Australian Centre for Remote Sensing

ACRES UPDATE

Manager's Message

Most readers will be aware of the replacement late last year of the Australian Space Board by an Australian Space Council, with a wider representation, chaired by Professor Don Watts.

Ken McCracken chaired the Board's Remote Sensing Committee, which advised the Board on priorities for allocating national space program funds.

The Committee also recommended on Australia's requirements for data, infrastructure, research and development and on coordination issues in Observing Australia, published in 1992 by the Australian Space Office on behalf of the Board.

These issues were being pursued by the Committee in consultation with a cross section of people who were able to bring a wider view to the issues, particularly from the user perspective.

Under the new arrangements, the Deputy Chairman of the Council, Professor John Richards, is chairing the Council's interim Working Committee on Earth Observation. Our task is to prepare for the Council a five year outlook on remote sensing. Ken McCracken's Committee's work, which used a process of wide consultation with the remote sensing community, has laid the foundation for this work.

As a constituency that is primarily concerned with remote sensing, while recognising that we have an interest in other Council issues such as communications, I feel we can be confident that remote sensing will have a high profile with the Council.

Carl McMaster

NARGIS 93

North Australian Remote Sensing and Geographic Information Systems Forum

Darwin

9–11 August 1993

Call for Papers and Registration

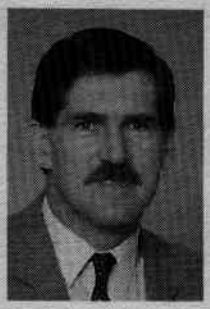
The aim of this forum is to promote the exchange of ideas about, and discussion of, the use of remote sensing and geographic information systems applications as tools in the management of the vast and sparsely populated areas of northern Australia.

See pages 14 and 15 for details.

INSIDE

April 1993

EDITORIAL



ACRES Update is a newsletter published quarterly by the Australian Centre for Remote Sensing and is intended to provide the remote sensing community with information on new satellite and sensor developments, ACRES products and organisational news, national and international developments of interest to ACRES clients and information on remote sensing applications.

ACRES is a business unit within the Australian Surveying and Land Information Group in the Department of Administrative Services.

Items for publication are invited from interested parties and should be forwarded to the Editor.

Contact: Dennis Puniard
Editor/Director Marketing
Phone: (06) 252 4429
Fax: (06) 251 6326

ACRES Staff and Organisation News

Ana Grzic left us in February to commence maternity leave and had a baby girl (Kristina) on 27 February. Both well. Congratulations!

Karen Thomsett has joined us as our face and voice to the outside world.

Ainsley Niblett has taken over the despatch duties as Merv Trubee moved to the computer room.

Jillian Healand has moved from Administration to Sales and Marketing as Marketing Support Person.

Jim Mollison has joined the Sales Team. He comes from an agricultural background in Queensland and will look after Queensland as his territory.

Jim

Karen

Ainsley

Peter Radonyi with the ERS-1 Fast Delivery Processor

The position of Senior Engineer at ACRES has been filled by Peter Radonyi. Peter has a Bachelor of Science degree from the University of Sydney. He has experience in VAX systems and networking at the University of New England-Northern Rivers. He also has experience as a Computer Engineer working on trouble shooting problems associated with Radar Systems on the Jindalee Over the Horizon Radar facility at Alice Springs. He has written programs in ORACLE/Pascal/Fortran/DCL. Peter's intellect is biased towards that of mathematics.

Peter's combination of skills, especially in the analytical, VMS systems, and signal processing areas, makes him particularly attractive to have for the AETHERS-1 SAR integration and ACRES network requirements to be put in place for communication with satellite operators in the 1993 area. It is these two areas where Peter will be given his primary tasks.

The image in the margin on each page is an ERS-1 SAR Image of Irian Jaya.

Sales Team Territories Defined

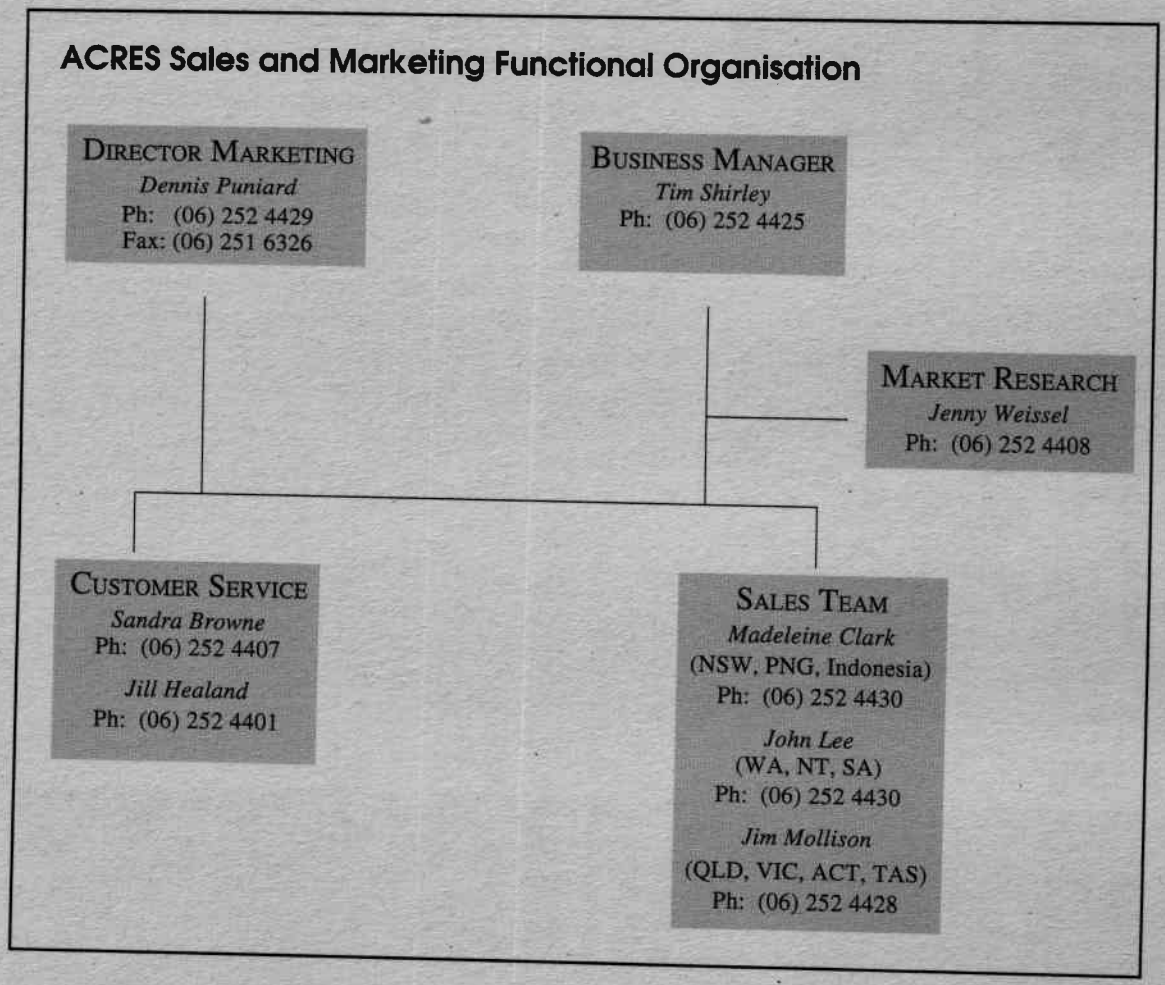
To facilitate a customer focus, the sales team has been allocated territories and will look after all clients in their territories. The responsibilities are:

- NSW, PNG, Indonesia:
  Madeleine Clark
- WA, SA, NT:
  John Lee
- QLD, VIC, ACT, TAS:
  Jim Mollison

Also, Erik Elmar has moved back to his Project Engineering role. Tim Shirley will take on day to day administration for the Sales Team, but with the well defined territories will not have a major role externally.

Dennis Puniard will continue to have responsibility for marketing including agreements and pricing issues.

ACRES Sales and Marketing Functional Organisation



Major Upgrade to the ACRES Production System

The production system at ACRES has undergone another major upgrade. During the period January to March this year the Canadian contractor, Macdonald Dettwiler and Associates (MDA), has been working on site at ACRES to provide:

- the capability to program the LANDSAT-6 spacecraft and process data from the Enhanced Thematic Mapper (ETM);
- the ability to program and process JERS-1 optical data (for scientific use at this time);
- the processing of SPOT data with variable gain;
- extended capabilities to produce geocoded data sets;
- automatic queuing of digital data to be written to film; and
- a three times increased throughput capacity, as compared to the pre-upgrade system.

To be able to take full advantage of the additional programming capabilities offered by various satellite owners, a dedicated team consisting of Rosalie Booth and Steve Alder are now devoting their entire efforts to satellite programming tasks.

There has been considerable impact on our ability to deliver our normal high standard of service during the upgrade, however we are now beginning to see the benefits of more effective and productive systems.

Frederick Chien, MDA Project Manager, signs off the acceptance of the new system, with Carl McMaster observing.

Mike Halliday, MDA Project Leader, in action.

The team in the computer room. Left to Right: Anton Albina (ACRES), Frederick Chien (MDA), Laurie Oliver (ACRES), Robert Denize (ACRES Project Leader), Mike Halliday (MDA), Arlene Mark (MDA), Mike Linney, Lien Ly, Paul Gardner (All ACRES)

Satellite Imagery for Global Forest Assessment

Tropical Ecosystem Environment Observations by Satellites (TREES)

*by Paul Millin**

Increasing concern in Europe over the loss of tropical forest ecosystems and the well documented implications for the carbon cycle, hydrologic cycle and genetic resources, has led to a global scale project to assess the existing area of forest and to provide a rapid means of monitoring changes in forest cover.

The only practical means of obtaining sufficient long term and consistent data sets on a global scale is by observation of the earth from space using remote sensing techniques. From this need, the Tropical Ecosystem Environment Observation by Satellites (TREES) project was conceived.

The overall objectives of the TREES project are to ascertain the area of tropical rain forest and to try and gauge the amount of forest degradation occurring through farming, logging, natural and other processes. More specifically, the objectives are:

(a) to provide quantitative data sets and information on the *spatial* distribution and *temporal* evolution of the tropical ecosystems, e.g. rate of change in forest cover, biomass burning, etc., for improved scientific assessment of their impact on global change;

(b) to establish an integrated satellite observation programme for long-term, continuous and *operational* monitoring of forest cover and rates of deforestation in the tropical regions.

The Papua New Guinea University of Technology (UNITECH) has recently signed a contract with the Institute of Remote Sensing Applications of the Joint Research Centre (JRC) of the European Community to work on a local scale in PNG/Irian Jaya as part of the global project. The expertise available within each country has proved invaluable for the verification stage of the project. UNITECH is fortunate in having staff with both a knowledge of the local environment and expertise in remote sensing, so much of the image interpretation can be done in-country.

The methodology involves a multi-level approach using low and high resolution satellite imagery. Two types of satellite imagery are being used for this project: imagery from weather satellites with a large pixel size and therefore low resolution; and imagery from earth resources satellites with a much smaller pixel size and therefore a higher resolution.

Firstly, satellite imagery with a pixel size of 1.1 km (low-resolution) will be retrieved from existing archives for 1990 and 1991 from the *whole* of the tropical region. This imagery is gathered by satellites on a daily basis, thereby offering potential as an effective monitoring tool. This enormous volume of data can be computer enhanced to give a simple classification comprising the following broad categories:

- closed canopy rainforest;
- degraded rainforest where regional forest cover is less than 70% with various patterns identified;
- deforestation from an area, identified using change detection indicators such as fire and roads; and
- secondary forest.

This stage of the project will be undertaken by the JRC together with the CSIRO Division of Wildlife and Ecology.

Secondly, LANDSAT imagery, with a pixel size of 30 metres (high-resolution) is also being gathered, but on a selective basis in order to refine and verify the above classification. Because of the greater amount of detail that can be seen in the high-resolution images, errors in the low-resolution global classification can be determined and then used to quantify the classification's overall accuracy. The Department of Surveying and Land Studies at UNITECH is coordinating the PNG/Irian Jaya section of the project. Five high resolution images of PNG/Irian Jaya from 1990/91 have been selected from the Australian Centre for Remote Sensing (ACRES) in Canberra and will undergo interpretation by staff at UNITECH.

The five sample images have been selected using the following two criteria:

(a) Complex areas of known recent disturbance;

(b) 'representative' areas where the ground cover type is relatively uniform and understood.

Extensive field data collection by staff from UNITECH and PNG Forest Authority will also be undertaken in these five areas to assist with verification of the overall classification. Field checking is always an essential part of any remote sensing project, because even

though boundaries between classes are usually easily identified on an image, determining the nature of the class is less straightforward. Collecting data on the ground is the final check on the classification — classes identified during the image interpretation can be positively identified on the ground.

Each high-resolution image covers approximately 185 x 185 km, a relatively small area in global terms but very large in terms of field work. The size of the study areas and the broad nature of the classification means that helicopters are the best way to cover the fieldwork sites.

The final stage of the project will be to integrate the satellite image derived classification into a Tropical Forest Information System together with a range of other information including:

- country boundaries;
- main roads and rivers;
- overall topography.

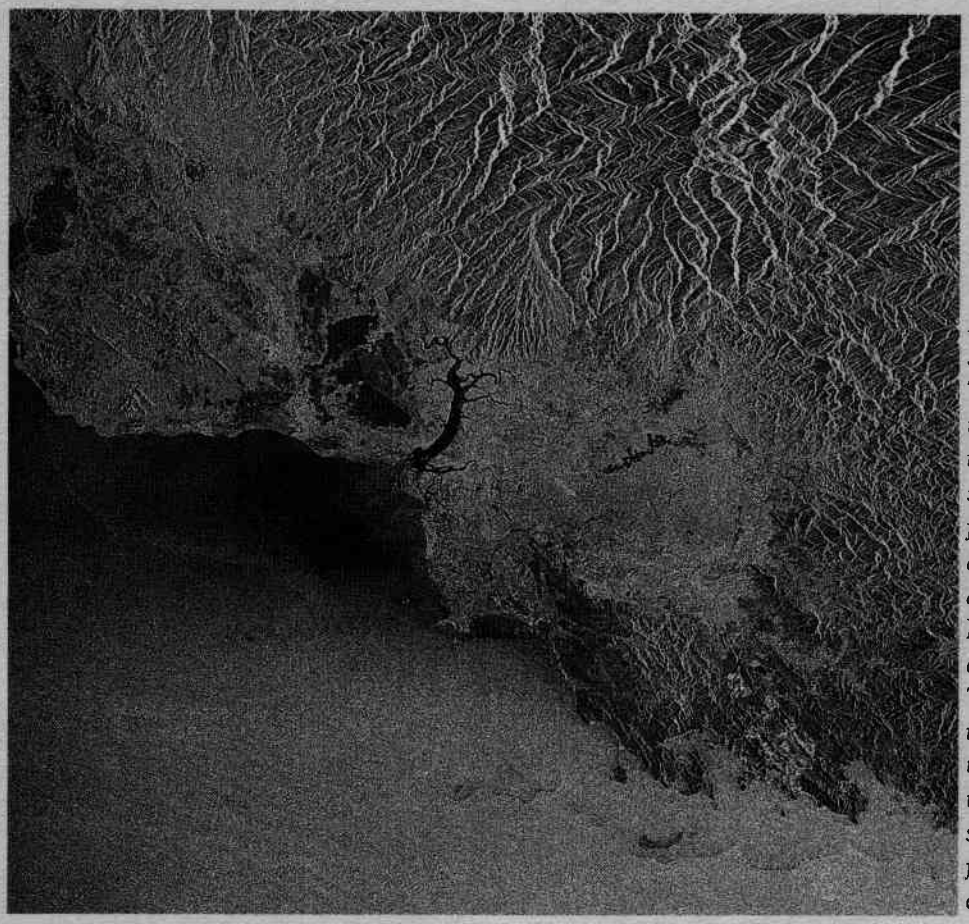
At this stage the project becomes operational. The integration of the low-resolution imagery into the system at regular intervals will allow for the implementation of an 'alarm' mechanism which will be triggered whenever the image analysis indicates gross regional changes in forest cover. These regions will then become subject to intense monitoring by the high resolution satellites including the recently developed radar satellites that are unaffected by cloud cover.

Gathering all this valuable information is pointless unless it can be rapidly disseminated. Therefore a further priority of the project will be the establishment of effective communication links.

The major objective of the TREES project is the establishment of the Tropical Forest Information System, the purpose of which is to assist in the detailed, *continuous* monitoring of active deforestation. It will also offer an invaluable tool with which to evaluate the environmental impact of potential development projects.

**Department of Surveying and Land Studies*
Papua New Guinea University of Technology
Private Mail Bag
Lae, Papua New Guinea
Ph: (675) 424 950; Fax: (675) 457 483

Reproduced with permission from: *Tropical Forest Management Update* — the International Tropical Timber Organization (ITTO) Newsletter



Port Moresby SAR Image. This image from the ERS-1 SAR instrument shows detail of forest, grassland and the urban area around Port Moresby, the capital of PNG. The SAR instrument 'sees' through cloud, thus all images show no effect from cloud cover.

Satellite Imagery with 10 Metre Resolution in Full Colour

A Powerful Tool for Geological Applications

Data from the Thematic Mapper (TM) sensor on the LANDSAT-5 spacecraft is currently the best multispectral data available for geological applications. The six reflectance bands on this sensor allow the preparation of base maps, mineral specific images for iron oxide and clays, landform and physiographic maps, structural images and regional and detailed lithographic images. The relative coarse resolution of these data (30 metres) does not however allow the definition of any but the major roads and creek patterns. At a scale of 1:100 000, imagery prepared from TM has a pixel resolution of 0.33 mm.

This lack of resolution has restricted the usefulness of TM imagery for use by geoscientists in the field unless used in conjunction with higher resolution aerial photography. The aerial photography being used for location purposes while the spectral responses from the Thematic Mapper are used for geological discrimination.

Currently the best spatial satellite imagery available is from the French SPOT Satellites which have a Panchromatic band in the visible green-red with a resolution of 10 metres. This data can be combined digitally with the multispectral Thematic Mapper imagery to produce composites with the best characteristics of both data sets, i.e. a multispectral image which can be enlarged to 1:50 000 and even larger scales.

The SPOT satellite also has a multispectral mode with three bands between the visible green and near infrared and a spatial resolution of 20 metres. This data can also be combined with the Panchromatic data to produce composite imagery which can be enlarged to between 1:25 000 and 1:50 000 scale with a 'red for vegetation' type colour scheme.

Advantages

The final imagery has a number of advantages over conventional aerial photography up to scales of 1:50 000 (at this scale the 10 m of the Panchromatic data has a resolution of 0.2 mm) and even larger scales. These advantages include:

- Good geometrical properties (no lens distortions).
- Large area overviews (a typical Panchromatic SPOT scene is 60 km square).
- An archive of data is available with new data being collected all the time. If data is not available the satellite can be programmed to collect particular areas.
- Since the Thematic Mapper uses bands in the mid infrared the spectral discrimination is much better than aerial photographs.

ACRES' Queensland based distributor, Geoimage Pty Ltd, has produced a full colour brochure with examples of merged images.

Contact:

Bob Walker or Sylvia Michael
Phone: (07) 871 0088
Fax: (07) 871 0042

ACRES Now Accepts Credit Card Payment for Orders

A credit card payment facility is now available for ACRES customers to pay for their orders at time of placement. VISA, MASTERCARD and BANKCARD can be accepted.

For more information contact:

Bob Jones
Ph: (06) 252 4427

New South Wales Remote Sensing Council Invites you to a Resource Management Seminar

Decision Making Using Remote Sensing and Geographical Information Systems

Monday 24 May and Tuesday 25 May 1993

Tuscan Room, Masonic Centre

Cnr Castlereagh and Goulburn Streets, Sydney

Two Seminars are offered:

Day 1 Monday 24 May

Manager's Seminar

Designed primarily for Senior Managers and Consultants.

Day 2 Tuesday 25 May

Specialists Seminar

Designed for middle level managers, professionals and technical level staff.

The program and speakers are the same for both days. However, more emphasis will be placed on the technical aspects of remote sensing and GIS on Day 2.

Speakers will address the functionality of remote sensing and geographic information systems in acquiring, processing and developing operational procedures for decision making and resource management.

Emphasis will be placed on:

- Real time applications
- Routine procedures for information gathering and processing
- Compatibility and integration of data sets
- Cost benefit analysis
- Impact of the technology on resource planning and management.

Program

09.00 – 0.930	Registration and Coffee
09.30 – 10.00	Paul Kelly, Deputy Surveyor General, LIC *Strategic Directions for Remote Sensing in NSW*
10.00 – 10.45	Peter Vickery, Principal Research Scientist CSIRO Division of Animal Production *Remote Sensing and Management Decisions in Agriculture*
10.45 – 11.30	Tom Stubbs, Project Director, Spacial Information Systems, Department of Premier, South Australia
11.30 – 12.15	Barry Steele, Land and GIS Consultant, BHP Land Technologies Division *Building a Case for Remote Sensing and GIS in Resource Management*
12.15 – 12.30	Dennis Puniard, ACRES *Data Availability and Distribution*
12.30 – 1.30	Lunch
1.45 – 3.00	Display and Demonstration of Systems Software and Products

Cost: Registration, Coffee and Lunch — $50.00

Further information: Graeme Tapper, NSW Agriculture, Orange. Ph: (063) 913 162; Fax: (063) 913 206.

Tony Milne, UNSW, Kensington. Ph: (02) 697 2731; Fax: (02) 697 3733.

Recommended Overnight Accommodation: Holiday Inn, 242 Arden Street, Coogee 2034.
Ph: (02) 315 7600; Fax: (02) 315 9100.

Single/Double $75.00 (for Seminar participants)

Please make your own reservations. Mention Resource Management Seminar to gain above rate.

'A Image' Now Available for PCs

'A Image' is an image processing package developed by CSIRO Division of Mathematics and Statistics in Perth and has been available for use on Amiga computers for some years. The system is now available in an enhanced version to run on VGA based IBM PCs and compatibles. PC 'A Image' includes the following features:

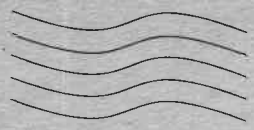
- Powerful desktop display and analysis of remotely sensed and other image data on standard VGA-based IBM-compatibles — standard and extra-memory VGA cards (320 x 200 x 256 colours, 640 x 480 x 256 colours, 800 x 600 x 256 colours and 1024 x 768 x 256 colours).
- Easy to learn and use, featuring full-screen and split-screen display of three-colour, pseudo-colour and grey-level images — user interface via pull-down menus and mouse.
- Single band or ratio or index (including linear combinations and log residuals) in each colour gun.
- Separate filters (low and high pass, directional, edge-detection and edge-enhancement) and/or stretches (linear and inverse linear, logarithmic and inverse log, exponential) for each band or index.
- Options for masking of images, annotation and vector overlaying.
- Advanced routines for discrimination and classification, and specialised classification display options — directed canonical variate analysis and enhanced maximum likelihood classification (relative class likelihoods and typicality indices) — split-screen or full-screen displays of both the original and classified images — display of class maps, with or without masking of atypical pixels; of posterior probabilities and typicality indices for each class; and of class maps or posterior probabilities over the original image.
- Advanced routines for band selection, principal components, decorrelation stretch, neighbour classification and pixel unmixing.
- Routines for image-to-image registration and image-to-map rectification
- Extensive file handling and file conversion routines.
- $540 for a single copy; $4650 for a Departmental licence of 10 copies; 30 day money-back guarantee.

A simplified version of the software is also available for use as a farm management tool for $150.

For further information contact:

Image Tech International Pty Ltd
First Floor, 192 Cambridge Street
WEMBLEY WA 6014

Ph: (09) 388 1555
Fax: (09) 381 4148



ACRES Distributors Rewarded

At the recent ACRES Distributors meeting held in Canberra the AUSLIG General Manager, Graham Bashford, presented the annual awards for sales performance. The awards were:

- Gold Award for best sales performance:
  Geoimage Pty Ltd
- Silver Award for second:
  Land Information Centre, NSW
- Bronze Award for third:
  Resource Industry Associates

Bob Walker, Geoimage

Terry Boyd, RIA

Terry Hickson, LIC

Flexible Digital Demodulator for Earth Observation Satellites

Now Available from Australian Company

The Australian Space Centre for Signal Processing recently installed a new demodulator system at ACRES Alice Springs reception facility and is marketing it worldwide.

General Description

The ASCSP Satellite Demodulator is configured for signals from the following Earth Resource Satellites:

ERS-1	at	52.5	Msym/s	QPSK
ERS-1	at	8.75	Msym/s	BPSK
JERS-1	at	30.0	Msym/s	QPSK
SPOT	at	24.6	Msym/s	QPSK
LANDSAT 6	at	84.9	Msym/s	BPSK

The system is readily adaptable to the demodulation of other ERS/EOS signals up to 52.5 Msym/s QPSK or 85 Msym/s BPSK.

System Features

- Multi-rate demodulation
- QPSK or BPSK reception
- User friendly menu-driven user interface
- Advanced Doppler frequency track algorithm leading to fast signal acquisition
- Built-in test and diagnostic software including fault isolation
- 720 MHz test modulator
- AM output suitable for antenna tracking
- Single 19' x 6U unit
- Terrestrial interface includes either 16 bit Parallel (ECL) output or Serial Merged NRZ (ECL) Data Stream with differential decoding and clock
- 386/VGA PC user interface with advanced menu-driven monitoring, control, test and diagnostic software and the ability to log operational parameters

For more information contact:

Dr Graham Gurr
Business Manager ASCSP
Phone: (018) 302 3336
Fax: (018) 302 3873

LANDSAT News

LANDSAT-6 Ready for Launch

EOSAT advises that technical problems with LANDSAT-6 are now resolved and all is on track for launch in early July.

EOSAT Special Offer for Archived Digital Products

EOSAT have announced a 65% reduction on digital products already archived. There are more than 8000 scenes of worldwide data available at a price of US$1500 per scene in LTWG format on 6250 bpi tapes. Data is mostly of 1985-89 vintage. A special 'education' price at 80% reduction is available to educational institutions.

ACRES has a copy of the catalogue of data available. Contact:

Sandra Browne

Phone: (06) 252 4407
Fax: (06) 251 6326

Worldwide MSS Data Now Only Available Through EROS Data Centre

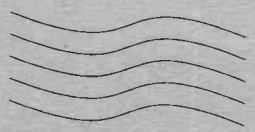
The US Government has transferred all sales and distribution of worldwide MSS data in the US archive to EROS Data Centre. Prices have also been reduced for all archived MSS data. No new MSS data is being received in the US as of February this year.

ACRES can still provide access to this data; however, a surcharge of $100 US will be added to the US prices for handling of these orders. Customers may order direct from EROS.

Prices

CCTs, Full Scene	$200 US
B&W Negatives	$ 18 US
B&W Positives	$ 12 US

NOTE: These arrangements do not apply to ACRES MSS data. ACRES will continue to receive and process MSS data for our reception area and ACRES prices are unchanged at this time.



ERS-1 News

New ERS-1 Prices

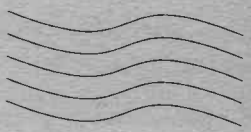
ESA has recently reviewed ERS-1 prices and in line with these changes ACRES has also released a new price list.

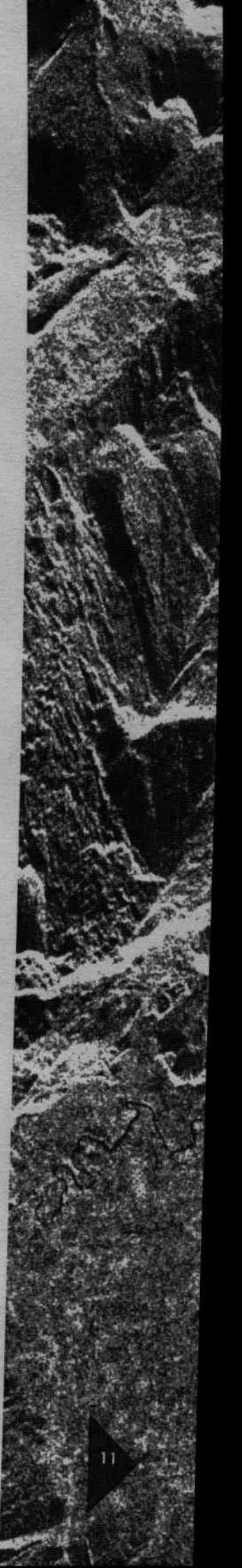
• Level 0.5 Full Scene (100k x 100k) Raw Data CCT	$850
• Level 1.0 Full Scene, Fast Delivery Offline CCT	$850
Photo	$850
• Sample Images: CCT (if ordered with digital product)	$170
Photo	$270

Contact:

Steve Alder or Rosalie Booth

Ph: (06) 252 4409





SPOT 3

The launch of the new SPOT-3 satellite is scheduled for 1 September 1993 from Kourou, French Guyana, on an Ariane 4 rocket.

The Ground Segment qualification phase has started in January and should be completed by the end of June. The spacecraft has been taken out of storage on 1 March 1993 for an on ground commissioning phase consisting of performance tests in the MATRA MARCONI SPACE facilities in Toulouse.

The improved ODETICS on board recorders are scheduled to be integrated in the spacecraft at the beginning of the on ground commissioning phase.

Three control stations will support the launch and the first orbit tracking:

- Prince Albert, Canada (telemetry)
- Katsura, Japan (telemetry and telecommand)
- Santiago de Chile, Chile (telemetry and telecommand)

SPOT Sales in Australia

We are very confident that the market for high resolution data in Australia will develop: the results for the first three months of 1993 show that SPOT sales in Australia are close to LANDSAT sales (28% compared to 44% of total ACRES sales). This sign is very encouraging and as a further incentive, SIS wants to offer to its customers another improvement on the data:

- for all orders for SPOT digital data* placed through SIS by the end of June 1993, SIS offers a free filtering of the image in order to enhance the sharpness: you will be delivered the original data plus the filtered image on your usual medium (CCT or Exabyte)

*Conditions apply

Contact:

SIS
Suite 502, 156 Pacific Highway
ST LEONARDS NSW 2065
Ph: (02) 906 1733
Fax: (02) 906 5109

New Members of the SPOT Ground Receiving Stations

The Ecuadorian station, located in Cotopaxi, near Quito, has started its operational reception of SPOT data in October 1992. This highland (3500 metres) receiving station is operated by the Centro de Levantamientos Integrados de Recursos Naturales por Sensores Remotos (CLIRSEN).

During 1993, three new stations should become members of the Network:

- the Indonesian station of Pare-Pare on the Sulawesi Island, operated by the National Aeronautics and Space Institute (LAPAN);
- the Taiwanese station, located near Taipeh, and operated by the Center for Space and Remote Sensing Research (CSRSR);
- the Italian station located at Fucino and operated by Telespazio.

This should lead to a 14-member SPOT receiving station network by the end of 1993.

SPOT news

SPOT Distributors' Meeting

Australia will be well represented at the SPOT Distributors' Meeting in Toulouse next month. Among them, Bob Walker from Geoimage was invited by SIS to attend: it will be Bob's first test of the French cuisine at the real spot (if we may say so!). Ken Dawbin will represent the WA Remote Sensing Applications Centre and Madeleine Clark will represent ACRES. [The distributors meeting will attend the official opening of the new SPOT Image building (2 levels, 100m long, 'smart building concept')].

SPOT Imaging Services: SPOT Specialists in Australia

SPOT Imaging Services Pty Ltd (SIS) is a Distributor of SPOT Imagery for ACRES. It means that SPOT data received by the Australian Station at Alice Springs are available to Australian customers through us and through our agents (call us to check who is the closest to your office).

SIS is the Australian subsidiary of SPOT IMAGE S.A. in France: as such we distribute images acquired by the SPOT system worldwide to the Australian customers.

SIS consists of six people:

- Patrick van Grunderbeeck (yes, I am French despite this Dutch-Flemish surname), Managing Director
- Keiko Crowley, Customer Service
- Thomas Tse, Sales
- Karen Fordham, SPOT Art but also Accounting and Discipline at SIS
- Laetitia Girardeau, Computer Wizard
- Katie Brian, Secretary

SPOT Prices Reduced

Due to the unprecedented response to ACRES '2 for 1' SPOT offer, we have reviewed our SPOT prices. The new price list was released in March and substantial across the board reductions have been made. Examples of the new prices are:

- Digital Full Scene PAN, Level 4: (40% reduction) $1,580
- Digital 1:50 000 Geocoded Map Sheet (Level 9)
  PAN $1,170
  MSS $1,140
- Photographic System Corrected 1:50 000 Map Sheet
  PAN $ 670
  MSS $ 570

For copies of the full price list contact:

Madeleine Clark
Ph: (06) 252 4430

NARGIS 93 • NARGIS 93 • NARGIS 93

North Australian Remote Sensing and Geographic Information Systems Forum

Darwin • 9–11 August 1993

Call for Papers and Registration

Aim

The aim of this forum is to promote the exchange of ideas about, and discussion of, the use of remote sensing and geographic information systems applications as tools in the management of the vast and sparsely populated areas of northern Australia. The forum will be of interest to practitioners (geologists, soil surveyors, environmental officers of mines, etc.) as well as managers and researchers whose interests and responsibilities lie in land management and environmental issues in northern Australia.

Themes

Emphasis will be on RS/GIS applications in:

- Resource assessment
- Resource monitoring and management
- Rehabilitation
- Environmental modelling
- Information systems as management tools

Key Note Speakers

- Professor Peter Burrough (Utrecht)
- Assoc Prof Tony Milne (UNSW)
- Mr Dennis Puniard (ACRES)
- Dr Andrew Skidmore (UNSW)

Workshops

A workshop associated with the forum will be held on 12/13 August at Jabiru to look at field examples of the use of RS/GIS in environmental assessment associated with uranium mining (numbers will be limited). Details of other special interest workshops which may be held in this period will be forwarded to those expressing interest in attending the forum.

Cost

Registration cost is $80 for three days or $40 per day. This will cover the cost of a copy of the published proceedings, lunch and morning and afternoon teas each day. A forum dinner is planned for the evening of Tuesday 10 August which will cost $20 (this does not include alcoholic refreshments).

Cost of the Jabiru Workshop is $60 which includes transport to/from Darwin and lunches. Participants are expected to make their own arrangements for accommodation and evening meals.

Papers

Proposals for papers and poster papers are invited. Expressions of interest and topics/titles are required by 31 May and authors will be advised of acceptance by 9 June. Abstracts should be submitted by 12 July and papers at the time of the forum. A program including abstracts will be forwarded to registered participants before the forum. Papers will be limited to 3,000 words and conform to a stylesheet forwarded to accepted authors. They will be published immediately after the forum.

Venue and Accommodation

The forum and display will take place at the NT Museum of Arts and Sciences, Fannie Bay, Darwin. Those travelling from out of town should make their own accommodation arrangements bearing in mind that August is in the NT tourist season so early bookings are essential. The Darwin Region Tourism Association can be contacted on:

(089) 814 300 or (089) 817 346 (Fax).

Information

Enquiries should be made to:

NARGIS 93
PO Box 461
DARWIN NT 0801

Tel: (089) 814 230
Fax: (089) 814 316
Email: nargis93@ironwood.ntu.edu.au

or

Chris Devonport
NTU (089) 466 711

Bernard Fitzpatrick
CCNT (089) 894 444

Steven Riley
OSS (089) 799 711

NARGIS 93 • NARGIS 93 • NARGIS 93

North Australian Remote Sensing and Geographic Information Systems Forum

Darwin • 9–11 August 1993

Request for Information

The occasion of the North Australian Remote Sensing and Geographic Information Systems Forum (NARGIS 93) offers an opportunity to assemble and collate a database of all remote sensing and GIS work that has been, or is being, done in northern Australia.

Information we are asking for

- Names and contact addresses of RS/GIS people who have, or have had, an association with, or worked in, northern Australia.
- Details of published material such as journal articles which are specifically relevant to RS/GIS work in northern Australia (including abstracts if available).
- Details of unpublished material such as Master/Doctoral theses, reports by government organisations, reports by consultants, etc. Although access to some of these may be restricted, we would still like to record their existence and note their contents.
- Suggestions as to contacts and/or locations where the above information may be found.

What we are offering in return

- The information collected will be published later this year in a document which will acknowledge the names of all contributors.
- Every contributor will be sent a copy of the printed publication. You do not have to be an author to make a suggestion or a contribution of information. A summary will be presented at NARGIS 93.

Contributions/information/suggestions

Contributions/information/suggestions should be sent to:

GIS Laboratory
Northern Territory University
PO Box 40146
Casuarina NT 0811
Australia

Myilly Point Campus
Ph: (089) 46 6711
Fax: (089) 41 0460

or

NARGIS 93
PO Box 461
Darwin NT 0801

Ph: (089) 814 230
Fax: (089) 814 316
Email: nargis93@ironwood.ntu.edu.au

The closing date for inclusion of material in the publication is 12 July 1993.

Enquiries may be addressed to:

Chris Devonport
NTU (089) 466 711
Email: chris@ironwood.ntu.edu.au

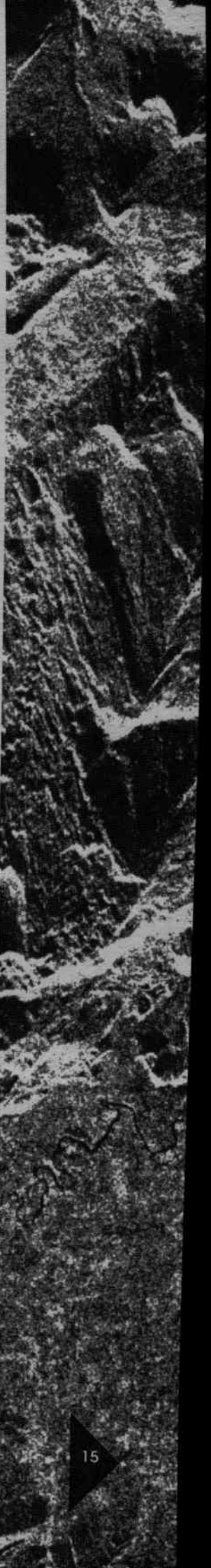
Bernard Fitzpatrick
CCNT (089) 894 444

Steven Riley
OSS (089) 799 711

Peter Waggitt
OSS (089) 814 230

Your assistance is greatly appreciated.

Please do it now!



LANDSAT Data Used for Vegetation Mapping on the Singleton Training Area

By Bob Gourlay

Introduction

Satellite imagery has been used to classify the land cover over 13 000 ha of the Army's Singleton Training Area (STA) for the purposes of land capability assessment and land management. Land cover refers to vegetation, bare ground and inland water. Vegetation is the main feature, although bare ground and erosion are important features in land management at the STA.

Vegetation is important in land management because it has a stabilising effect on soil conditions which can reduce the potential for erosion. Vegetation structure is also important in military land use because it influences decisions on manoeuvre tactics and the nature of training. The vegetation in this study has been classified according to structure because of its direct relevance to land use and management. This includes degraded, modified, and sparse vegetation which is important in assessing erosion and wildlife habitat potential.

Framework for Land Cover Classification

Land cover classifications are an abstraction of the real world. Any classification can only be an approximation of the structural or functional boundary of ecological systems. However, it is possible to classify the landscape objectively using spectral differences in satellite imagery to produce land cover classes.

These classes describe the range and distribution of uniform land cover types. These types are determined by the dynamic interactions of climate, terrain, soils, hydrological processes and the nature and intensity of land use.

Study Approaches

The vegetative cover of the STA and the surrounding area was mapped from Landsat Thematic Mapper satellite imagery supplied by ACRES. Digital data from four spectral bands (2, 3, 4 and 7) acquired in August 1986, were imported into a MicroBRIAN image processing system. The image was spatially rectified to overlay the 1:25 000 Minimbah topographic map and classified to provide mappings of land cover.

Use of an 1986 image potentially introduces some limitations. Changes in land cover after 1986, and particularly changes due to climatic factors or seasonal conditions during the intervening period, can limit the level of detail that can be examined with field reconnaissance. The selection of an image to coincide with the dry conditions experienced during the initial survey in December 1991 would have given poor spectral resolution between vegetation types. However, the 1986 image produced high resolution between all vegetation types because herbaceous plants were at the peak of development at that time. Also, this winter image provided clear definition between vegetative and non-vegetative areas, and therefore clearly identified areas of erosion.

To maximise the spectral values, a large number of spectrally different areas were selected for the classification. The procedure progressively identified uniform areas based on spectral and spatial associations. The assumption was made that uniform areas on the image represent the spatial distribution of similar landscape patterns or features. However, no preconceptions or assumptions were made prior to field sampling as to what these uniform areas represented.

The initial classification of 153 landscape classes was reduced in a series of steps to an 18 class map which was verified by field survey. The survey confirmed that the main vegetation types were identified in the final classification, and that these classes could be further reduced to a cohesive map of 14 classes. The 14 class map was verified by a subsequent field survey of 73 sites and cross checked with the land cover descriptions of the initial 88 field survey sites. This produced a 96% *reliability rating* and provided a high degree of resolution between the different vegetation types. A land cover map of *eight classes* was produced for land management purposes, which has a *reliability of* 94%.

Summary

The use of satellite imagery has proved in this case to be an effective and efficient method of discriminating and describing vegetation structure. The methodology has been applied for land management purposes, but could be equally effective in the classification of vegetation for appreciating manoeuvre, concealment and other tactical considerations.

Contact:
Environmental Resource Information Consortium (ERIC)
R Gourlay, phone: (06) 246 5727

ERM Announces ER Mapper™ Release 4.0

Earth Resource Mapping (ERM) recently announced the release of ER Mapper 4.0, a significantly enhanced and improved version of its powerful image processing software package for the earth sciences. 'We are very excited about release 4.0, and feel it is the finest version of ER Mapper to date,' said Stuart Nixon, ERM's Chairman and founder. 'We have added a wide range of new features, with a particular emphasis on Land Information applications. ER Mapper 4.0 is shipped on CD-ROM with over 400 Mb of sample data, and we also offer a free CD-ROM for product evaluations.' ER Mapper 4.0 is available on a variety of workstations, including Sun (SunOS and Solaris 2.1), DEC Ultrix/MIPS, DEC OSF/Alpha, Silicon Graphics, and Hewlett-Packard. ACRES has supplied some sample Australian data for use with the package.

Highlights of ER Mapper 4.0 enhancements include:

- Land Information features, including additional classification methods.
- A completely new GUI-based map composition feature.
- 'Virtual datasets', a revolutionary new concept that lets you define a view into data that can be treated as a real dataset.
- New geolinking and geopositioning features, including the ability to geolink multiple image windows to a common extent or map sheet, and a new geoposition window that simplifies control of image extents and zoom factors.
- Additional import programs and export programs for a total of over 80 import/export formats in all.
- More hardcopy devices. ER Mapper 4.0 supports over 150 hardcopy formats.
- Improved graphical user interface and documentation.

Fully functional four-week evaluations of ER Mapper are available for $200, including complete hardcopy manuals. ERM also offers a free ER Mapper 4.0 evaluation CD-ROM that includes full on-line manuals and limited functionality, lasting 30 minutes.

Contact:

ER Mapper at Level 1
87 Collins Street
WEST PERTH WA 6005

Phone: (09) 388 2900
Fax: (09) 388 2901

ERS-1 SAR Traps Earth's Shifting Surface

Daniel Clery

You would have thought that the best place to measure tiny movements in the Earth's surface caused by shifting geological faults or volcanic activity would be on the ground. But researchers have shown recently that it may be just as easy to measure them from a satellite orbiting almost 800 kilometres overhead.

At a recent symposium in Cannes to discuss results from the European Space Agency's first Earth observation satellite, ERS-1, launched in July last year, several groups reported success using a technique called radar interferometry. Not only has the technique been used to spot the movement of markers on the ground by one centimetre, but it can also produce detailed three-dimensional relief maps of the Earth's surface.

ERS-1's largest instrument, the synthetic aperture radar or SAR, beams microwave signals downwards and then picks up the reflected signal. Intensive computer processing translates this signal into a detailed image of the surface with a resolution of around 25 metres. But the SAR antenna does not just pick up the strength of the returning signal, it also detects its phase, or what part of the beam's wavelength it is at when it reaches the antenna. Phase is directly related to the distance of the surface from the antenna.

Radar interferometry relies on taking two images of the same area from slightly different orbits of the satellite. The phase information from one image is then superimposed by computer onto the phase information of the other. The phase values for each corresponding pixel of the two images are subtracted, leaving an image, known as an interferogramme, that records only the differences in phase between the two.

These phase differences give the variations in altitude of each pixel. The

effect is identical in principle to stereo vision: slight differences in the image perceived by the right and left eye gives a scene the impression of depth.

The result is a computer relief map known as a digital elevation model and ESA hopes the technique will be used to produce cheaply and easily relief maps of inaccessible parts of the world. Initial results show that the calculations of height are accurate to about the nearest four metres. The only other ways of producing such maps is to physically measure the terrain, which is very expensive, or use stereo pairs of images from aircraft or optical satellites such as France's SPOT. But the French satellite is less accurate than ERS-1 and optical surveys can be blocked by cloud.

Earlier this year, an experiment was carried out on a further refinement of the technique, known as differential radar interferometry. This involves taking three images of the same area. The first two are subtracted to form an interferogramme, then the second and third are subtracted to form another interferogramme. The two interferogrammes are then subtracted from each other to make a final one which shows up with great accuracy any changes between the original three images.

In the experiment, researchers from the Institute for Navigation at the University of Stuttgart set up four movable markers known as corner reflectors, which are very visible to the SAR, in an area near Bonn. ESA took 10 images of the area over the course of a month and sent them to a team at the Polytechnic of Milan for processing. But during the month, the Stuttgart researchers moved two of the reflectors up or down by one centimetre. After processing the images, the Milan researchers successfully identified which reflectors had moved and when, and put the changes at eight millimetres and nine millimetres.

Steve Coulson of the ERS mission's section at the agency's ESRIN centre in Frascati, Italy, says the Bonn experiment was 'a big step' in proving that differential radar interferometry could be used to detect movements in the Earth's surface. Experiments are now in progress to use this technique to detect tiny ground movements without the help of reflectors.

One study is looking at an area north of Nice which is prone to landslides. Another study is of an area next to Mount Vesuvius near Naples which expands and relaxes because of volcanic activity below ground. It is now in a relaxation phase but the difference between the phases is less than a centimetre. Both studies are using images taken in August and September last year.

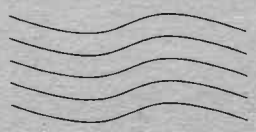
The researchers at the Polytechnic of Milan are also using improved image processing to study recent images of Mount Etna in Sicily and have already detected lava movements below the surface.

Australasia is involved in this research through the activities of the Australasian Fringe Group. The Group coordinated by ACRES consists of the UNSW, DSTO and DOSLI in NZ. Test data, supplied by ESA, has been used by DSTO to generate an interferogramme with the next and more complex stage being the generation of the DEM.

Based on the success of the Europeans and the belief that SAR interferometry is the way to provide accurate, consistent and cost-effective DEMs the ACRES ERS SAR acquisition program has most of Australia covered by the two or more ERS SAR passes needed for interferometry. ACRES is currently awaiting more information from ESA on which passes will be most useful for interferometry so as to have a complete coverage for DEM generation.

While DEMs from SAR are an exciting use of the technology it needs to be remembered that during the SAR acquisition stage relief will cause loss of data through 'layover' and 'radar shadow'. In such areas DEM information cannot be extracted and another SAR system or some other alternative will need to be used to fill in these gaps. Fortunately, in a country like ours we do not have too much relief to cause too many such problems.

Contact:
Paul Wise
Phone: (06) 252 4434



Farm Image Product Continues to Impact the Agriculture Scene

In February this year ACRES renewed an agreement with AGRECON Pty Ltd to facilitate the continuation of the Farm Image Product range. The Farm Image product is specifically tailored for farmers, agricultural companies and others involved in rural land management. It is available as both a photographic and digital product in two formats at very attractive prices.

Product Specifications

3 Band geocoded colour image

1:50 000 scale — nominal area 225 sq km

1:100 000 scale — nominal area 900 sq km

Copy on floppy disk available with original order for photo product

Prices

1:50 000/225 sq km:
$300 photographic print, $250 floppy disk

1:100 000/90 sq km:
$650 photographic print, $500 floppy disk

Contact:

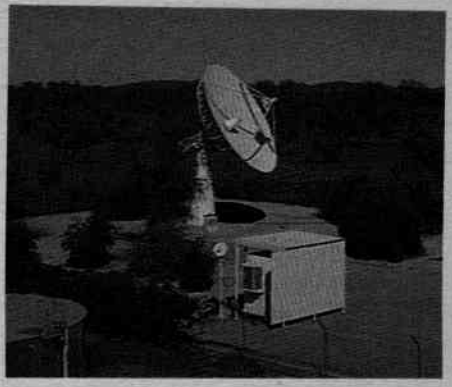
Dr Brian Button
AGRECON
Phone: (06) 201 2565
Fax: (06) 201 5030

Brian Button signs new Farm Image Agreement, with (left to right): Tim Shirley, Dennis Puniard, Carl McMaster.

News from the ALICE

Whilst the ACRES processing system has been undergoing a major upgrade, changes have also been taking place at the receiving station in Alice Springs. Two major contracts were let to Australian companies, MITEC Pty Ltd, from Brisbane, and the Australian Space Centre for Signal Processing (ASCSP) in Adelaide to upgrade the receiving facilities for dual channel reception necessary to receive LANDSAT-6 and JERS-1 data. APCSP has built new demodulators based on digital signal processing technology and MITEC has supplied dual channel converters designed to ACRES specifications. The system is now fully functional and is ready for LANDSAT-6 operations.

Warren Serone, the Alice Springs Manager, reports that one of his senior operators, William Willis, has just returned from an overseas visit which included a tour of the DATRON facilities at Simi Valley, near Los Angeles in California. DATRON supply satellite antennas and associated hardware. They have supplied the ACRES system and recently refurbished parts of it. William was envious of the wide array of sophisticated equipment in production at DATRON, including up to 20 riser towers for shipborne systems and a semi trailer mounted portable system. They also have extensive environmental testing equipment to test components often required to work in harsh conditions. With our solitary antenna at Alice Springs, we would be very pleased to 'borrow' the semi trailer for a year or two!



The ACRES Antenna at Alice Springs

DRAGON Software Can Now Handle ACRES Data

The latest release of DRAGON Image Processing Software can now handle the ingest of ACRES data in EXABYTE format.

DRAGON is a world leader in remote sensing image processing for personal computers. Since 1987, DRAGON has made fast, powerful, easy-to-use IMAGE ANALYSIS available and affordable. Universities, government and international agencies, and private consulting firms in more than three dozen countries around the world now use DRAGON for research, operational projects and training.

Powerful Image Processing for the Professional

DRAGON is a convenient and versatile tool for applications such as vegetation monitoring, hydrologic mapping, environmental assessment and rangeland management. It works in partnership with a variety of GIS packages and the DRAGON Tools Libraries, importing and exporting both vector and raster data. Current DRAGON users are analysing imagery from LANDSAT, SPOT and NOAA satellites, airborne multispectral scanners, video and aerial photography.

Inexpensive Image Processing for Education

DRAGON's flexibility, ease of use and low cost make it ideal for educational environments. DRAGON supports a broader range of personal computer hardware than any other PC-based image processing software. Context-sensitive help provides immediate assistance to new users, while more than 400 pages of documentation provide in-depth explanations when needed. Volume pricing policies make it easy for schools and universities to equip an entire lab with DRAGON image processing.

Integrate Imagery into your GIS

DRAGON makes it easy and economical for you to use remotely-sensed images as a data source for your GIS. Supervised and unsupervised classification algorithms allow you to transform spectral data to thematic information. On-screen digitizing, with an image as background, lets you extract vector features. Data import and export tools facilitate communication of raster and vector data between DRAGON and a wide range of other packages. And the new DRAGON Programmer's Toolkit can help you to create custom data exchange solutions if necessary.

Hardware Requirements

DRAGON runs on any personal computer such as an IBM PC/XT/AT/386/486 or PS/s computer. The computer must have at least 640 kbytes of memory, a hard disk, and some supported colour graphics device and appropriate colour monitor.

We *recommend* that DRAGON systems also include additional memory (at least 512 kbytes, configured as EMS), a mouse and a numeric (math) coprocessor.

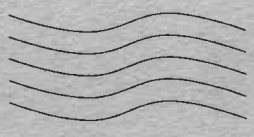
The most popular graphics device is the VGA or the so-called 'Super-VGA'; DRAGON can also be configured for the 8514/A, XGA, Targa-16 and TargaPlus boards. TIGA driver permits using almost any high-quality graphics board based on the 11340x0 graphics processor.

Your graphics board is a very important part of your system. We recommend that you select it carefully, seeking greatest functionality rather than lowest cost. Super-VGA and TIGA boards with resolutions of 1024 pixels by 256 colours, plus 640 pixels at 32,000 colours, are readily available at low cost.

The level 2 Dragon System is priced at $2300 or $1530 for educational institutions.

For further information contact the Australian distributor for DRAGON:

LISTECH Australia
(Andrew Dilley)
Phone: (03) 729 2066
Fax: (03) 729 1060



CALENDAR

Calendar of Remote Sensing and Associated Events

1993

24–25 May Sydney

The Application of Remote Sensing and GIS for Managers. Contact: Graeme Tupper, NSW Department of Agriculture, Orange. Phone: (063) 91 3100.

18–19 June Singapore

Far East Workshop on GIS (FE GIS 93). Contact: Mrs Ho Siew Foong, University of Singapore. Fax: (65) 779 4580.

21–25 June Singapore

Third International Symposium on Large Spatial Databases (SSD 93). Contact: Mrs Ho Siew Foong, University of Singapore. Fax: (65) 779 4580.

20–22 July UNSW, Sydney

Advanced Remote Sensing Conference 'Coming of Age — 21 Years after LANDSAT'. Contact: Prof Bruce Forster. Phone: (02) 697 4127. Fax: (02) 313 7493.

20–22 July UNSW, Sydney

Conference on Land Information Management and GIS. Contact: Mr J R Pollard, Department of Surveying. Phone: (02) 697 4184. Fax: (02) 313 7493.

9–11 Aug Darwin

Northern Australia Remote Sensing and GIS Conference. Contact: Chris Davenport, NTU. Phone: (089) 466 711.

18–21 Aug Tokyo, Japan

1993 International Geoscience and Remote Sensing Conference (IGARSS 93), Koga Kuin University. Contact: Professor Sadao Fujimura, Faculty of Engineering, University of Tokyo. Phone: 81-3-3812-2111 Ext 6900. Fax: 81-3-5689-7354.

24–26 August Sioux Falls, South Dakota, USA

Pecora 12 — Land Information from Space Based Systems. Contact: EROS Data Centre, USGS. Ph: (605) 594-6007. Fax: (605) 594 6589.

21–22 Sept Adelaide

Remote Sensing South Australia — Towards 2000. Contact: John Willoughby, Department of Geology, University of South Australia

12–18 Oct Tehran, Iran

14th Asian Remote Sensing Conference. Contact: Prof Shunji Murai, University of Tokyo, Japan. Fax: 81 3 3479 2762..

25–30 Oct Adelaide

Course on Photogeology and Image Interpretation for Mineral and Petroleum Exploration. Contact: Australian Mineral Foundation. Phone: (08) 379 0444. Fax: (08) 379 4634.

2–4 Nov Minneapolis, USA

GIS/LIS 93. Contact: Secretariat. Phone: (301) 493 0200. Fax: (301) 493 8245.

24–26 Nov Adelaide

AURISA 93 Environmental, Urban and Social Planning — The Winning Vision. Contact: Secretariat. Phone: (08) 363 1307. Fax: (08) 363 1604.

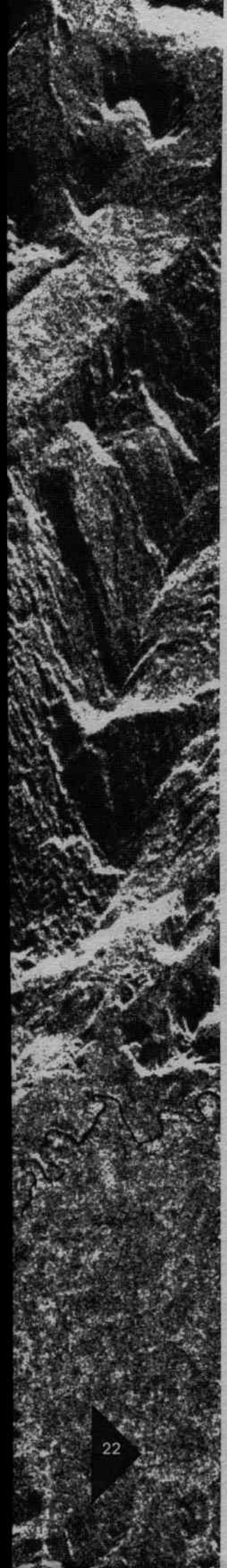
1994

28 Feb–4 Mar Melbourne

Seventh Australasian Remote Sensing Conference. Contact: Secretariat. Phone: (03) 387 9955. Fax: (03) 387 3120.

5–12 Mar Melbourne

FIG XX International Congress. Contact: ICMS. Phone: (03) 387 9955. Fax: (03) 387 3120.



University of New South Wales Centre for Remote Sensing and GIS

Seminar Series 1993

To be held on Wednesday from 1–2 pm in Room 136, Geography and Surveying Building unless otherwise specified (Barker Street Entrance)

19/5/93 *Speaker:* Dr David Jupp
Topic: Modelling structural forest parameters from remotely sensed data

2/6/93 *Speaker:* Dr Geoff Taylor
Topic: Geological Interpretation of geoscan imagery

28/7/93 *Speaker:* Dr Michael Box
Topic: Atmospheric remote sensing for climate change

4/8/93 *Speaker:* Dr Jon Huntington
Topic: Advances in remote sensing for exploration geology

18/8/93 *Speaker:* Prof John Richards
Topic: Progress in Radar Backscatter Models of Forests

Please contact the Centre for Remote Sensing and GIS (697 4964) for further details.

Short Courses

Short Course: Geological GIS
Date: 21–30 July 1993
Organising School: Key Centre for Mines
Contact: Prof G Taylor

Short Course: Advances in GIS (Prof P Burrough)
Date: 19 July 1993
Organising School: Geography
Contact: Ms F Colman

New Regolith Mapping Technique Described in AGSO Publication

Integrated LANDSAT TM and High-Resolution Gamma-Ray Spectrometric Imagery

Documentation of an effective mapping tool in an area of thick vegetation and residual soil cover in north Queensland

High-resolution airborne gamma-ray spectrometric data acquired for the National Geoscience Mapping Accord north Queensland project have proved invaluable for differentiating regolith types in the Ebagoola 1:250 000 Sheet area according to their potassium, thorium, and uranium signatures. The justification for this conclusion is the subject of the newly released AGSO Record 1992/78 (Surficial Geology 3): 'Regolith mapping using integrated Landsat TM imagery and high resolution gamma-ray spectrometric imagery — Cape York Peninsula' by John Wilford.

Gamma rays emitted by rocks can penetrate a residual soil cover as much as 40 cm thick and the vegetation that it supports. For this reason, the acquisition of airborne gamma-ray spectrometric data is particularly useful in north Queensland, where a dense vegetation cover and residual sandy soils masking much of the underlying geology hinder the acquisition of other remote-sensing data sets. Image-processing techniques have been applied to the gamma-ray data to enhance them and integrate them with Landsat Thematic Mapper data.

The resulting imagery has helped to identify broad lithological divisions and structural domains reflected in the regolith cover and in the geomorphic features of the landscape. It thus provides an insight into the weathering and geomorphic history of the region, and helps to distinguish deeply weathered stable landforms from eroding landforms lacking a surficial cover.

Record 1992/78 documents the usefulness of the integrated imagery to regolith mapping in the Ebagoola Sheet area. It also discusses other applications of the imagery — for example, the potential for assisting stream-sediment geochemical data interpretation and environmental studies, because the imagery effectively maps the distribution of sediments and soils in the landscape, and identifies areas of erosion and land degradation.

Record 1992/78, comprising 35 pages, 16 figures and 1 table, costs $20 + postage and handling charges of $5 (in Australia) or $15 (overseas).

Contact:

AGSO (Australian Geological Survey Organisation).
AGSO Sales Centre
Phone: (06) 249 9519
Fax: (06) 249 9982

Interactive Remote Sensing Display Proves a Winner in Adelaide

In 1992 ACRES was requested to develop an interactive remote sensing display for the South Australian Investigator Science Centre at Wayville in Adelaide. It was decided to develop the display using MacIntosh and Hypercard technology and the system was handed over to the Centre mid year by Senator Nick Bolkus. It was recently on display at the Australian Science Festival in Canberra. The display has proved very popular and several schools have approached ACRES to obtain copies. The display has descriptive data on satellites and over 50 images. We are presently in negotiation with Apple Canberra to improve the display and make it more widely available.

Contact: Dennis Puniard
Phone: (06) 252 4429

Investigator Science Centre and the display in action.

Subscription Form

If you are not on the mailing list for ACRES Update or would like to receive a personal copy please complete the following and send to the following address:

ACRES Update
PO Box 28
Belconnen ACT 2616
Australia

or: Fax: (06) 251 6326

Name: .....

Position: .....

Organisation: .....

Address: .....

Phone: ..... Fax: .....

Business Sector:

- ❑ Federal Government
- ❑ State Government
- ❑ Local Government
- ❑ Government Business Enterprise
- ❑ Private Industry
- ❑ Education

LGEMAP — A Local Government Development Project

A group consisting of Greening Australia, Technical and Field Surveys and AUSLIG has been awarded an Office of Local Government grant for a project called 'LGEMAP'. This project addresses the way in which low cost Geographic Information Systems (GIS) can be used by Local Government to efficiently and cost-effectively monitor vegetation cover and manage environmental activities.

The project contains three themes:

(a) An overview of the most effective GIS strategies for environmental and vegetation management by local government, commensurate with councils' role in serving the needs of its local community and utilities.

(b) A demonstration of the practical application of these strategies, in Singleton Shire, using systems appropriate to local council and community applications.

(c) Development of an introductory GIS package and tutorial ('GIST'), capable of being run on most desktop systems, together with subsets of satellite imagery and digital mapping data relevant to each user's area.

LGEMAP will combine the various types of satellite data from ACRES with vector geodata from AUSLIG, as well as other data sets from State agencies, into a practical, user-friendly product. Wide dissemination of the results should stimulate the acceptance of satellite data by community users.

The tutorial data will be a common set of data for all GIST packages based on the Singleton Shire project. Part of the data will be in the form of manipulatable layers operated within the program module and part will be presented as digital 'snapshots' of worked output. The manual will provide full user documentation on how to operate the software, tutorial and site-specific data. It will also provide a general background on data sources and planning concepts.

Site-specific data will consist of matched layers of raster satellite imagery and selected vector data which can be used by local councils for feasibility assessment, education and initial planning.

Contact:

Mike Aubrey
Technical & Field Surveys
Phone: (02) 887 8642
Fax: (02) 887 8647