



acres news

Australian Centre for Remote Sensing

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UPGRADE AT ALICE SPRINGS

To enhance system performance and expand reception capabilities, the data acquisition facility (DAF) at Alice Springs has been upgraded in the following way:

- Replacement of the Signal Processing Experiment (SPE) equipment installed in 1986 (and used to acquire LANDSAT TM data to December 1989) with new reception and demodulation equipment for Landsat.
- Installation of additional receiving equipment to acquire data from the French SPOT satellites.
- Installation of a data handling assembly to allow reception of data from passes directly overhead.
- Improved antenna control including computerised calculation of satellite orbit parameters.

The antenna upgrade caused a short break in reception of MSS and MSS data between 31 December 1989 and 9 February 1990. The non-data periods are contained elsewhere in this newsletter.

A problem with part of the SPOT receiving equipment resulted in limited reception of SPOT data in April 1990. Routine reception of data at the ACRES DAF resumed on 1 May 1990.

AVHRR data is now received on an opportunity basis due to the upgrade.

ACRES NEW DIRECTOR

Dr. John McMaster has taken up the position of ACRES Director with great enthusiasm. He brings with him a high level of experience in remote sensing and a strong background with ACRES. Manager John McMaster will provide a new direction for the organisation.

John describes his background and outlook for ACRES in his message to the user community on page 2.

NEW SATELLITES LAUNCHED

SPOT 2 22/1/90
 SPOT 2 was successfully launched by Ariane rocket from the Guyana Space Centre at 01:35 universal time on the 22 January 1990. The first imagery was acquired on January 23rd following technical tests and orbital adjustments.

The SPOT 2 platform is reported to be performing perfectly. Both HRV's and both on-board recorders are operating normally and SPOT 2 is now in the same orbit as SPOT 1, one hundred and thirty three miles from SPOT 1.

SPOT 2 continues to perform its mission with no major problems and image quality consistent with that of SPOT 1.

MOS 7 22/1/90
 MOS 7 was successfully launched by the National Space Development Agency of Japan (NASDA) from the Guyana Space Centre on 7 January 1990. The satellite is in a similar orbit to MOS 2 which continues to perform its mission.

MOS 7 is a earth observation satellite, identical to MOS-1 and forms part of a satellite earth observation system contributing to the monitoring of the earth's environment.

LANDSAT STATUS

The Landsat program continues to provide data from Landsat 2 and 5. The Department of Environment and Heritage is currently conducting a study of the program.

The program provides data for land and ocean resource monitoring. (Source: Landsat World Update, Volume 3, Number 2, Feb 28, 1990).

SATELLITE OPERATIONS SUB SYSTEM (SOSS)

The Satellite Operations Sub-System known as SOSS, is a software system which allows ACRES to program the SPOT satellite within its Australian coverage area.

The program operates in the following way. Orbital elements for NOAA 10 and 11, Landsat 5 and SPOT 1 are accepted by the software. Calculations based on the most recent orbital elements enable conflicts between these satellites to be analysed and priority listed. The Program also highlights the conflicts between SPOT programming requests for a particular path. (K is the correct SPOT Image Terminology). Once a SPOT path has been successfully interrogated by the conflict analysis program, the information is transferred to the Mission Control Centre Front End Computer (MCCF) at the Centre National d'Etudes Spatiales (CNES) in Toulouse, France. Following MCCF's acceptance of the ACRES acquisition request, instructions are sent to the SPOT satellite during its overnight pass above Toulouse.

The SOSS program greatly assists ACRES in the programming of future acquisitions for all satellites and simplifies communication with the computer.

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MANAGER'S MESSAGE



Carl McMaster - Manager, ACRES

Satellite remote sensing personifies an era of rapidly changing technology. ACRES goal is to provide data products that can bring the benefits of satellite remote sensing to Australia and where relevant, to the wider international community. Our directors, Dennis Puniard (Operations) and Paul Wise (Applications) have this responsibility.

In 1987, as the Australian Landsat Station (ALS), we received and distributed Landsat MSS products. This newsletter refers to our involvement with the Landsat TM, SPOT, MOS and NOAA programs and we are also preparing for the reception and processing of data from the European Space Agency's ERS1 satellite program due for launch in 1991. This program expansion has been brought about because of the foresight of individuals within the Australian remote sensing industry and through the efforts of ACRES staff.

Front Cover - DAF receiving antenna.

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ACRES is part of the Australian Surveying and Land Information Group (AUSLIG), in the Department of Administrative Services.

DAS Service
is Our
Business

NEW DIRECTOR APPOINTED

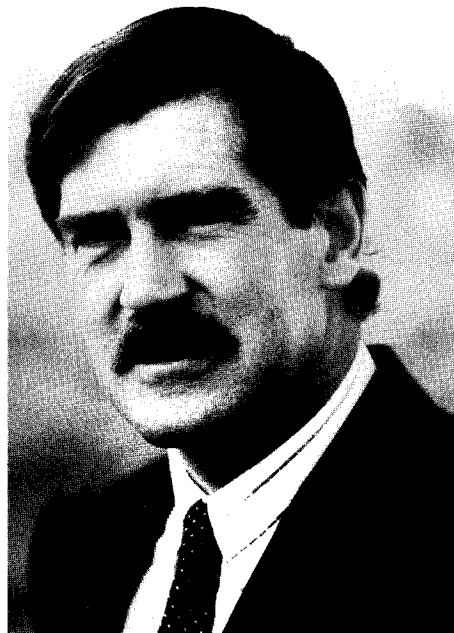
Dennis Puniard was appointed Director, Operations, ACRES in March. Prior to Dennis's appointment, Paul Wise was acting in the position (since November 1989) but has now resumed his previous position as Director, Applications.

Dennis comes to ACRES after 20 years service as an officer in the Royal Australian Survey Corps. In his early Army career as a surveyor and mapper he saw service in PNG, the Army Survey Regiment (Bendigo, Victoria), the School of Military Survey (Bonegilla) and he commanded 1 Field Survey Squadron in Brisbane.

In 1982, Dennis completed a one year Technical Staff Officer's Course at the Royal Military College of Science at Shrivenham in the U.K. He then took up a position with the Scientific Adviser to the Army in Canberra where he first developed his interest in remote sensing. Since then, he has been a prime mover in developing Defence interest in applications of remote sensing technology.

In 1983/84 he studied full-time at the University of Queensland for a Masters Degree which included a strong remote sensing content.

For the past two years he has been a Staff Officer in Headquarters, Australian Defence Force, involved in policy



Dennis Puniard - ACRES Director, Operations.

development, in particular for Geographic Information Systems (GIS) in defence, including the remote sensing elements of GIS.

Dennis comes to ACRES with a broad background in remote sensing applications research and development which will assist him in ensuring that ACRES continues to provide its customers with a high level of service.

5TH AUSTRALASIAN REMOTE SENSING CONFERENCE

The 5th Australasian Remote Sensing Conference will be held at Observation City Resort Hotel, Perth between 8 - 12 October 1990. Henry Houghton, Conference Chairman, reports that preparations are well underway. The program has been finalised and more than 150 papers and/or workshop posters will be presented. Ten plenary speakers of international repute will present the following papers:

- Data Calibration Dr Joachim Hill
- GIS and Remote Sensing Dr Craig Trotter
- Global Monitoring Professor John Townshend
- High Dimensional Spectral Data Professor Alexander Goetz
- Radar Remote Sensing Dr Diane Evans
- Oceanography Dr Graham Harris
- Forestry and Remote Sensing Professor Roger Hoffer
- Agricultural Remote Sensing Dr Ray Jackson
- Atmospheric Remote Sensing Dr Paul Menzel
- Geological Remote Sensing Dr Graeme Bonham-Carter

Concurrent activities will include:

- | | |
|-----------------|--|
| 5 - 6 October | Pre conference agricultural workshop on Friday and Saturday, 5th and 6th October |
| 6 October | Image processing workshop |
| 7 October | Geological high spectral workshop |
| 13 - 14 October | Post Conference field expedition to Kalgoorlie |

During Conference week, various user group meetings will also be held (times to be announced).

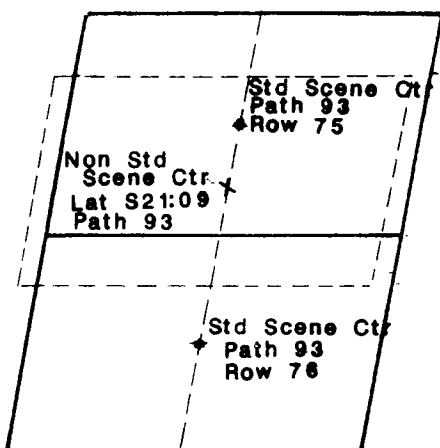
Registration forms and program details are now available from:

Conference Secretariat
Remote Sensing Applications
Centre
PO Box 1215
WEST PERTH WA 6005
Ph: 619 323 1520
Fax: 619 321 8576

ACRES TM NON STANDARD FRAMING

ACRES is able to provide non standard framing for TM data. A non standard scene may be obtained with a scene centre at any position along the centre of a given path.

However, when ordering non-standard imagery, customers must provide the latitude of the non-standard scene centre and approximate longitude and/or path along which the scene is located. In addition, customers should provide detailed information about the area, including maps and diagrams with area of interest clearly marked to assist Customer Services in identifying the correct non standard scene latitude. This will hasten the entry of your order and result in earlier delivery of product.

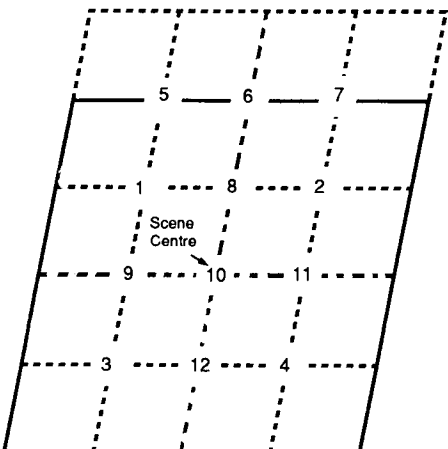


X=Non-standard scene selection.

QUADRANTS FROM NON STANDARD SCENES

In addition, ACRES can supply quadrants from non standard scenes, also known as non standard quadrants. These quadrants are located within a non standard full scene.

To order, please provide Customer Services with the latitude and path of the relevant non standard "Full Scene" centre, plus a quadrant number as per the following diagram.



Solid line represents a standard full scene.

ACRES TM ACQUISITION

ACRES has routinely received TM data since 1 September 1987, in conjunction with the Signal Processing Experiment (SPE). TM reception via SPE continued until 3 January 1990 when the equipment was dismantled for commencement of modifications for the antenna upgrade. As from 14 February 1990, routine reception of both TM and MSS data recommenced.

No data was collected on the following dates during the last 2 years.

| BAD DATA PERIOD | DATES |
|-----------------|-------------------------------|
| | 28/3/89 - 15/5/89 |
| NO DATA | 19/10/89 - 31/10/89 |
| NO DATA | 6/12/89 - 7/12/89 |
| NO DATA | 18/12/89 |
| NO DATA | 4/1/90 - 13/2/90 |
| NO DATA | 19/3/90 - 21/3/90 |
| NO DATA | Paths: 88,90,97,104,106 & 113 |
| NO DATA | 01/03/90 |
| NO DATA | Paths: 92 and 108. |
| NO DATA | 19/3/90 - 21/3/90 |
| NO DATA | Paths: 88,90,97,104,106 & 113 |

Some TM data was recorded from test passes during the antenna upgrade. Data availability is as follows:

| PATHS | DATES |
|----------|---------|
| 113 | 31/1/90 |
| 111 | 02/2/90 |
| 102 | 03/2/90 |
| 112 | 09/2/90 |
| 094 | 10/2/90 |
| 110 | 11/2/90 |
| 101 & 92 | 12/2/90 |

NO ACRES FLOPPY DISKS

ACRES is not currently producing TM data on floppy disk, however, MSS data in floppy disk format is still available.

TM floppy disk data is obtainable from ACRES Distributor, Resource Industry Associates (RIA) in Melbourne. The TM data is limited to the Australian Mining Industry Research Association's (AMIRA) archive which was acquired during the Signal Processing Experiment (SPE). Data is available from August 16th, 1986 through to September 1989 at a cost of \$500.00 per 512 X 512 data set.

For a lesser fee, RIA also offer the service of transferring your TM data on Computer Compatible Tape (CCT) onto floppy disks.

For further details contact:

Mr Terry Boyd
 Manager
 Resource Industry Associates
 832 High Street
 EAST KEW VIC 3102

Ph: (03) 810 9503
 Fax: (03) 859 7062

ACRES TM TERMINOLOGY - SYSTEMATIC & PRECISION

ACRES offers georeferenced and geocoded data products however, there appears to be some misunderstanding about the terms "systematic" and "precision". Both terms relate to georeferenced and geocoded TM products as follows:

| | | |
|---------------|---------|------------|
| georeferenced | level 5 | systematic |
| | level 6 | precision |
| geocoded | level 8 | systematic |
| | level 9 | precision |

Georeferenced processing involves radiometric and geometric correction as well as two-dimensional resampling to a map projection. Georeferenced products provide users with imagery where ground feature locational accuracy is comparable to a map in the same projection and at the same scale.

Locational accuracy is offered in two stages:

systematic - resampling data to a map projection using the satellite positioning data; and

precision - resampling data to a map projection using satellite positioning data plus ground control points (GCP's) derived from 1:100 000 scale topographic maps.

Essentially, **georeferenced** data retains the original pixel size (30 x 30 m bands 1,2,3,4,5,& 7) and remains aligned to the satellite grid.

Geocoded processing involves radiometric and geometric corrections (as for georeferenced). Resampling of data to a new pixel size (25 X 25 metres) allows for the overlay of various sensor and data types at a given map location. The resampled data is **rotated and aligned to a map projection**. Therefore data is only available in 1:100 000 map sheet areas as per the AUSLIG map sheet index.

The two processing stages available for georeferenced data are also available for geocoded data.

Further information about georeferenced and geocoded products can be obtained from ACRES Data Sheet 1.3.

CHANGE TO LANDSAT TM MICROFICHE

With the completion of the ACRES antenna upgrade and the resumption of Landsat 5 data reception at Alice Springs, a change in the ACRES Micro Image Catalogue has been implemented.

With effect from Cycle 137, (period 20/2/90 - 7/3/90), the Micro Image Catalogue will be produced from Landsat 5 Thematic Mapper data instead of Multispectral Scanner data. Essentially, the layout of scenes within the individual fiche frames and the grouping of scenes into the same nine geographical areas remains unchanged.

A band combination of band 1 blue, band 2 green and band 4 red has been used, because this combination offers optimum differentiation between cloud and terrain.

Master images for the new fiche are written on the MacDonald Dettwiler Colour FIRE 240, and all nine frames can be written in approximately 75 minutes. This represents a considerable time saving over the old process of recording MSS fiche on the Optronics Image Writer, which could take over 4 hours to write one pair of frames.

ACRES currently produces between 70 and 80 copies of each fiche frame. Due to the new and faster method of preparing master negatives, ACRES hopes to reduce the time delay between completion of the Landsat acquisition cycle and delivery of the Micro Image Catalogue to the customer.

ACRES USER MANUAL

Interest in our Distributors Workshop Manual has been sufficient to allow production for general distribution at a price of \$35.00. The manual covers current remote sensing systems and data output. ACRES processing of Landsat, SPOT and NOAA-AVHRR imagery is also highlighted. Data Sheets, examples of the Micro Image catalogue, colour prints of data and processing types are included together with information on connection to the ACRES ON-LINE CATALOGUE, ARCOS, (due to commence later this year). The manual represents excellent value for teachers seeking to obtain resource material on satellite remote sensing.

The manual is constructed so that new data on ERS-1 SAR imagery (for example) can be added. Price list updates will also be available for inclusion in the manual (updates may be subject to a small processing fee).

Anyone interested in ordering a copy of the ACRES User Manual should contact Sharelle Payne, Promotions Officer on 06 252 4428.



Sharelle Payne - Promotions Officer.

NEW MARKETING AND SALES SECTION

ACRES User Services Section has been renamed Marketing and Sales to reflect our business oriented direction.

Jenny Weissel, former ACRES Promotions Officer, was the successful applicant for the Position of Marketing Manager, (vacant since the departure of Steve Dovey last November). Jenny commenced her new position in February 1990.

The recruitment campaign to fill the Promotions Officer position has been completed and the new Promotions Officer, Sharelle Payne, commenced with ACRES on 30 April. Sharelle assisted Jenny in promoting ACRES satellite image products and other AUSLIG products at the Pacific Rim (PAC RIM) Conference (Jupiter's Casino, Gold Coast, Qld.) between 7-11 May. GeoImage (an ACRES distributor), occupied the adjoining exhibition stand and promoted sales of ACRES TM imagery. ACRES and GeoImage personnel also provided advice on acquiring imagery for other Pacific rim areas from EOSAT.

VISIT TO AUSTRALIA BY EOSAT REPRESENTATIVES

EOSAT's interest in developing the world wide data sales market was evidenced by the Australian visit of Steve Cox, EOSAT's International Sales Director and Shawana Johnson, Director of North American Sales between 21 - 27 January 1990. Their visit was aimed at gaining a preliminary overview of the Australian remote sensing service and equipment supply sectors.

ACRES, Marketing Manager, Jenny Weissel accompanied the EOSAT representatives on a five day fact finding tour of selected remote sensing organisations in five capital cities. The tour provided an insight into the Australian data sales and data processing industry and Steve and Shawana were able to answer enquiries from local organisations on the Landsat program.

Some highlights from their talks were:

- Landsat 6 has scheduled for a late 1991 launch via rocket rather than space shuttle.
- EROS Data Center, Sioux Falls, S.D., U.S.A., will no longer be taking orders for Landsat data. Orders will now be processed by EOSAT's Customer Service Section at their headquarters in Lanham, Maryland, U.S.A.
- EOSAT have now gone to a non-LTWG format for CCT's. The new format is FAST FORMAT and documentation is available from ACRES or EOSAT.
- EOSAT sales are up 30% for North America and 42% internationally, based on figures for the last financial year.

Joe Gatto, EOSAT's Director of International Sales for Asia, carried out a more comprehensive tour in February.

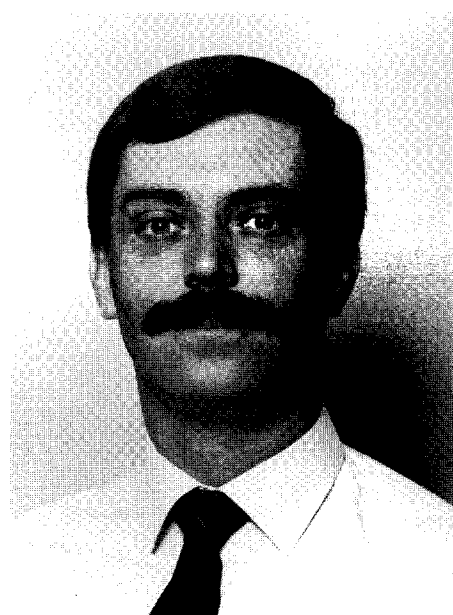


(From left to right) ACRES Manager Carl McMaster, EOSAT representatives Steve Cox and Shawana Johnson, ACRES Director - Applications Paul Wise and ACRES Marketing Manager Jenny Weissel.

CONFERENCE REPORTS

NATIONAL AGRICULTURAL RESOURCES AND OUTLOOK CONFERENCE

Response to our representation at the National Agricultural and Resources Outlook Conference held at the National Exhibition Centre, Canberra, in January was encouraging. Interest in ACRES satellite imagery and AUSLIG's Geographic Information Systems display, was high. An ACRES Reference Centre, the University of New South Wales, Centre for Remote Sensing, also assisted by providing a representative, Mark Hall, who advised delegates on adopting remote sensing technology to increase efficiency in their resource management activities.



*ACRES Production Co-ordinator
John Horn.*

REPORT ON 8TH AUSTRALIAN CARTOGRAPHIC CONFERENCE

The 8th Australian Cartographic Conference was held this year in Darwin. This is the first time that the Northern Territory Division of the ACA has hosted the event.

A joint paper titled "The Use of Geocoded Satellite Images for Map Revision" prepared by John Horn and Paul Wise of ACRES was presented at the Conference by John Horn, ACRES Production Coordinator. The paper was intended to stimulate awareness in the mapping community of the availability of precision geocoded products from both Landsat 5 TM and SPOT data.

In addition to presenting this paper, John also spent time on the AUSLIG Exhibition Stand where the displayed examples of ACRES Imagery attracted considerable attention.

AUSTRALIAN PARTICIPATION IN THE INTERNATIONAL COMMITTEE ON EARTH OBSERVATION SATELLITES (CEOS)

Discussions and cooperation between agency representatives of the USA, ESA, Canada, Japan, India, France, Australia etc have emphasised the utility of space-borne Earth observation data to users worldwide; have encouraged the coordination of program plans among space-borne Earth observation system operators; and have fostered international receptivity to and acceptance of space-borne Earth observation system activities and applications.

As a result, the representatives of a large number of international, national and regional space-borne Earth observation systems, aware of the overlap of space-borne Earth observation mission objectives and the interdisciplinary applications of remotely sensed data, recognised the advantages of ongoing communication and cooperation among space-borne Earth observation operations; and desiring to promote the international growth and potential benefits of space-borne observations of the Earth has affirmed the value of the activities described above and have agreed to coordinate informally their current and planned systems for Earth observations from space, through the organisation of a Committee on Earth Observation Satellites (CEOS).

The CEOS will serve as a forum for the exchange of technical information to encourage complementarity and compatibility among space-borne Earth observation systems currently in service or in development. The first CEOS meeting was held in September 1987, and meetings are now held at least once every two years in plenary session. At present, there are two Working Groups specialising in:

- the Working Group on Data (WGD), chaired by NOAA; and
- the Working Group on Calibration and Geophysical Validation (Cal/Val), chaired by ESA.

In July 1989, COSSA formally nominated ACRES to represent Australia as a member of the CEOS WGD and Robin Buckley (ACRES Chief Engineer) was asked to attend the 7th meeting (WGD-7) held at INPE, the Brazilian space institute's headquarters in Sao Jose dos Campos in November 1989.

Anyone interested in obtaining further information about the conference should contact Robin Buckley, at ACRES.



CEOS Delegates, ACRES Chief Engineer Robin Buckley, centre front.

SPOT IMAGERY FOR SALE

ACRES has an extensive archive of SPOT digital and photographic data purchased over the last few years from SPOT Image including a scene over the Casino region of New South Wales. This SPOT image, comprising PA and XS data can be obtained by contacting ACRES Marketing and Sales Section

who can also provide details of coverage, product details and costs.

SPOT data has been routinely received by ACRES since 1 May 1990 and data products are due for release on 1 July 1990. Available processing levels will be 4, 5 and 8 only.

ACRES ADMINISTRATION SECTION



ACRES Administration (left to right, standing), Bob Clements, Jill Healand, Merv Trubee, (seated) Cheryl Monahan, ACRES Business Manager Col Purbrick and Svet Taseska (Bob Jones, missing).

The administration section has responsibility for the smooth running of the organisation. Tasks vary from business administration, including communications and accounts, to stock inventory and product dispatch control.

The Section is run by Col Purbrick, ACRES Business Manager with assistance from Bob Jones, Administration Officer. Both Col and Bob have been with ACRES since its inception as the Australian Landsat Station, over ten years ago.

Col is currently involved in an ongoing project aimed at redesigning the ACRES accounts and statistics systems to integrate with the new ("post upgrade") production procedures.

Other administration personnel are:

Jill Healand, provides secretarial support for ACRES Manager and Director, and keeps track of conference room activities and staff details.

Bob Clements, promoted to the position of Stock and Procurement Officer during 1989, is responsible for purchasing a range of items from photographic material, electronic components to computer stationery for the daily operation of ACRES.

Svet Taseska, former ACRES Receptionist, is now Financial Statistics Officer. Svet is responsible for processing customer accounts.

Merv Trubee, began in January this year as the ACRES Storeman. Merv dispatches all customer products, facilitates deliveries around Canberra and assists with stock inventory.

Cheryl Monahan, a recent graduate from Daramalan College was appointed ACRES receptionist in March. Cheryl also provides typing and clerical support to ACRES.

COMPUTER CENTRE NEWS

Mike Linney reports on activities in the computer centre.

After almost 12 months production with the new TM system, an assessment of the system performance has been undertaken.

Problems with the FIRE Image writer necessitated "work around" solutions but customers should note that the FIRE Image writer is now back on line! No waiting, no delays, customers should

place their orders for image writing with ACRES Customer Services (ASAP).

Precision geocoded imagery production is ongoing but some delays in processing customer orders are being experienced. Nevertheless, operators are continuously marking ground control points for each new scene ordered and processing speed will increase once a significant portion of the Landsat frames covering Australia have ground control points marked and stored in the system.

ACRES APPLICATIONS NEWS

Staff of the Applications Section completed their move from Belconnen to the ACRES building at Fern Hill Park, Bruce in January. The DIPIX Aries III and MicroBRIAN, previously at Cameron Offices, Belconnen, now complement ACRES Meridian and MicroBRIAN systems.

Paul Wise temporarily transferred to the position of Acting Director, ACRES, between November and March has now resumed his position as Director, Applications. During Paul's absence, Laurie Oliver assumed the position of Director, Applications.

Our new address is:

**Acres Applications,
PO Box 28
BELCONNEN ACT 2616**

**(Dunlop Court, Fern Hill Park,
BRUCE ACT 2617)**

Tel: (06) 252 4434 (P. Wise)
(06) 252 4443 (L. Oliver)

Fax: (06) 251 6326
Telex: 61510

Craig Smith, ACRES Applications, attended the "Advanced Topics in Image Classification" course at the University of New South Wales, Centre for Remote Sensing.

A summary of activities is highlighted below:

- The AUSLIG Antarctic mapping program continues with the processing of Landsat TM imagery acquired from EOSAT over the North Prince Charles Mountains and SPOT imagery over Larsemann Hills.
- A project is underway to determine the areas of over 200 selected reefs on the Great Barrier Reef using Landsat MSS imagery.
- Aerial photography is being scanned on behalf of a client to provide digitised images to be used for change detection.
- A shallow water mapping project is being carried out for the Navy over Ashmore Reef in the Timor Sea using TM data. Depth penetration to 40 metres was achieved using Band One of the image set.
- Fireburn mapping over the Uluru National Park in the Northern Territory using Landsat MSS data.
- Image mapping of Tasmania at 1:250 000 scale.

Enquiries on value-added processing of ACRES data or applications projects over your area of interest are invited. Please call Paul Wise or Laurie Oliver on the above telephone numbers.