE FORAGE PRODUCTION OF SEMI-ARID RANGELANDS WITH VARIABLE TREE AND SHRUB COVER USING LAND RESOURCES SATELLITES
Ian R. Lane, University of Edinburgh, Edinburgh, *Scotland, UK*
- [E-8] DETERMINATION OF VEGETATION TYPES IN ARID AND SEMI-ARID REGIONS OF TUNISIA BY ITERATIVE CLUSTER ANALYSIS OF LANDSAT MULTISPECTRAL DATA
P.T. Ellason, P.A. Davis, Jr. and M.J. Groller, U.S. Geological Survey, Flagstaff, AZ, *USA*
- [E-9] STRUCTURAL GEOMORPHOLOGY OF RAJASTHAN BASIN, INDIA-INTERPRETED THROUGH LANDSAT IMAGERY AND AERIAL PHOTOS
P.V.L.P. Babu, Oil & Natural Gas Commission, Institute of Petroleum Exploration, Dehra Dun, *India*
- [E-10] PHOTOGRAPHIC PROCESSING OF LANDSAT DATA FOR USE IN ARID AND SEMI-ARID LAND STUDIES
Robert Anderson and Allan Falconer, Regional Remote Sensing Facility, Nairobi, *Kenya*
- [E-11] THE DOUBLE CURRENT OF SAND TRANSPORT ON THE TASSILI N'AJJER (ALGERIA): AN EXAMPLE OF THE COMPLEXITY OF THE LOCAL WIND DYNAMICS
L. Cossus, Université de Reims, Reims, *France*
- [E-12] A PRACTICAL ATTEMPT AT CORRELATION OF ROCK UNITS FROM CCT PRINTOUTS
G. Venkataraman, V.K. Anand, R. Nagarajan and A.B. Inamdar, Indian Institute of Technology, Bombay, *India*
- [E-13] CAUSES AND EFFECTS OF INCREASING ARIDITY IN NORTHWEST BANGLADESH
M.A. Jabbar, M.H.Q. Huda and M.U. Chaudhury, Bangladesh Space Research & Remote Sensing Organization, Dacca, *Bangladesh*
- [E-14] MAPPING BUILT UP AREAS USING UNSUPERVISED CLASSIFICATION OF LANDSAT MSS DIGITAL IMAGERY
I.J. Dowman and M.A. Mohammad, University College London, London, *England*
- [E-15] THE DEVELOPMENT OF A METHOD USING LANDSAT SATELLITE IMAGERY FOR DETECTING AND MONITORING DESERT ENCROACHMENT INTO AREAS OF SEMI-ARID VEGETATION IN NORTHERN KENYA
G.H. Griffiths and W.G. Collins, The University of Aston in Birmingham, Birmingham, *England*
- [E-16] ENVIRONMENTAL CHANGE DETECTION IN THE NILE USING MULTIDATE LANDSAT IMAGERY
N.F. Lee and B. Bruce, Canada Centre for Remote Sensing, Ottawa; W. Bulani, The University of Western Ontario, London, Ontario, *Canada*
- [E-17] GENERAL AND THEMATIC MAPPING FROM LANDSAT IN ARID LANDS
J. Poulain, Institut Geographique National, Saint Mandé, *France*
- [E-18] MONITORING DESERT WINDS BY REMOTE SENSING—THE U.S. GEOLOGICAL SURVEY DESERT WINDS PROJECT
John F. McCauley, Maurice J. Grolier, Carol S. Breed, David J. MacKinnon, George H. Billingsley and Paula J. Helm, U.S. Geological Survey, Flagstaff, AZ, *USA*
- [E-19] ESTIMATES OF REGIONAL EVAPOTRANSPIRATION IN SOUTH-EASTERN FRANCE USING THERMAL AND ALBEDO DATA FROM THE HEAT CAPACITY MAPPING MISSION SATELLITE
P. Reiniger, J. Huygen and J. Mégier, Joint Research Centre, Ispra Establishment, Ispra, *Italy*; B. Seguin, Centre de Recherches d'Avignon, Avignon, *France*
- [E-20] PARTICLE SIZE VARIATIONS IN DESERT SURFACE SEDIMENTS: IMPORTANCE FOR REMOTE SENSING OF ARID REGIONS
Ted A. Maxwell, Smithsonian Institution, Washington, DC, *USA*
- [E-21] MESOSCALE MAPPING OF AVAILABLE HOURLY SOLAR IRRADIANCE BY USE OF DATA COLLECTED BY "METEOSAT"
Vann Kerr, Centre National D'Etudes Spatiales and Claude Delorme, Groupement Pour le Developpement de la Teledetection Aerospatiale, Toulouse, *France*
- [E-22] INFORMATION FROM SPECTRAL AND TEXTURAL FEATURES FOR GEOLOGICAL INTERPRETATION OF LANDSAT IMAGERY OF THE EASTERN SAHARA
H. Burger, K. Dobbrick, E. Hilt, U. Köhler, F. K. List, M. Steffan and A. Welgelt, Freie Universität Berlin, Berlin, *Germany*

MONDAY

JANUARY 25

CLOSING REMARKS

(Ballroom, Holiday Inn Pyramids)

- 4:00 Dr. William M. Brown, Environmental Research Institute of Michigan, Ann Arbor, MI, USA
Dr. Jerald J. Cook, Environmental Research Institute of Michigan, Ann Arbor, MI, USA
Dr. Mohamed A. Abdel Hady, Remote Sensing Center, Cairo, Egypt