

AUSLIG and RADARSAT International sign Data Distribution Agreement



REPRESENTATIVES AND GUESTS AT THE RADARSAT INTERNATIONAL (RSI) DINNER AND AUSLIG AGREEMENT SIGNING INCLUDED (FROM L TO R): SHAWN BURNS, RSI; PROF JOHN RICHARDS, ADFA; ASSOC PROF TONY MILNE, UNSW; BOB TACK, RSI PRESIDENT; PROF JOHN TRINDER, UNSW; AND DENNIS NAZARENKO, RSI.

AUSLIG and RADARSAT International (RSI) have signed a license agreement to enable ACRES to distribute RADARSAT data and data products in Australia, Papua New Guinea and New Zealand. The signing took place during a dinner hosted by RSI which was held during the week of the 8th Australasian Remote Sensing Conference in March. The announcement of the ACRES RADARSAT sub-distributors for the Australasian region was also made at the time of the signing. (See separate story.)

The President of RSI, Mr Robert E Tack, was present for the signing, along with AUSLIG General Manager, John Kent. The RADARSAT satellite has been designed, constructed, launched, and operated by the Canadian Space Agency, and is equipped with an advanced

Synthetic Aperture Radar (SAR). As the world's first operationally-oriented radar satellite, RADARSAT's unique capabilities open a vast new array of applications worldwide.

"ACRES offers RADARSAT users in this region a wealth of satellite imagery expertise. We look forward to working with ACRES in developing local applications for RADARSAT data which will yield new information products," said RSI President, Robert Tack.

RADARSAT's active SAR capability will be useful in penetrating cloud in the northern tropics, low light levels and rain in the southern winters. Requests for time specific data acquisition will no longer be weather dependent, and RADARSAT's programmable repeat cycle will allow more frequent revisits to areas during crucial times and immediately following a natural disaster.

This will be the first time that a wide range of SAR products are can be selected from a single sensor. The products vary with respect to the area covered, the view, and the final spatial resolution, and form a complementary data set to the various optical data already being received by ACRES.

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The Government's recent Budget decision on AUSLIG amounts to a strong reaffirmation of AUSLIG's public interest role. Funding for AUSLIG's public interest activities including ACRES has been maintained at current levels despite severe cutbacks in other government programs. Given that ACRES already works

on an outsourced service delivery model the Budget decision is likely to have minimal impact on our operations. This should come as good news to ACRES customers and distributors.

Paul Trezise

Commonwealth Budget Decision on AUSLIG

The Minister for Administrative Services, David Jull, announced the retention and restructuring of AUSLIG as part of the Commonwealth Budget handed down on 20 August 1996.

In his Budget press release Mr Jull stated: "We have retained within government those businesses that perform important public interest functions - AGPS, AUSLIG, AGAL and AVO. At the same time, many of their service delivery activities will be market tested or contracted out to ensure that government is getting full value for money."

The Government has reaffirmed AUSLIG's responsibility for national mapping, maritime boundaries, remote sensing and geodesy services together with national land information coordination and advice. AUSLIG will focus on program management, policy, coordination and standards associated with national land information programs within the framework of a National Spatial Data Infrastructure.

"AUSLIG will continue to operate as usual during the restructuring process to deliver the full range of services to customers. Existing contracts and agreements between AUSLIG and its customers will be honoured" said AUSLIG's General Manager, Peter Holland.

"AUSLIG will keep customers, distributors, industry and other interested parties informed of organisational changes during the restructure."

RADARSAT sub-distributors appointed

Owing to AUSLIG's appointment as the exclusive distributor for RADARSAT data and data products for Australia, Papua New Guinea and New Zealand, expressions of interest were called for the appointment of sub-distributors. Following an extensive evaluation of these submission, AUSLIG announced on 28 March the appointment of six Australian and one New Zealand sub-distributor to sell data in the Australasian region.

The sub-distributors' primary focus will be on key markets such as mining, agriculture, forestry, hydrology and the environment. Over the next twelve months the sub-distributors will be required to develop case studies in their areas of primary focus to demonstrate to the user community the benefits of using this new technology.

The organisations appointed as RADARSAT sub-distributors are:

- Agrecon Pty Ltd
- Geoimage Pty Ltd
- Geo Mapping Technologies
- WA Dept of Land Administration
- Landcare Research (NZ)
- ERIC Pty Ltd

The availability of RADARSAT data is likely to open up new applications that will yield new information products. The environment, agriculture, surveillance and forestry are some of the fields where new applications are likely to arise.

To find out more about RADARSAT please contact one of the RADARSAT sub-distributors. Contact details are listed on the back cover of *ACRES Update*.

AUSLIG Open Day – Australian Science Festival

The Australian Science Festival is an annual event in Canberra, appealing to all ages, with displays, events and demonstrations about a variety of scientific subjects. The festival lasts for over a week with activities all over Canberra. On Saturday 27 April, AUSLIG hosted its Open Day, as part of the festival, to help promote and stimulate a general interest in the types of activities we undertake. Over 200 people took the opportunity to visit us and learn of our activities.

A major part of our display consisted of various examples of satellites and satellite imagery, and included a live link to the ACRES digital catalogue. Visitors could also "surf" through the ACRES/AUSLIG World Wide Web pages to gain a greater understanding of the organisation. Other items of interest included demonstrations of Global Positioning Systems (GPS), Digital Elevation Models and AUSLIG's new atlas on CD-ROM called "Australia Unfolded".

8th Australasian Remote Sensing Conference

The 8th Australasian Remote Sensing Conference held at the end of March in Canberra proved to be another success with many highlights, including an inspiring audio-visual presentation at the opening and closing ceremony. At the official dinner an amazing (and knowledgeable) after dinner speaker convinced many people, for a while at least, that he was Dr Allen E Cosby, Director of Research and Development at Orbital Sciences, USA. However his true identity was revealed after the speech as actor/impersonator Campbell McComas.

As usual, the conference provided an ideal opportunity for anybody involved in remote sensing to network with others and discuss a multitude of issues. The organising committee deserve to be congratulated for a job well done.

Five ACRES' distributors had booths at the conference, as did RADARSAT International and AUSLIG/ACRES. The highlight of the AUSLIG/ACRES booth was a live connection to the ACRES Digital Catalogue, with a colour printer available for 'take-away' images. Being relatively new, the digital catalogue proved to be extremely popular, with many comments received about the excellent quality of the images.

The theme of the conference was "What's New, What Works". Conference proceedings are still available from:

Australian Convention and Travel Services,
GPO Box 2200
Canberra ACT 2601
Tel: +61 6 257 3299
Fax: +61 6 257 3256

The cost of the proceedings is \$50 for hard copy or CD-ROM.



ACRES STAFF MIKE PASFIELD, ROBERT DENIZE AND JENNY WEISSEL AT THE ACRES BOOTH DURING THE 8TH ARSC.



ACRES DISTRIBUTORS KEN DAWBIN, DOLA, AND PROF BRIAN BUTTON, AGRECON, SHARING A CHAT DURING CONFERENCE WEEK.

Minister Jull visits ACRES

On the 4th of June 1996 the new Minister for Administrative Services, the Hon David Jull MP, visited AUSLIG and ACRES for the first time. Mr Jull spent about two hours being briefed on AUSLIG's operations and viewing a wide range of products. He showed considerable interest in remote sensing and was particularly interested in ACRES new digital catalogue system.



ACRES MANAGER, PAUL TREZISE, DISCUSSING THE VARIOUS ASPECTS OF ACRES OPERATIONS WITH THE HON DAVID JULL MP.

ACRES wins EOSAT award for sales results

ACRES recently received an award from the Earth Observation Satellite Company (EOSAT), for being an "Outstanding Regional Representative".

The major reason for ACRES' award was for achieving a 165% increase in Landsat sales for the calendar year of 1995. In dollar terms this was the largest increase in the world, and now places ACRES second in the world for Landsat sales, behind USA, and ahead of Europe, Japan, Thailand and Canada. The figure is further testimony to the good work of ACRES, ACRES Distributors and ACRES Specialist Consultants.

The award was presented to Jim Mollison, ACRES Product Manager, at an informal dinner during the 1996 EOSAT Global Distributors' Meeting, recently held in Hawaii.



JIM MOLLISON ACCEPTS THE ACRES AWARD FOR 'OUTSTANDING REGIONAL REPRESENTATIVE' FROM SUSAN SINCLAIR, EOSAT DIRECTOR OF WORLDWIDE DISTRIBUTOR NETWORK.

ERS SAR information seminars

The European Space Agency (ESA), in conjunction with ACRES and the University of New South Wales will hold a series of information seminars around Australia in early September. At the time of writing, it is likely that the seminars will be held in Perth, Adelaide, Melbourne, Canberra, Sydney and Brisbane. The seminars will cover various aspects of ERS Synthetic Aperture Radar (SAR) satellite data and its applications.

If you are interested in attending, please contact Jim Mollison at ACRES, (Tel 06 201 4129 Fax 06 201 4366), or your local Distributor (see back page of *ACRES Update*).

ACRES sales results

Jim Mollison, Remote Sensing Product Manager

The financial year of 1995/96 has seen yet another large increase in ACRES sales. The value of gross sales increased by about 78% from the previous year to a total of about \$6.53 Million in 1995/96. The healthy increase is attributed to a number of factors including some major government sales, a more mature market, and better provision and affordability of associated software.

Total Gross Sales

Year	\$Million
1994/95	3.65
1995/96	6.53

The importance of digital data (verses photographic) was again demonstrated by a further increase in the proportion of products sold in digital form. For products produced at ACRES, 94% of them (in dollar terms) were delivered on digital media.

The following summary shows that Landsat was once again the primary data source, accounting for about 70% of total gross sales. SPOT data accounted for about 24% of total sales compared to 26% in the previous financial year. Despite this minor fall in the proportion of SPOT sold, the value of sales for both Landsat and SPOT increased dramatically.

ACRES/AUSLIG are very pleased with the results for 1995/96, and congratulate our Distributors and Specialist Consultants on a job well done.

Summary of ACRES' Gross Sales for 1995/96

	Sales (\$)	Percent of Total
Landsat		
ACRES MSS	116,530	2
ACRES TM	4,099,511	63
EOSAT (mainly TM)	267,280	4
NRCT - Thailand (TM)	50,858	1
EROS (MSS)	15,055	-
Total	4,549,234	
SPOT		
Panchromatic	1,304,180	20
Multispectral	284,302	4
Total	1,588,482	
Other		
ERS SAR	9,237	-
NOAA AVHRR	6,600	-
Image Writing	246,165	4
Royalties	61,221	1
Miscellaneous	68,665	1

EOSAT Global Distributors' Meeting

EOSAT (Earth Observation Satellite Company, USA) held their Global Distributors' Meeting during the last week in June this year. EOSAT administers ACRES' agreement for the reception of Landsat data in Australia. In addition ACRES is EOSAT's representative in Australia for the sale of worldwide Landsat data, and more recently JERS and IRS data.

The main reason for the meeting was to assemble all of EOSAT's worldwide distributors together for discussions on products, new sensors (especially IRS) and a variety of sales and marketing issues.

EOSAT stated that their main focus for the future would be towards the Indian IRS program. EOSAT are the exclusive worldwide distributor of IRS data (outside of India) and their agreement allows them to distribute IRS data on a totally commercial basis. This is in contrast to the distribution of Landsat data where US Government policy plays a significant role.

Indian representatives were present at the meeting to inform attendees of the philosophy behind the IRS program and to provide a wide range of additional information.

Two of the representatives were N Sampath, Executive Director of Antrix, and Dr M G Chandrasekhar, Director Earth Observation Systems, ISRO. Dr Chandrasekhar gave an absorbing keynote address on "Using Space to Enhance Life on Earth". The speech contained many thought provoking points and a number of practical examples of how remote sensing has improved lifestyles in India.

EOSAT's overall marketing strategy was also outlined at the meeting, with the major emphasis being on education and awareness. Their eagerness to work in partnership with their distributors was clearly evident, helping to pave the way for a stronger global remote sensing industry.

Landsat Data used in Greenhouse Gas Emissions Study

In 1994 Australia's National Greenhouse Gas Inventory identified agricultural land clearing as a potential significant source of greenhouse gas emissions. It was acknowledged that the original emission estimates were very uncertain, largely due to the difficulties in obtaining accurate data on changes in agricultural land cover.

In the meantime Australia was required to prepare an inventory of greenhouse gas emissions as part of its obligations under the United Nations Framework Convention on Climate Change. The Bureau of Resource Sciences of the Department of Primary Industry and Energy therefore convened a national workshop in 1994 to develop a cost effective method for collecting the data required to improve the estimates of gas emissions. The workshop was attended by 25 representatives of Commonwealth and State agencies as well as non-government organisations with an interest in land cover change.

The workshop concluded that the estimates of gas emission due to changes in land cover could be substantially improved using remotely sensed data eg. Landsat TM, to locate and assess the extent of land clearing.

BRS therefore approached AUSLIG on behalf of the Commonwealth and States agencies to buy the large data sets required for such a study. In response to this request and similar requests from Distributors and other government agencies, AUSLIG developed the Joint Agency Data Agreement (JADA) to provide a mechanism for permitting large data sets to be purchased and utilised by a number of agencies involved in public interest programs. The agreement permits two or more Commonwealth and/or State organisations to share the cost of Landsat digital data over large areas, thereby making it more cost effective for the data to be purchased, and facilitates the increased use of remotely sensed data. The BRS JADA involves 23 Commonwealth and State Government Departments.

In addition to the BRS funding the Queensland Department of Natural Resources has funded a separate, but related project called "The Statewide Landcover and Trees Study (SLATS)". (See separate article in this edition of *ACRES Update*.)

FORMER AUSLIG GENERAL MANAGER, JOHN KENT,
WITH MICHELE BARSON OF COMMONWEALTH
BUREAU OF RESOURCE SCIENCES (BRS), DEPT OF
PRIMARY INDUSTRIES AND ENERGY, DURING THE
SIGNING OF THE BRS JADA.



LGSOWG-25 meeting

Paul Trezise

During June 1996 I attended the 25th annual meeting of the Landsat Groundstation Operators Working Group (LGSOWG), which was hosted by the South African CSIR Satellite Applications Centre in Pretoria. The other attendees were from Taiwan, Thailand, Japan, Canada, China, Brazil, ESA, India and EOSAT as well as the US agencies NASA, NOAA and USGS. The LGSOWG meetings are held annually and are a chance for the groundstation operators from around the world who receive Landsat to be informed about the status of the program.

STATUS OF LANDSAT 5 SATELLITE

EOSAT reported that the health of the 12 year old Landsat 5 satellite was very encouraging. The rate of degradation of the X-band downlink and the TM sensor was such that, barring catastrophic failure, the satellite could remain operational until the year 2000. If this happened there would be no data gap in the Landsat series, providing Landsat 7 is successfully launched in 1998.

GLOBAL LANDSAT SALES STATISTICS

Global Landsat sales declined by approx 9% to US\$21.0 million during calendar year 1995 largely due to big declines in the US and European markets. In contrast Australia achieved the best sales increase in the world (US\$2.35 million). This now puts Australia second in the World in Landsat sales, only behind the USA and ahead of Europe, Japan, Thailand and Canada.

LANDSAT 7 MISSION

There have been no major changes in the Landsat 7 mission scenario since the last LGSOWG. Importantly, Landsat 7 is ahead of schedule for a launch on May 15 1998, with NASA having paid additional money to contractors to accelerate the development process. NASA is now very confident that the May 1998 launch date will be met or bettered barring some unforeseen catastrophe.

NASA still plans to operate Landsat 7 in conjunction with the AM-1 satellite which will have the MODIS sensor on board. AM-1 will cover the same track as Landsat and be 15-60 minutes behind Landsat. This will permit the use of MODIS data for atmospheric corrections to Landsat ETM+ data.

BEYOND LANDSAT 7?

The current plan for a post Landsat 7 follow on is for the LATI (Landsat Advanced Technology Instrument) to fly on the AM-2 platform in 2004. However NASA has also been directed to explore other options such as the use of private industry funding and management, or a government/industry joint venture.

The LATI instrument is planned to be radically different to the ETM+ sensor on Landsat 7. It will be hyperspectral, much lighter and involve many new technological innovations. This being the case NASA is understandably nervous about trialing the instrument for the first time within such a vital program as Landsat.

NASA's New Millennium Program has a goal of developing and validating revolutionary technologies to reduce development times and life cycle mission costs. On March 22nd this year it was announced that the Advanced Land Imager (ALI) sensor concept has been chosen as the first (ie highest priority) New Millennium mission (to be known as EO-1). It is targeted for launch in late 98/early 99 in order to test LATI concepts early enough for the results to be incorporated into the design of the final LATI sensor. Total mission costs will be limited to US\$90 million.

The ALI design incorporates both multispectral and hyperspectral instruments. The mission plan will be to position the satellite 15 minutes ahead of Landsat 7 so that direct comparisons can be made with ETM+ data.

Landsat 5 – descending equatorial crossing time

Steve Alder – ACRES SATOPS

Users of Landsat 5 imagery will be aware that the descending node (equatorial) crossing time of the satellite is currently progressively changing as a result of orbital correction manoeuvres conducted by EOSAT late in 1995. These manoeuvres were necessary to correct the orbit inclination and to gradually change the crossing time back to the nominal time of 09:37 Mean Local Sun Time (MLST). Currently the crossing time is approximately 09:26 MLST and it is expected that the nominal crossing time will be achieved during January 1997.

The following table provides an indication of the nominal overpass times in UTC* against the current (17 July 1996) times for some Australian cities:

City	Path/Row	Nominal Acquisition Time (UTC*)	Acquisition Time (UTC*) on 17 July 1996
Sydney	89/83	23:07:00	22:57:54
Adelaide	97/84	23:56:00	23:47:30
Perth	112/82	01:27:30	01:19:42
Darwin	106/69	00:45:30	00:37:10

*Add 8 hours for WA time, 9.5 hours for central Australian time and 10 hours for eastern Australian time. (Extra adjustments are needed for daylight saving times.)

Customer Service Guarantee

Mike Pasfield, ACRES Production Manager

As part of the commitment to improving ACRES service the Customer Service Guarantee has been in action since May 1995 (See *ACRES Update*, May 1995). The guarantee is designed to provide customers with a consistent level of service. The Customer Service Guarantee involves the following services:

- Hours of Service
- Catalogue Searches
- Mapping Up
- Order Confirmation
- International Orders
- Programming Requests
- Order Delivery
- Product Quality

The guarantees are meant to be challenging to ACRES staff, yet achievable in all but the most unusual of circumstances. In the event of a problem preventing achievement of any of the guarantees, Customer Service Personnel will contact the customer to advise them of the situation.

Details relating to the achievement of each guarantee is registered. These details are used to calculate the performance of ACRES staff in achieving the stated guarantees. At the start of each month the results of the previous month are made available to all personnel for performance assessment.

The high degree of achievement of these guarantees is an indication of the commitment ACRES has to Customer Service.

CSG	Service	Commitment	Result
1	Hours of Service	0830 – 1700	100% achieved
2	Catalogue Searches	< 4 Hour turn around	100% achieved
3	Mapping Up	< 24 Hour turn around	100% achieved
4	Order Confirmation	< 4 Hour response	97% achieved
5	International Orders	Same day service	100% achieved
6	Programming Requests	Success advice < 3 days	100% achieved
7	Order Delivery	90% < 10 days	100% achieved
8	Product Quality	Advice < 48 hours of receipt	100% achieved

The Customer Service Guarantee is not intended to be static, it will be revised shortly to reflect improvements in our capabilities and the desires of our customers.

ACRES Digital Catalogue in demand

ACRES and its distributors and customers have been making heavy use of the new ACRES Digital Catalogue System. Over the months of May and June 1996 users logged into the catalogue over 1600 times and viewed over 65,000 thumbnail images.

Over 85% of users have been from Australia but there has also been strong interest from the USA, New Zealand as well as occasional access from users from 10 other countries.

Despite the fact that access to the catalogue is free of charge the level of "surfer" access has been quite low at less than 10%. Users from educational institutions also consume about 10% of catalogue resources. The remaining 80% of usage is due to ACRES, its distributors and customers.

ACRES passes TQM audit

On April 16th ACRES successfully passed a periodic external audit as part of the three year certification period following AUSLIG's accreditation to the ISO 9002 quality standard in 1994. The audit was carried out by Det Norske Veritas. The auditor was particularly impressed by a number of improvements that had taken place since the previous audit, particularly the implementation of ACRES on-line digital catalogue.

ACRES Geocoded Products

Mike Pasfield, ACRES Production Manager

The demand for Geocoded Products has increased dramatically over the past 18 months. These products may be ingested, with minimum effort, into most GIS packages as their pixels have been rotated to align with a specific map grid and coded to register with the relevant geographic information.

The Geocoded Image Correction System (GICS) developed by MacDonald Dettwiler of Canada is the system in use at ACRES for the production of all satellite imagery products. GICS can process imagery from various satellite/sensor combinations to various levels of correction such as Raw, Bulk, Georeferenced and Geocoded. Geocoded products are made with the highest level of correction, but may be systematically or precision corrected.

The basis of the GICS process is the removal of systematic distortion through modelling the sensor, the earth, satellite orbit and satellite attitude. Precision models are determined by refining the systematic orbit and attitude models and by incorporating information in the form of Ground Control Points (GCPs).

This approach provides maximum accuracy with minimum GCPs and differs from the correction polynomial approach (used by most image processing systems) which use 'best-fit' curves and generally require significantly more GCPs to achieve comparable accuracy.

A study by MDA personnel using GICS on Landsat TM data and USGS 1:24,000 scale topographic maps indicated that with most of the distortion removed through modelling on GICS, only 3 GCPs were required to achieve sub-pixel accuracy in the final corrected data.

MAP SCALES

GCPs for ACRES geocoded imagery are selected and digitised from Australian maps held in our map library. These include the 1:250,000 and 1:100,000 series and a very limited number of 1:50,000 and 1:25,000 series. ACRES will use the largest scale maps available. However, this will most likely be 1:100,000 for all areas except those close to the major population centres. This means that the absolute accuracy of geocoded imagery products may vary accordingly.

If you can supply good quality large scale maps of your particular area of interest, ACRES will use such mapping to create GCPs for your product, and your maps will be returned on completion.

DIGITAL ELEVATION MODELS

To achieve the optimum in accuracy a Digital Elevation Model (DEM) should also be applied to the imagery. This will correct panoramic distortions caused by the changing angle of view, particularly at the edges of an image, if elevations are changing rapidly. The degree of correction will be directly related to the resolution of the DEM – the higher the resolution, the better the correction.

In the near future, ACRES will use the AUSLIG 9" DEM for image correction. If you can supply a higher resolution DEM covering your area of interest ACRES can incorporate it in GICS for correction of your image.

RESAMPLING METHODS

There are several resampling methods available for use with geocoded products. For these products ACRES recommends the DS16 kernel for general use and KD16 for use with data required for quantitative analysis. Use of other resampling methods for geocoded products may cause unexpected artefacts.

ACRES strives for continuous improvement in production through staff training and better techniques. ACRES welcomes feedback that may lead to improved production methods and product quality.

AMG zones – be aware

When ordering two or more map oriented (level 8, 9 and 10) products which you plan to mosaic or use in conjunction, please remember that adjacent products which have their *standard** full scene centres located in different AMG zones will be generated with their individual image grid aligned to those different zones.

If the AMG zone is not specified and the *standard** full scene centres of your images happen to be located either side of an AMG zone boundary, you will not be able to join or overlay these products.

To be sure, if your imagery is close to, or straddles an AMG zone boundary (longitudes 114 deg, 120, 126 ...144, 150), please note on your order form which AMG zone you require for orientation of your product.

(*Standard full scenes are framed according the nominal path/rows of the World Reference System (WRS). For AMG zoning purposes, a SPOT standard scene is based on the row (latitude) only. Please contact ACRES or your Distributor for details.)

SPOT satellite programming fee

Steve Alder – ACRES SATOPS

Commencing 1 May 1996 ACRES introduced a SPOT satellite programming fee for future acquisition imaging requests. Prior payment of this fee entitles the client to priority programming for five imaging attempts over a defined project area. The lodgement of a future acquisition request also involves completion of a future acquisitions order form so that the final product is specified.

On receipt of a programming request ACRES will undertake an analysis and feasibility study of the request and will provide an acquisition plan to satisfy the imaging requirements. Successful acquisition will be met when there is less than 10% cloud cover over the entire project area. Additionally, client may also nominate particular (critical) site(s) within the project area that must be 100% cloud free. When these criteria are satisfied, the product will be made and delivered to the client.

The fee is based on a sliding cost scale depending on the size of the project area and the sensor mode required. For a project area of less than 7200 sq km to be imaged in pan or multispectral the programming fee is \$300. An additional charge of \$300 applies for combined pan and multispectral imaging.

Throughout the acquisition period ACRES Satellite Operations Section will closely monitor the result of each imaging attempt and will provide the client with preliminary cloud cover results within three working days of each attempt. After successful acquisition the required product(s) will be entered into the ACRES production system. This procedure normally involves the conversion by Satellite Operations Section of a quotation for the future acquisition order into a firm sales order.

The reason for the fee is to help cover the cost of providing the additional services mentioned above. The ACRES SPOT future acquisition fees are much less than those charged by other countries. In addition the fee encourages clients to think carefully about their future acquisitions needs. Because these needs are being considered more carefully, more satellite time (which is limited) is now available for acquiring a more comprehensive background archive over Australia.

Clients are reminded that ACRES needs up to 3 weeks advance notice before the start of a defined acquisition period for any routine SPOT future acquisition request. This helps ensure that we can request the appropriate imaging slot with the satellite operators in France. Therefore, to avoid disappointment, requests should be submitted at the earliest opportunity before the commencement of your required acquisition period. Please contact your preferred distributor or ACRES for further details.

New image writing price list

ACRES Image Writing Service produces quality colour or black and white negatives from customer supplied digital data. As of 1 July, some minor adjustments have been made to some aspects of the pricing of this service. The main changes are:

- Production of a black and white negative, is now the same price as for a colour negative. (The colour negative price remains at \$250, which includes a companion contact print.)
- A new pricing structure for copy prints now makes it cheaper for bulk (>5) copies.
- The size of a medium print has now increased from 50 cm x 50 cm to 80 cm x 80 cm (with a corresponding small increase in price).
- The prices of contact prints and transparencies has increased slightly

Please contact ACRES Customer Services or your distributor for the complete price list, or for any other information relating to the Image Writing Service.

Reproduction, Distribution & Sale of Unenhanced and Enhanced ACRES Data Products (Schedule I)

Part of the Licence Conditions (Schedule G) for the purchase of satellite imagery from ACRES concerns the distribution of Enhanced Products by the customer. The definition of Enhanced Products is contained in a separate document called Schedule I, 'Reproduction, Distribution & Sale of Unenhanced and Enhanced ACRES Data Products'. Schedule I has recently been revised to provide a better description of Unenhanced and Enhanced Products, and is now available from ACRES and our Distributors.

It is important that purchasers of ACRES Satellite Data become familiar with Schedule I, as it highlights the conditions under which the data may be exploited by the licence user. It covers data from the Landsat, SPOT and ERS sensors. For the purposes of Schedule I, the words "Enhanced Products" are used for all sensors, in addition to the different terminologies used by different satellite operators. Please contact ACRES or your Distributor if you would like a copy of Schedule I and/or if you would like further clarification of its contents.

The second ERS tandem campaign

Steve Alder – ACRES SATOPS

The second (and final) ERS SAR tandem acquisition campaign using the ERS-1 and ERS-2 satellites was conducted during the period 28 April 1996 to 3 June 1996. The Alice Springs and Hobart ground stations were scheduled with a very heavy acquisition workload from both descending and ascending orbits throughout the 36 day period.

The daily acquisition schedules for the Alice Springs reception site during this period required considerable planning effort to avoid conflict with the existing Landsat and SPOT programmes. The acquired SAR imagery will complement the existing tandem acquisitions archived during the first tandem campaign during the period November 1995 to January 1996. As mentioned in the March 1996 edition of the *ACRES Update*, this data will be extremely useful in the generation of digital elevation models (DEMs).

ERS-2 is now being used as the primary satellite for worldwide SAR imaging. ESA is currently also using ERS-1 to gather some additional imagery during the next few months, mainly in northern Europe.

New order forms

New ACRES order forms for Landsat/SPOT data, ERS data and for the Image Writing Service have recently been produced and distributed. One of the main changes to the order forms is the expansion of the information collected about each customer placing an order.

The information collected relates to "Application Type" (eg agriculture; mineral exploration etc) and to "Organisation Type" (eg Private; State Govt etc). By collating this information throughout the year, ACRES and its distributors hope to gain a better understanding of the market's composition, with a view to better serving the various sectors of the market.

Please help us to help you by ticking the appropriate box on the order form, or by giving this information to your distributor at the time of order placement.

Ordering Landsat Quarter Scenes – Scene Centres

Landsat quarter scenes may be ordered from ACRES for all Path Oriented products (ie levels 4, 5 and 6). Only quadrants 9, 10 or 11 may be ordered from along the satellite swath (see diagram). But care must be taken when defining the framing of these quarter scenes.

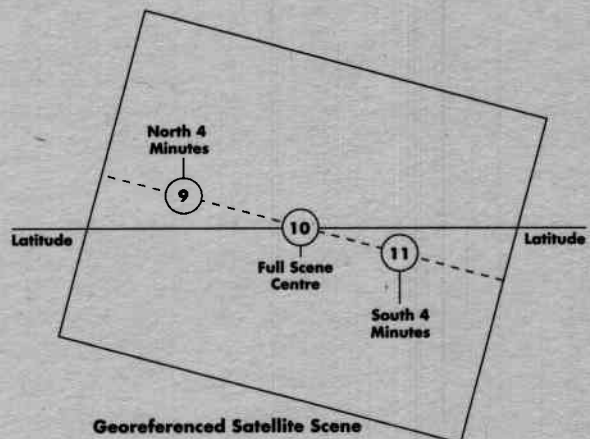
Due to the skew of the satellite path, the latitudes of the scene centres of these three central Landsat quadrant scenes will not be identical.

Quadrant 10 is always the same latitude as *the full scene centre*. However, the Quadrant 9 scene centre will be located approximately 4 minutes further North and the Quadrant 11 scene centre approximately 4 minutes further South than the full scene centre. (The diagram shows the relative positions.)

When ordering quadrants 9, 10 or 11 customers need to specify the latitude of the full scene centre, and then specify the appropriate quadrant required. If the centre of the quadrants 9 or 11 is specified the product delivered will be -4 or +4 minutes in error.

Please seek help from ACRES or our Distributors if you are unsure about ordering quarter scenes.

Relative Positions of Landsat Central Quadrants



Value adding to land cover classification by merging Landsat TM and SPOT Panchromatic data

Eric Koetz, ERIC

Environmental Research and Information Consortium Pty Ltd (ERIC), was recently awarded the Canberra Business Centres 1996 *Business of the Year Award* for Product Innovation. This award is in recognition of ERIC's innovation in biophysical mapping including the integration of optical satellite data and geophysical data. ERIC has utilised the spectral capabilities of Landsat TM and the spatial resolution of SPOT Panchromatic data to extract significant information regarding the composition of the vegetation of the Upper Shoalhaven Catchment. The research and development undertaken by ERIC in this field has led to a quantum leap in the amount of information available for vegetation survey.

This innovative approach to landcover classification is currently being employed by ERIC with the Ballalaba-Krawarree Landcare group as part of a remnant vegetation study under the Save the Bush Fund program. The land cover maps are integrated with other cadastral and cultural data to provide information rich maps for community consultation.

Ground truthing teams comprised of local farmers and landholders are working in conjunction with experienced ERIC consultants to validate and verify the land cover and condition maps. The additional information provided by the merging of the satellite data is allowing the ground truthing teams to more accurately describe the land cover types and condition within the catchment area.

In conjunction with the land cover assessment team other Landcare members are conducting a riverine and remnant vegetation survey of the catchment, identifying major floristic communities and broad ecological zones, and examining the cultural and historical values of the catchment.

As part of ERIC's methodology the project is being underpinned by a social process of community facilitation, local publicity/ awareness and stakeholder involvement. The community participation in this process allows the project groups to identify key areas of remnant vegetation management and to recognise the major threats to existing native vegetation, especially along the riparian zone.

Community participation in this project is being strengthened by the establishment of a display wall on the local Gundillion Hall to provide a pictorial chronicle of the project. The use of Landsat TM and SPOT Panchromatic data has produced land cover maps which provide the community with better information to improve their decision making about the environment in which they live.

The Ballalaba-Krawarree Landcare Group are providing a lead to other groups in the region and the project outcomes will be a key component of the Upper Shoalhaven Catchment Management Planning and Management Program.



ROB GOURLAY OF ERIC AND MEMBERS OF BALLALABA-KRAWARREE LANDCARE GROUP PREVIEW LANDCOVER MAP.

RADARSAT Roadshow

In March this year, RADARSAT International (RSI) in association with the University of New South Wales, ACRES and our distributors, conducted several information seminars on Synthetic Aperture Radar (SAR) and RADARSAT.

The seminars were held in Perth, Brisbane and Canberra, covering topics such as: introduction to SAR; RADARSAT overview and advantages; RADARSAT products and services; RADARSAT applications; and distribution arrangements in Australia.

About 60 people attended the seminar in Perth, while about 40 people attended the Brisbane seminar. Several smaller and larger groups in Canberra heard similar information during the week of the 8th Australian Remote Sensing Conference.

Speakers at the seminars included Professor Tony Milne (University of New South Wales), Shawn Burns (RADARSAT International Sales Director, Asia-Pacific) and Dennis Nazarenko (RADARSAT International Applications Specialist).

Most attendees had a background in remote sensing, but had limited experience with SAR. They found the seminars to be quite useful in describing some basics of SAR, its applications, and where the RADARSAT satellite can help.

Special thanks is extended to the regional seminar hosts and co-organisers: Remote Sensing Services, DOLA, WA; Department of Natural Resources, Qld; and Geospatial Pty Ltd, Qld.

News and activities from 'The West'

Remote Sensing Services, DOLA, WA

This year sees a range of exciting new initiatives in Western Australia for the use of Landsat TM and SPOT data.

- The WA Regional Mosaic by Satellite (WARMS) will be produced for the first time, covering the 145,000 sq km area of south western Australia. It will be a seamless mosaic on CD-ROM for the GIS user, using SPOT Panchromatic and Landsat TM data. The three Government Agencies of CALM, Water and Rivers Commission and DOLA have funded the project to acquire current high resolution data on land cover.
- A major Landcover Mapping Project covering the whole agricultural area of Western Australia is being undertaken by the Department of Agriculture, RSS, DOLA and CSIRO as part of the Bureau of Resource Science's national greenhouse gas inventory. This project will produce current information on the change in areas of forests, remnant native vegetation and tree plantations, from 1990 to 1996. Information about the increasing areas of tree plantations will be updated annually.
- AGIMAGE is a collaborative project between RSS, DOLA and Department of Agriculture, providing image products of crop yield variability within paddocks based on the NDVI from winter-time SPOT XS, Landsat TM or airborne Digital Multi-Spectral Video. This information compliments the yield maps produced using grain yield monitors and GPS on headers. This development underpins evolving developments in Precision Farming.
- Plans are underway to apply techniques developed by CSIRO for the mapping and monitoring of saline areas from 1987 – 1996. The project will last over a three year period using Landsat TM data for the whole agricultural area of Western Australia.
- There is a continued high demand for Landsat TM data by the exploration industry and the WA Geological Survey for geological mapping. Consultants such as Peter Wilson, International Earthscan Pty Ltd, and Andrew Grace, World Geoscience Corporation, are particularly active in the use of satellite imagery for the Exploration Industry.

Monitoring Queensland's vegetation and land use – project update

The Queensland State Landcover and Trees Study (SLATS) previously called QVLUMP (Queensland Vegetation and Land Use Monitoring Project) is progressing well at the Resource Sciences Centre in the new Department of Natural Resources.

Initial results reveal that 308,000 hectares have been cleared on average between 1991 and 1995 in Queensland. This preliminary figure was derived from analysis of 84 full and 4 quarter Landsat TM scenes using either image change classification or visual interpretation methods. The rate is an average figure from 1991 to 1995 and does not indicate the actual area of clearing in any individual year.

Detailed field work is currently underway in the inland central Queensland area. This fieldwork includes measurement of ground control points using differential GPS, checking of vegetation change sites, collection of land cover observations and detailed vegetation site measurements.



FIELD WORK IS AN INTEGRAL PART OF THE PROJECT

To guide the project, a Project Advisory Board has been established. This group of clients and stakeholders provides comments on the activities of the project and assists in communicating the project results to the community.

PROJECT ADVISORY BOARD MEMBERS:

Bill Eastgate, Chair and Executive Director, Resource Sciences Institute

Gus McGown, United Grazier's Association

Bonny Banks, Cattlemen's Union

Ross Dunn, Qld Grain Grower's Association

Mark Everson, Cane Grower's Association

Ted Fenson, Qld Conservation Council

Gerard Pender, Local Government Association

Emeritus Professor Ray Specht, ex Uni of Qld

Paul Sattler, Qld Department of Environment

Dr Phil Price, Land and Water Rural Research & Development Corporation

Ken Brook and Gail Kelly – Dept of Natural Resources

SLATS PROJECT TEAM MEMBERS

Project Manager: Tim Danaher

Image Processing Team:

Gerry Bisshop, Lisa Collett, Sel Counter, Bruce Goulevitch, Dave Harris, Rob Hassett, Laz Kastanis, Cheryl Kuhnell, Dipak Paydya, Jim Walls.

Systems Manager: Lindsay Brebber

Greenhouse Gas Modelling Experts:

Greg McKeon, John Carter, Mark Littleboy



MEMBERS OF THE PROJECT ADVISORY BOARD AND SOME OF THE PROJECT TEAM MEMBERS

More definitive results on vegetation regrowth and clearing will be released as image processing and detailed field work is undertaken.

For more information contact:

Tim Danaher (07) 3896 9589 or timd@dpi.qld.gov.au

AUSLIG'S Geodata 9 second DEM

As reported in the last *ACRES Update*, the new Geodata 9 second DEM is completed and is now available on CD-ROM. The 37 tiles covering Australia have been encrypted onto the CD-ROM and require a password for download. However the user guide, sample data and other information can be freely read from the CD-ROM. The user guide and sample data, can also be accessed through AUSLIG's World Wide Web site at www.auslig.gov.au

The standard (single user) licence fee of \$250 per tile and \$5500 for National coverage, has already been announced. More recently a pricing structure for multiple users has been announced:

1 - 4 USERS

\$250 per tile

\$5500 for National coverage (37 tiles)

5 - 9 USERS

\$375 per tile. Bulk discount as described below.

\$8250 for National coverage.

MORE THAN 9 USERS

\$500 per tile. Bulk discounts as described below.

\$11000 for National coverage.

Bulk Discount: Per tile price for the first 10 tiles, and then 50% discount thereafter.

For further details about the product or a copy of the CD-ROM, please contact AUSLIG's National Data Centre (1800 800 173), AUSLIG Digital Data distributors or AGSO.

Progress report on the TFS Rural Resources Applications Centre (TRRAC)

Mike Aubrey, Technical & Field Surveys Pty Ltd

Technical & Field Surveys Pty Ltd (TFS) has been actively involved in the business of remote sensing and geographic information systems (GIS) for 26 years. It has also had a continuous public commitment to national and regional planning through service on many government committees.

In March of this year the company re-located to Bathurst in rural NSW where it has established a TFS Rural Resources Applications Centre (TRRAC). TRRAC is an operations, training and demonstration site for remote sensing and GIS technologies and their applications for natural resources and environmental management. The site will also provide facilities and a controlled base for research projects.

The TRRAC Vision Statement is:

To extend the operational uptake of GIS and remote sensing technology at grass roots level by providing a controlled field location for practical applications, product development, demonstration and training as a collaborative venture with like-minded institutions, enterprises and agencies.

TFS is keen to develop TRRAC as a truly collaborative venture between those organisations, agencies and institutions interested in promoting, improving and expanding the effective application of these technologies. Greening Australia has provided some hardware, GIS software and furnishings, and has based a regional facilitator on site. The NSW Office of Regional Development has provided some assistance in relocation and establishment.

Local data sets for demonstration and training have been kindly provided by SPOT Imaging Services and the NSW Land Information Centre. ACRES will be providing Landsat data in the near future. Other organisations, including two universities and several government departments are also considering areas of collaboration in the venture. TRRAC is actively encouraging collaboration with local community groups and primary industry as a means of identifying and servicing typical requirements.

The motivation for developing TRRAC stems from the accumulated experience gained from a sequence of national strategic studies conducted by the author over many years on behalf of organisations including the Australian Space Council, the Office of Local Government and Greening Australia; and service on committees, such as the Remote Sensing Board, ALCORSS and the UNSW Visiting Committee. The most recent of these studies identified three key areas of need to improve the effective usage of earth observation data:

- the improvement of education and training
- the enhancement of value-added products and services
- the need for an effective means of delivering data and information products to users.

TRRAC is founded upon these three objectives.

An integral component of TRRAC's activities is to provide a showcase for rural applications, a seminar site for small group training, and a controlled field test site for pilot projects, product development and technology transfer to new users. It will serve as an outreach centre taking the technology to the user in a familiar environment and providing practical cost effective assistance to new or inexperienced users. Hopefully, it will also serve as a model for other similar centres elsewhere.

To provide a 'user-friendly' base for TRRAC, TFS has acquired a small rural property of 200 acres near Bathurst to act as a demonstration and training base. The property has 120 acres of grazing, 80 acres of native woodland and very varied topography which will offer an effective demonstration site for agricultural and environmental applications. The geological setting is also appropriate to mineral exploration training. The catchment in which it is situated offers a range of agricultural activities, land and water regimes, geological conditions and land degradation targets.

We have just completed the renovation and furnishing of a 155 sq m office and training building which can accommodate groups of up to 12 trainees and concurrent project operations. TRRAC is equipped with all the hardware, reference material, data sets and training aids necessary for effective practical operations and training. This includes a variety of desktop and portable computers installed with several GIS and image analysis software packages, GPS equipment, digitisers, plotters and audio-visual facilities.

We have also commenced the compilation of a detailed GIS baseline for the property and environs. This has involved the acquisition of information using satellite imagery, aerial photography, geology, soils, vegetation, land capability, digital elevation, cadastre, topography, drainage, infrastructure and meteorology. We have also begun detailed mapping of vegetation associations, local geology and relief.

In spite of our recent relocation, we have already been visited by 25 people from thirteen organisations, including 3 government departments, CSIRO, 2 teaching institutions, 4 mining companies (one from Myanmar), 3 agribusiness companies and an environmental organisation. Our first training course for nine local government staff starts next month.

The staff of TRRAC consists of Mike Aubrey, Director, who has 30 years experience in remote sensing/GIS and natural resource applications, is a member of the Remote Sensing Board and has served on numerous other committees and associations; Dr. Richard Roger (D.Phil, Oxford), Training Director, who until recently was a Research Fellow at ADFA; two geologists and one environmental scientist all with training in GIS/remote sensing; and two administration staff.

Some examples of current projects in which TFS/ TRRAC is engaged and which have relevance to our collaborative intentions are:

- Pasture condition assessment based on satellite image analysis in conjunction with Incitec Ltd.
- ARIES (Australian Resource Information and Environment Satellite) development – a consortium project with CSIRO, Auspace Ltd, ACRES and others proposing to design, construct and manage a hyperspectral remote sensing satellite program.
- AEON (Australian Earth Observation Network) – a consortium project in association with the Australian Space Office, ACRES, AGSO, CSIRO and NRIC to establish a continental electronic data distribution network for remotely-sensed and other spatial data.
- A Community Aid Abroad remote sensing project for Tigre Province, Ethiopia.
- A geological GIS/image analysis system for a Myanmar-based mining company.
- Local Government training and GIS development programs.
- Mineral exploration spatial database development.

TRRAC looks forward to a new and exciting era of serving the practical earth observation and GIS needs of 'grass roots' users.

RESURS-01 satellite: wide swath, medium resolution data

The Russian RESURS-01 satellite is providing a relatively new data source to worldwide users, as recently displayed at the 8th Australian Remote Sensing Conference in Canberra. The sensor has a swath width of 600 km with a spatial resolution of 160 metres, thereby filling some of the gap between Landsat's 185 km swath and 80 metre pixel (MSS), and NOAA's AVHRR instrument which has a swath of 2500 km and a pixel size of 1.1 km. This makes RESURS-01 a very useful data source for many environmental monitoring projects. The potential revisit time of 4 days also helps to serve this purpose.

The data is acquired in two visible and two near infra-red bands, similar to the wavelengths of Landsat MSS. An additional sensor collects thermal data (10.4 – 12.6 μm) at 600 metre resolution.

Data is downlinked and processed by the Swedish Space Corporation. On board recorders ensure that all parts of the world can be imaged. Data is currently being collected to build up a world wide archive. Three types of products and services are being offered: Mapping Services, Monitoring Services and Archived Images.

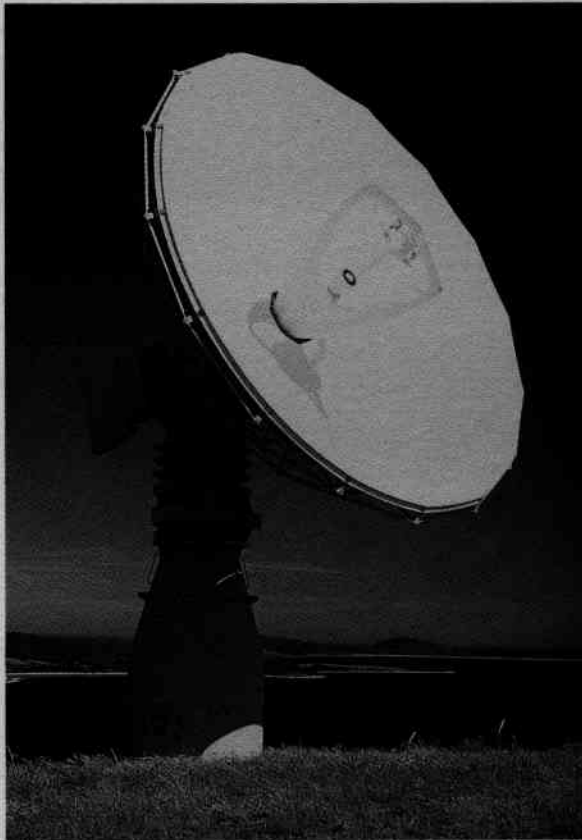
Data distribution arrangements for Australia are still being determined.

ACRES to assume responsibility for TERSS operations

The Board of the Tasmanian Earth Resources Satellite Station (TERSS) has agreed that ACRES will assume responsibility for the operation of the groundstation from August 1st 1996. TERSS is currently the only other Australian X-band groundstation besides ACRES Data Acquisition Facility (DAF) at Alice Springs. It was previously operated by the CSIRO Division of Oceanography.

In reaching its decision the Board (which consists of CSIRO, Bureau of Meteorology, Antarctic Division, University of Tasmania and ACRES) decided that it was appropriate that TERSS be operated and maintained by ACRES now that the TERSS facility had reached fully operational status.

The advanced technology developed at TERSS will allow the groundstation to be operated remotely by ACRES staff at Alice Springs. ACRES engineering and technical staff will visit Hobart as required for preventative and remedial maintenance. CSIRO staff in Hobart will provide on-the-spot support.



THE TERSS DISH NEAR HOBART, TASMANIA

AUSLIG World Wide Web site changes

www.auslig.gov.au

Jenny Weissel, ACRES Engineering

Who hasn't seen AUSLIG's new home page? After months of examining statistics on the way users were accessing our site we have changed the navigation for improved efficiency. Specifically, you will find a matrix of products and services as the main feature on the opening page so that users can quickly go to the areas which provide information on what they need from AUSLIG. For example, selecting "Satellite Imagery" will get you straight to ACRES' products and services documents.

New features also include a white background and a new, colourful AUSLIG banner for every page. There are also changes to the buttons on every page. In ACRES' pages the top row of four buttons are all ACRES specific. The bottom row is for the AUSLIG site in general. Notice that users now have a glossary button for quick reference to explanations of terms and acronyms used on the site. Users also have the use of an index button for an alphabetical listing of all pages on the site. Copyright gives an explanation regarding the usage of AUSLIG data.

ACRES WWW PAGES UPDATE

ACRES pages of the AUSLIG Web site have now been upgraded and expanded to provide users with access to a wide range of information including satellite details (including status), sensor and dataset descriptions, price lists, policy or guideline documents and so on. We have also rearranged our Distributor listing so that users can access Distributors by data type as well as by location. Where Distributors have their own Web site a link has been provided to visit their site.

There are two ways of accessing ACRES pages on the AUSLIG WWW server. The first is to go to AUSLIG's Home Page and select "Satellite Imagery" (as explained above). To go to the ACRES opening page use the "ACRES Page" button at the bottom of the current document. However if you wish to go to further documents in the ACRES' products and services area, proceed to the "ACRES Product and Services Index" page.

The second way of accessing ACRES pages is to go direct to "www.auslig.gov.au/acres/index.htm". This is the opening page for a hierarchical navigation of ACRES pages. Don't forget to check out "What's New?" along the way. You will find a link to ACRES' Performance Measures there. These are selected graphs showing the results of ACRES operational performance against key indicators.

There are 74 new documents in ACRES' area of the AUSLIG Web site. A few old documents have been suspended. If you have bookmarked to any of these you will receive a message regarding the new location of the data. You are now invited to start surfing the new ACRES pages and find out everything you've always wanted to know! See the chart below.

NEW WEB SITE LAUNCHES

Spot Imaging Services, Sydney, Australia

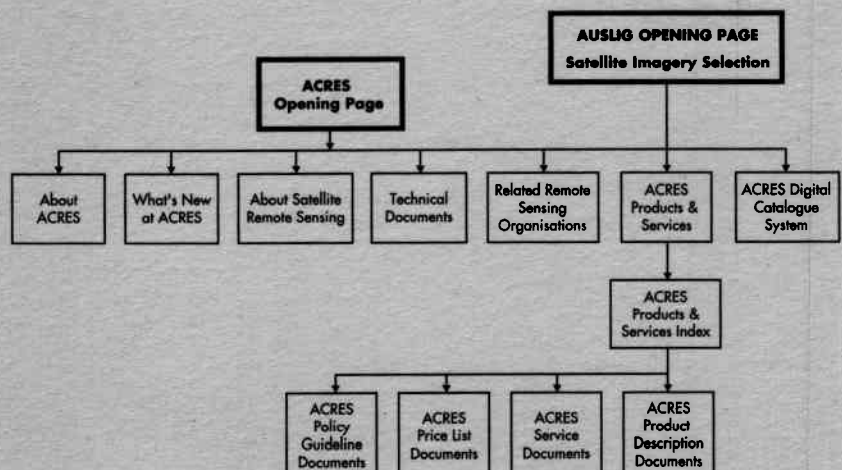
Congratulations to our SPOT Distributor, SPOT Imaging Services (SIS) on the successful launch of their Web site: www.spotimage.com.au. This is an interesting site (see separate article) and links to ACRES' site in a way that allows users to peruse the SPOT satellite, sensor, product descriptions and price lists in ACRES pages, and then go to the SIS site to find a list of SIS Distributors. You can also fill in a form to enable a satellite scene search. Easy!

RESTEC, Japan

The Remote Sensing Technology Center of Japan (RESTEC) has announced the opening of their Web site: www.restec.or.jp. RESTEC is part of the world-wide community of earth resource satellite receiving, archiving and data processing and distribution centres. They invite the Australian remote sensing community to view their pages. (A link is located in ACRES pages from "Related Organisations"). It's well worth a visit.

FEEDBACK

We welcome comments from users on our new pages. With your assistance we can make the site even better!



SPOT on-line

Carl McMaster, SPOT Imaging Services

In addition to the AUSLIG homepage which enables Internet searches of the ACRES image catalogue, surfers can access SPOT Imaging Services (SIS) homepage at www.spotimage.com.au. These pages include SPOT product descriptions and prices, and inquiry forms linked by e-mail to SIS's Distributors.

Links are provided to the SPOT IMAGE web site in France (www.spotimage.fr) where details can be easily found about the SPOT program, technical descriptions of the satellites, demonstration applications and news.

Internet access is now available to SPOT IMAGE's world-wide catalogue in France.

Interested organisations should contact SIS to arrange registration. An annual fee of \$140 is required for the supply of a decoder unit which allocates unique passwords for each access. The catalogue can be queried by specifying geographic co-ordinates, KJ's, acquisition dates, cloud cover, incidence angle and spectral mode. In response, digital quick-looks and meta data are displayed. The ability to define regions of interest by clicking on index maps is being added.

The relatively new CRISP ground station in Singapore has been routinely receiving SPOT data over south-east Asia since September 1995, supplementing the SPOT 3 tape recorded data which is archived in Toulouse (France) and Kiruna (Sweden). CRISP is operated by the National University of Singapore and has a SPOT data distribution arrangement with SPOT ASIA in Singapore, which is headed by Yves Bechacq formerly of SIS Sydney.

CRISP operates a very user-friendly homepage at www.crisp.nus.sg which allows SPOT quick-looks to be viewed and copied.

The efforts made by the various remote sensing organisations implementing Web sites including catalogue access are primarily aimed at improving customer service through the more efficient availability of products and services.

RADARSAT International's new WWW site

RADARSAT International (RSI) is pleased to announce that its World Wide Web site, *RADARSAT Interactive*, is now open. The address for RSI's Web site is www.rsi.ca.

Robert E. Tack, President, RADARSAT International said: "The introduction of RADARSAT Interactive is another demonstration of our commitment to serve our clients and interested organisations worldwide by offering timely information on our full range of satellite solutions. We encourage everyone to visit our site regularly to learn more about our latest products, applications and corporate developments".

RADARSAT Interactive offers visitors a wide range of features including sample RADARSAT imagery and information on RSI, applications of RADARSAT, system and product specifications for RADARSAT, SPOT, ERS, Landsat, JERS, and education programs and materials. Additional site highlights include links to RADARSAT Network Stations and other related sites, contact information for RSI sales directors and distributors worldwide, the latest RSI news, and email addresses for RSI staff. RADARSAT Interactive will be updated on a regular basis with new information and sample imagery.

SPOT celebrates 10 years

ACRES congratulates SPOT Image, which during April 1996 celebrated 10 years of successful distribution of products from the SPOT series of satellites.

To celebrate the occasion, SPOT Image organised a major conference in France focusing on the achievements of the SPOT program and the many applications of SPOT data. AUSLIG's Assistant General Manager, Peter Holland, presented a paper on the successful use of SPOT panchromatic imagery in AUSLIG's national 1:100,000 and 1:250,000 map revision programs.

ACRES staff movements

ROSALIE BOOTH

Rosalie has returned to ACRES at the end of May 1996, following 12 months maternity leave. Rosalie and husband Steve now have a 14 month old son, Piri, and a five year old daughter, Taygan.

Rosalie has now moved from the Satellite Operations area to the Synthetic Aperture Radar Processor (SARP) Project Team, working with the Project Engineer, Peter Radonyi. The project involves bench testing the new SAR processing system which is being developed by Vexcel, a US company. The SAR processor is important to ACRES customers as it will expand ACRES' SAR product range.



ROSALIE BOOTH

LAURIE MCLAUCHLAN

Laurie is a new member of the ACRES team and will be working as an Engineering Technician at the Data Processing Facility (DPF) in Canberra. Laurie will be taking over from Clive Broomfield who will be retiring later in the year after many years of valuable service.

MADELEINE CLARK

Madeleine returned on 1 July as an Account Manager for ACT, NSW, Queensland and SE Asia. She was able to spend four months working as a consultant with DAS Corporate Marketing and Projects focussing on International and Defence Markets.

AURISA 1996

The 24th Annual International Conference and Technical Exposition of AURISA (Australasian Urban and Regional Information Systems Association Inc) will be held at Hobart's Wrest Point Casino from 25 - 29 November 1996. The conference will bring together people with a common interest in the spatial information industry.

The theme of the conference is "participation" with a focus on relationships, so that those attending will be able to share knowledge and experiences while building closer ties with each other.

One of the eight planned workshops will be dedicated to "GIS, Remote Sensing, Low Orbiting Satellites and You". This workshop will obviously be of particular interest to *ACRES Update* readers.

For more information on the AURISA 96 Conference and Exposition, please contact the secretariat:

ACTS

GPO Box 2200

Canberra ACT 2601

Tel: (06) 257 3299

Fax: (06) 257 3256

NARGIS 97

The Northern Australian Remote Sensing & Geographic Information Systems Conference will be held in Cairns from 28-30 April 1997. The conference theme will be "Northern Focus".

Cairns, in tropical northern Australia, is one of Australia's leading growth centres and is the ideal venue for this informative forum.

Expressions of Interest are invited from those persons wishing to present a paper at NARGIS 97 based on the following topics:

- Marine Applications
- Mineral Exploration
- Commercial Applications
- Agri-business Applications
- Land & Resource Management
- Urban & Regional Planning
- Environmental Management
- Disaster Management

Abstracts will be needed by the end of October. Please use the following contact details for any further information.

NARGIS 97

PO Box 1082

Cairns Qld 4870

Tel: (070) 313 083

Fax: (070) 312 940

email: cairnsman@internetnorth.com.au

Calendar

22–26 September 1996 Canberra, Australia

Mapping Sciences '96, Mapping for Management.
National Convention Centre, Canberra, ACT, Australia.

Contact: PO Box 505, Curtin ACT 2605.

Tel: +61-6-281-6624;

Fax: +61-6-285-1336.

23–27 September 1996 Taormina, Italy

European Symposium on Satellite and Remote Sensing III,
Palazzo dei Congressi, Taormina, Italy.

Contact: Europto® C/- Direct Communications
GmbH.

Fax: ++49-30-88-68-2946;

e-mail: 100140.3216@compuserve.com.

7–12 October 1996 Beijing, China

*Space'96 47th Congress and Exhibition of the International
Astronautical Federation.*

Contact: Ms Chen Yang, Exhibition Co., CGWIC, 21
Huangsi Dajie, Xicheng Qu, Beijing, China
100011.

Tel: 86 10 8372706 8372707

Fax: 86 10 8372706 8373155

4–7 November 1996 Florida, USA

*Eco-Informa '96 Global Networks for Environmental
Information – Bridging the Gap Between Knowledge and
Application.*

Contact: ERIM/Eco-Informa, PO Box 134001
Ann Arbor, MI USA 48113-4001.

Tel: (1) 313 994 1200, ext. 3234

Fax: (1) 313 994 5123

e-mail: wallman@erim.org

<http://www.erim.org/CONF/conf.html>

4–7 November 1996 Berlin, Germany

*International Academy of Astronautics Symposium on Small
Satellites for Earth Observation.* This symposium will
focus on the creation and usage of Small Satellites for
solving most applied and scientific space exploration
tasks.

Contact: Bernd Kirchner

Tel: +49 30 69545 545

Fax: +49 30 69545 532

e-mail: iaa.symp@dlr.de

19–22 November 1996

Beijing, China

RS GIS and GPS in China.

Contact: Mr Mi Zhaohui, Beijing, China.

Tel: +8610-5051582;

Fax: +8610-5051582.

19–21 November 1996

Colorado, USA

GIS/LIS '96. Annual Conference and Exposition, Colorado
Convention Center, Denver, Colorado, USA.

Contact: The American Society for Photogrammetry
and Remote Sensing, 5410 Grosvenor Lane,
Ste. 210, Bethesda, MD 20814-2160, USA.

25–29 November 1996

Hobart, Australia

*The 24th Annual International Conference and Technical
Exposition of the Australasian Urban and Regional
Information Systems Association Inc. (AURISA).* Wrest
Point Hotel Casino, Hobart, Tasmania, Australia.

Contact: ACTS, GPO Box 2200, Canberra, ACT,
2601.

Tel: +61-6-257-3299;

Fax: +61-6-257-3256.

17–19 March 1997

Florida, USA

*Fourth International Conference on Remote Sensing for
Marine and Coastal Environments: Technology and
Applications.*

Contact:

Tel: (1)313 994 1200, ext. 3453;

Fax: (1)313 994 5123;

e-mail: raeder@erim.org;

<http://www.erim.org/CONF/conf.html>.

28–30 April 1997

Cairns, Australia

*Northern Australian Remote Sensing & Geographic
Information Systems Conference (NARGIS 97).* Cairns
Campus of James Cook University, Captain Cook
Highway, Smithfield, Cairns.

Contact: NARGIS 97, PO Box 1082, Cairns Qld
4870.

Tel: (070) 313083

Fax: (070) 312 940

email: cairnsman@internetnorth.com.au

1–9 July 1997

Melbourne, Australia

*Joint Assemblies of international Association for Meteorology
& Atmospheric Sciences, and International Association for
Physical Sciences of the Ocean.*

ACRES official distributors

NEW SOUTH WALES

Land Information Centre (LIC)

Department of Land and Water Conservation
Panorama Avenue
PO Box 143
Bathurst NSW 2795
Tel: (063) 32 8419
Fax: (063) 31 8095

SPOT Imaging Services Pty Ltd (SIS)

Suite 502
156 Pacific Highway
PO Box 197
St Leonards NSW 2065
Tel: (02) 9906 1733
Fax: (02) 9906 5109

ENCOM Technology Pty Limited

Level 2
118 Alfred Street
PO Box 422
Milson's Point NSW 2061
Tel: (02) 9957 4117
Fax: (02) 9922 6141

ESRI Australia

Level 3
1 Kent Street
Sydney NSW 2000
Tel: (02) 9241 2138
Fax: (02) 9241 1249

VICTORIA

Resource Industry Associates (RIA)

538 Brunswick Street
North Fitzroy Vic 3068
Tel: (03) 9482 4945
Fax: (03) 9482 4956

AUSTRALIAN CAPITAL TERRITORY

AGRECON Pty Ltd

University of Canberra
PO Box 1
Belconnen ACT 2616
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Fax: (06) 201 5353 (BH)
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