AUSTRALIAN CENTRE FOR REMOTE SENSING

JUNE 1999, ISSUE 18

ACRES UPDATE

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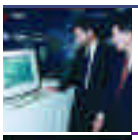

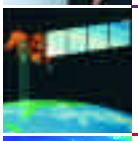

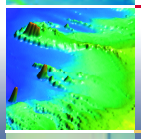

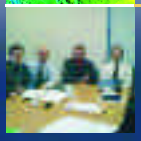

The live telecast of the Landsat 7 launch by NASA TV.

ACRES

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Cover: Landsat 7 was successfully launched in April. Photograph courtesy of NASA.

PUBLICATION DETAILS

Published by ACRES, Australian Centre for Remote Sensing, a business unit of Australia's national mapping agency, AUSLIG, Commonwealth Department of Industry, Science and Resources.

ACRES, PO Box 28,
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MANAGER'S MESSAGE

Two launches of different kinds are the highlights of this edition of *ACRES Update*.

The first was the official launch on 12 November 1998 of ACRES new SPOT-LITE product. SPOT-LITE is a significant departure from the way that organisations like ours traditionally do business. It allows users to order and take delivery of GIS-ready SPOT PAN imagery via the internet, and at much lower cost and a fraction of the delivery time than for more traditional products. There has been strong interest shown in SPOT-LITE already, especially from people who have not previously used remote sensing imagery in their work. We are currently surveying our prospective SPOT-LITE clients to determine how we can make this new service even more attractive.

The second launch was the long awaited lift-off of Landsat 7 from Vandenberg Air Force base on 15 April 1999. All of us at ACRES are delighted that this mission is now successfully underway, and that the continuity of Landsat data into the new millennium now seems assured. I was very fortunate to be present at the launch along with members of the project partners, NASA and USGS, the science team and mission sub-contractors. There were certainly a lot of very happy, excited and relieved people around afterwards!

Now that the satellite has been launched, ACRES has accelerated its preparations for direct reception of Landsat 7. Negotiations with USGS for direct downlink access to the satellite are nearing finalisation. Later this month, new demodulators that will allow acquisition of Landsat 7 will be installed at our Alice Springs reception station. All being well, direct reception should commence on 1 July 1999 when Landsat 7 is scheduled to be declared operational.

In addition, ACRES has recently signed a contract with MacDonald Dettwiler and Associates of Vancouver, Canada, for the supply of a new Optical Data Processing System. As well as delivering much higher throughput than our current processor, this system will also support processing of the full range of Landsat 7 and SPOT 4 products. Delivery is scheduled for July 1999.

The next issue of *ACRES Update* will contain full details of the Landsat 7 products that will be offered by ACRES including the revised pricing and data policy conditions.

Paul Trezise

LANDSAT 7 IN ORBIT

The Landsat 7 spacecraft, aboard a Delta II rocket, lifted off at 4:32pm Australian Eastern Standard Time on Friday 16 April, from Vandenberg Air Force Base, California. Precisely one hour, one minute and forty seconds later, the spacecraft separated from the Delta II second stage. Landsat is a dual-agency program between NASA and the United States Geological Survey (USGS).

'We're off to a great start,' said Phil Sabelhaus, Landsat 7 project manager at NASA's Goddard Space Flight Center in Greenbelt, Maryland. 'The spacecraft is now in orbit, the solar array has deployed and is power positive. All data indicates we have a healthy spacecraft.

'The next couple of weeks will be spent performing calibration activities and detailed checkout and deploying the scientific instrument,' he said. NASA will turn operational control of the spacecraft over to USGS on 1 October 2000. The spacecraft is currently in a polar orbit, 705 kilometres above the Earth.

Landsat 7 is the latest in a series of missions that began with Landsat 1 in 1972. This data will provide remote sensors with new information on deforestation, receding glaciers and crop monitoring. The data also will be available commercially for land-use planning and urban development issues.

Lockheed Martin Missiles and Space in Valley Forge, Pennsylvania built this new science spacecraft. The only instrument onboard, the Enhanced Thematic Mapper Plus (ETM+) was built by Raytheon, at Santa Barbara Remote Sensing in California.

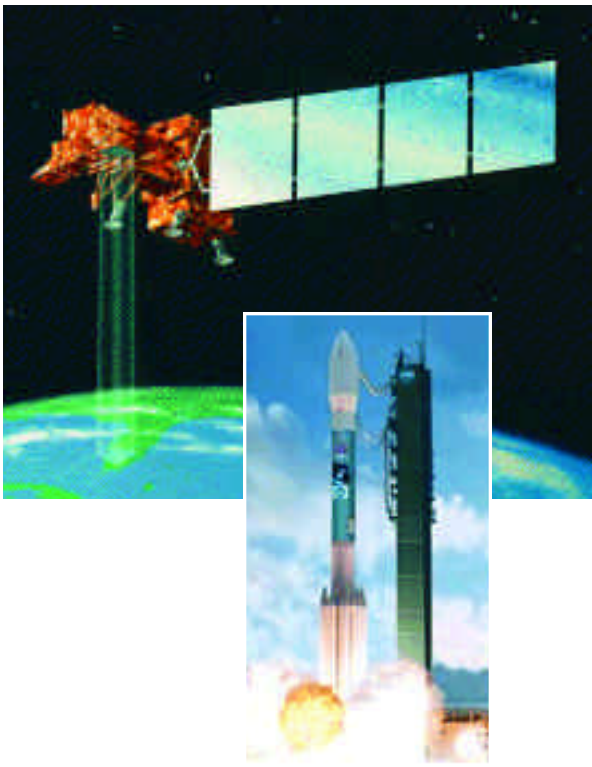


Photo courtesy NASA.

ACRES TO OFFER ENHANCED LANDSAT 7 IMAGERY

Landsat 7 is a major satellite system with ground and space elements, which performs wide-area multi-spectral imaging in a sun-synchronous, near polar orbit. It provides remote sensing of the Earth and returns data which can be processed by either ground segments or a variety of scientific, military and commercial applications. The system supports global change research, national security, civil and commercial objectives. Diagram courtesy Boeing.

After the successful launch of Landsat 7, ACRES is gearing up for the full production of image products from the new Enhanced Thematic Mapper Plus (ETM+) sensor.

A contract has been signed for the supply of new demodulators that are needed to acquire Landsat 7 data at the Alice Springs and Hobart receiving stations.

Canadian firm MacDonald Dettwiler and Associates will install a new optical data processing system at ACRES worth $2 million to cope with the expected increase in satellite imagery sales.

Apart from Landsat 7 processing capabilities, the new processor will also be able to process SPOT 4 and the extensive range of images in the ACRES optical data archive.

The upgrade of the ACRES Data Acquisition Facility in Alice Springs is nearing completion. By May, ACRES will be able to place 'browse' images on its digital catalogue within 24 hours of acquisition. The combined effect of the acquisition and processing upgrade programs will further enhance ACRES commitment to the efficient processing and delivery of satellite image data products.

Regarding the direct reception and distribution of Landsat 7 products, negotiations with USGS over the Memorandum of Understanding are progressing well.

If all goes well with the launch and subsequent 60-day NASA testing period, it is expected that the first Landsat 7 product will roll out of ACRES new systems in late July.

PROGRESS ON THE DAF UPGRADE

Final testing of new software and hardware to upgrade the Data Acquisition Facility (DAF) in Alice Springs is close to completion.

State-of-the-art equipment will allow automatic and unattended data acquisition, archiving and cataloguing, making imagery available on the internet almost immediately after the satellite pass.

Users can expect to see the results progressively over the next few months, with online cataloguing commencing in May.

The new equipment was installed in February and the station is now being operated in both the traditional way and in the new mode.

The antenna control software is currently being modified to improve accuracy and reliability of all components.

The traditional operation is with a manned antenna control, serial recording to High Density Digital Tape (HDDT), with catalogue browse images and metadata being processed in Canberra at ACRES Data Processing Facility.

The new mode has automatic antenna control, data recorded to disk array and written in computer compatible format to Digital Linear Tape (DLT). Catalogue material (excluding cloud cover assessment) is processed within hours of acquisition at the DAF, then transferred to the web catalogue server in Canberra.

A commercial robotics tape library has been delivered at the Data Processing Facility to store and manage the archive of DLTs. The design, coding and testing of this system is now underway and is expected to be released to operations in May. This will ensure readiness for the new processing system.

The development team is also working on software to ensure the DAF can receive, record and catalogue Landsat 7 ETM+ data as from its expected date of availability in mid-June.

NEW $2MILLION OPTICAL DATA PROCESSOR

AUSLIG is purchasing a new optical data processing system (ODPS) that will significantly reduce ACRES product delivery times for remotely sensed satellite data.

Canadian firm, MacDonald Dettwiler and Associates (MDA), won the contract worth more than $2 million to supply the new processor. The contract calls for the replacement of ACRES current GICS system with MDA's latest generation Product Generation System.

'MacDonald Dettwiler has a successful international track record in the supply of remote sensing ground processing systems and has supplied processing systems to ACRES since 1980,' said ACRES Manager, Paul Trezise.

'The new system will provide a more streamlined service to Australia's broad community of satellite data users,' he said. 'The production time factor is particularly critical to emergency services organisations, which rely on current satellite images to assist with natural disasters such as floods or bushfires.

'Companies involved in agriculture, forestry and minerals exploration, scientists and academics researching global change issues and government agencies responsible for environment and resource management will also appreciate the improved delivery time.'

At the ODPS configuration review held in Vancouver on 15th April 1997 were: ACRES Project Manager Robert Denize (centre) with the MDA project team (from left) Mike Halliday, Kelly Wiebe, Shu Cheung Tang and Frederick Chien.

ABOUT THE NEW OPTICAL DATA PROCESSING SYSTEM

ACRES new optical data processing system (ODPS) is due for delivery and testing in July 1999, with products available from early August. Unlike the previous GICS system, the new ODPS will support new Landsat 7 ETM+ and SPOT 4 HRVIR imagery.

ACRES is currently developing a new, modular system of architecture that will enable COTS (Commercial Off the Shelf) modular subsystems, like the ODPS, to be purchased, installed and replicated as needed. The ODPS will be the first of the COTS systems interfacing to several parts of the new architecture.

A key task for ACRES will be to deliver data from the new ACRES Archive Data Server in a format that the ODPS can process.

The Project Engineer, Robert Denize, recently returned from a visit to MacDonald Dettwiler in Vancouver, where he attended a configuration review and met the team responsible for the delivery of the ODPS.

The new system will speed delivery because it has increased capacity and a higher degree of automation. As the next generation of the system hired last year from May to September, the ODPS will provide similar products, with similar specifications and comparable datasets.

ASDAMS TO MANAGE SATELLITE DATA ACQUISITION AND PROGRAMMING

ACRES will soon have a new system to manage data acquisition and programming requests in the Satellite Operations area — the ACRES Data Acquisition and Management System, or ASDAMS.

The Canadian Company CALIAN, based in Ottawa, has been commissioned to modify their Integrated Satellite Acquisition Management System (ISAMS) to suit ACRES needs.

ACRES current scheduling tool, Satellite Operations Satellite System (SOSS) is no longer adequate to handle the multiple missions and acquisition sites that make up ACRES operations today. Nor is SOSS Year 2000 compliant.

ASDAMS will replace SOSS and achieve a more automated solution to ACRES satellite operation and mission planning activities for its two receiving sites at Alice Springs (DAF) and Hobart (TERSS).

A software developer from CALIAN, Brian Young, is at ACRES during April and May for the installation of ASDAMS. He will conduct on-site acceptance and staff training and is also developing software to include Landsat 7 data.

There were sighs of relief throughout ACRES, but especially from Brian Young (left) and Peter Pianella (ACRES project manager) at the safe arrival of the CPU for ACRES new data acquisition and management system — one month late from the courier!

UPGRADE TO DIGITAL CATALOGUE

In February, ACRES released Version 3.4 of the ACRES Digital Catalogue which introduced new features such as the ability to export metadata and images directly to MapInfo.

This has meant the demise of the PC Client, which is no longer compatible with the operating system, nor Year 2000 compliant. Features of the new catalogue are:

MapInfo Export
- choice of export MID/MIF/ Image TAB files
- for image export, use Browser functionality

Save Query/Area of Interest
- define query, save by name
- define geographic search region, save by name
- load previously stored search/query/area of interest

Preference Page
- user modification of passwords and contact information
- additional display options

Map (Where & When) Page
- load stored Area of Interest
- modified Actions list (zoom, pan, corner point select)
- search for dates since last use of catalogue

Refine Page
- multilevel sort of results (ascending or descending)

Results Page
- results summary (footprints or coverage)
- additional 'printer friendly' results layout
- checkbox for selecting image
- add to Shopping Cart button

Cart Page
- submit button activates MapInfo export (this is not an online ordering system)

Save Page (floppy disk tab)
- save and load Queries and Areas of Interest.

For technical reasons, some of these new features are not available to 'guest' users. Thanks to the users who have expressed their appreciation of the upgrade tool and to those who have also given constructive feedback on how to improve the current features. Two suggestions are already in development and will soon be introduced:
- the User Area of Interest (AOI) to appear on the map with search results and the ability to export AOI
- automatic naming the Export TAB and JPG files for export.

For further information on the ACRES digital catalogue, contact Alice Lee on 02 6201 4118 or A.lee@auslig.gov.au

UPGRADE TO ACRES SAR PROCESSING CAPABILITY

ACRES has recently signed a contract with the Vexcel Corporation to upgrade its ability to process synthetic aperture radar (SAR) data.

The current Vexcel processor used for JERS, ERS1/2 and RADARSAT single beam and ScanSAR data processing is configured on a Dec AlphaStation 600 5/266. The upgraded system will be configured on a Silicon Graphics (SGI) server and workstation with a baseline throughput of 10 RADARSAT Level 1 products per day.

However, the processing levels and product range of the existing system will be retained with some improvements. The software will consist of three modules:

- FOCUS;
- PHASE; and
- OrthoSAR.

The FOCUS module will ingest the raw data and produce Level 1 CEOS data products suitable for the interferometric processor or the orthorectification processor. FOCUS will generate:

- phase-preserving SLC-I images suitable for interferometry;
- ESA ESRIN SLC and PRI CEOS products;
- JERS products (in ESA SLC and PRI CEOS equivalents); and
- RADARSAT SLC, SGF, SGC and SGX standard products.

The PHASE module generates Digital Elevation Models (DEM), and creates orthorectified imagery from ERS1/2, JERS and RADARSAT data. The OrthoSAR module then generates georeferenced and orthorectified ESA ESRIN GEC and GTC standard products and the RADARSAT SSG and SPG standard products.

The processed SAR data generated by FOCUS will also be radiometrically calibrated to the ERS and RADARSAT sensors. Users of the SAR data, processed by ACRES, will be able to convert intensity (DN) values to physical backscatter values by applying a linear transformation consisting of two parameters.

The upgraded system will generate products with improved geolocation accuracy. RADARSAT specifies a 750m margin of error while the upgraded system is currently capable of halving that error in most cases. With such an improvement in geolocational accuracy, GCPs, which in SAR data are extremely hard to find, may not be required.

Delivery of the system is due mid-May with installation and testing to be complete in June and products from the upgraded system planned to be available in July.

RADARSAT CERTIFICATION

Since ACRES achieved certification for direct downlink of RADARSAT data and to generate Level 0 products last June, it has achieved several other milestones to help it provide better products and service.

Level 1 Product Certification

After a rigorous product analysis program, ACRES proved its ability to generate imagery products to the standards demanded by RADARSAT. ACRES achieved product certification for Level 1 products last November.

These standards covered:

- The CEOS format standard, such that products can be read and displayed as georeferenced images using commercial off-the-shelf software;
- Visual radiometric and geometric criteria;
- Meeting absolute location accuracy requirements of less than 750 metres ALE for specific point targets contained in Level 1 image products (excluding ScanSAR).

This enabled ACRES to generate, transcribe and commercially distribute these products:

- Path Image, SGF — Standard, Wide, Fine, Extended High & Extended Low Beams;
- Path Image Compact, SGC — Standard, Wide, Fine, Extended High & Extended Low Beams;
- Single Look Complex, SLC — Standard, Wide, Fine, Extended High & Extended Low Beams.

TERSS Certification

The Canadian Space Agency (CSA), the operators of RADARSAT, faced some interesting problems in evaluating the operation of TERSS as it was the first unmanned tracking station up for RADARSAT certification.

CSA found that they needed to rewrite some of their operational procedures to allow for automated satellite tracking, downlinking and reporting.

ACRES staff too, were challenged to find some new and innovative ways of meeting CSA's reporting requirements. According to inside sources, however, 'there's nothing like a challenge to bring out the best in people' and all these problems were overcome to achieve certification last December.

SHUTTLE MISSION TO TEST DEMS FOR ACRES

A shuttle mission this September will include an AUSLIG research and development project to evaluate Digital Elevation Models (DEMs) generated from interferometric data obtained during the mission.

The DEM proposal was one of about 100 to be accepted by DLR, the German Space Agency, from a range of organisations around the world.

More complete DEM coverage of Australia will be available about two years after the mission.

The 11 day space shuttle mission will acquire a significant global coverage of X-SAR and C-Band interferometric data in a single pass.

Known as the Shuttle Radar Topography Mission, SRTM is a cooperative effort between the US National Aeronautics and Space Administration (NASA), the US National Imagery and Mapping Agency (NIMA), the Italian Space Agency (ASI) and DLR (the German Space Agency). DLR is responsible for the processing, archiving and distribution of all the X-SAR data acquired by the SRTM.

This single pass mission will overcome the well known problems with repeat orbit interferometry of temporal target decorrelation, unsuitable baselines and different squint angles for the two passes to be processed.

AUSLIG will evaluate DEMs that cover a range of locations across Australia, including Perth, Lake Frome, Melbourne and Canberra. The expected RMS height errors of the DEMs will be less than 10 metres with a grid spacing of one arc second.

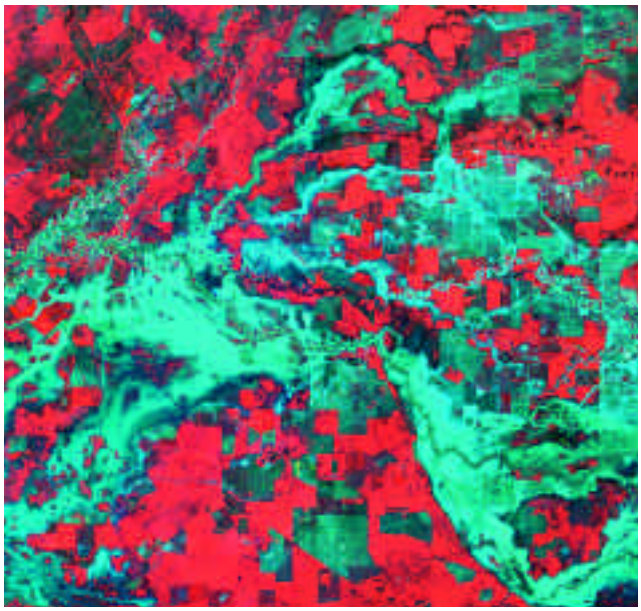
It is expected that more complete DEM coverage of Australia will be available about 18 months to two years after the mission.

Information about topography is of major importance to all earth sciences. DEMs are a prerequisite for any process model concerning erosion, vegetation distribution, hydrology or climatology.

Possible commercial applications related to SRTM DEMs are:

- telecommunications
- air traffic routing and navigation
- planning and construction
- geological and mineral exploration
- natural hazard management support
- hydrology
- geocoding of remote sensing data and integration into geographic information systems.

More information about the SRTM mission can be found at the following internet address: www-radar.jpl.nasa.gov/srtm/



A SPOT XS image showing the Wee Waa — Walgett area in August 1998, with the extensive floodwaters highlighted in blue.

FLOOD, FIRE AND CYCLONE IMAGERY

When natural disasters hit, ACRES always tries to acquire satellite imagery as close as possible to the moment of the event, for the benefit of the Australian community.

ACRES acquired considerable cloud-free SPOT imagery over parts of the NSW floods that occurred in August 1998. Many scenes are joined in order and enable the creation of large mosaics. Predominantly cloud-free scenes are available from Goondiwindi, south to Gunnedah and west all the way to Bourke.

Three adjacent swaths acquired on 9 August show considerable flooding from Wee Waa to Walgett, and additional flooding on the Macintyre and Barwon Rivers from Talwood to Mungindi. ACRES also has a large number of archived RADARSAT images covering various parts of these floods.

February 1999 proved to be a busy month for natural disasters, starting with ACRES acquiring considerable SPOT and RADARSAT imagery over the Mary River floods in Queensland from 14–28 February.

Post imagery of the recent North Queensland cyclone Rona was acquired successfully on 21 February using RADARSAT and 25 & 27 February using SPOT 1 and 2.

SPOT imagery was also acquired over the fires in the vicinity of Pinnaroo, South Australia from 11–20 February and over the "Crookwell" fires in NSW from 21–28 February.

SPOT 5 TO CARRY ENHANCED STEREOVIEWING CAPABILITY

Paris: Plans to enhance the SPOT 5 satellite with a high resolution stereoscopic (HRS) instrument will enable Spot Image to offer stereoscopic coverage of large regions.

The instrument will make it possible to generate digital elevation models (DEMs) accurate to 10 metres for the increasing number of applications that now require precise elevation data such as mapping, civil and military databases, telecommunications (especially for cellular phone network planning), airport approaches and geographic information systems.

The French space agency CNES, Spot Image and Matra Marconi Space recently signed an agreement concerning development of the HRS instrument to be flown on SPOT 5, which is scheduled for launch towards the end of 2001.

To be developed by Matra Marconi Space for CNES, the HRS instrument will complement the two high resolution geometric instruments (designed to acquire imagery at a resolution of 2.5 metres) making up the main SPOT 5 payload.

The HRS space system will cost in the region of FF170 billion. Fifty-four percent of funding will come from future product sales by Spot Image once the system is operational (2002–2006), with the remainder to be made up by CNES.

Matra Marconi Space (MMS) is to recover its investment in the instrument's development from the revenue of Spot Image sales of DEMs generated by the HRS instrument. DEMs generated using imagery acquired by the instrument will cover up to six million square kilometres every year.

RESURS-O1 PRODUCT CHANGES

As both transmitters on-board the RESURS-01-4 satellite have stopped working, SSC Satellitbild can no longer downlink data from that satellite.

Also, the RESURS-01-3 satellite is no longer broadcasting on its X-band transmitter. As a result, ACRES has cancelled the Mapping and Monitoring service options. However, ACRES has a local archive of more than 100 scenes that are available for ordering.

RESURS digital images from the Local ACRES and the Worldwide Archives are now available for 50% off the current ACRES price until the end of the year. For more information please contact ACRES at FREECALL 1800 800 173 or acres@auslig.gov.au.

INTERNATIONAL MEETINGS AT ACRES

ACRES is to host the next SPOT (GOSS) and ESA (ESOWG) ground station network meetings, which have been postponed until February 2000. Dates to be confirmed.

CONFERENCE CALENDAR

17–21 May 1999 — **Portland, USA**

American Society for Photogrammetry & Remote Sensing 1999 Annual Conference

Contact: ASPRS
Tel: 1 301 493 0290; Fax: 1 301 493 0208
Web: www.asprs-portland99.com

1–3 June 1999 — **Warsaw, Poland**

Remote Sensing and Forest Monitoring Conference

Contact: Tomasz Zawila-Niedzwiecki and Heronim Olenderek, SGGW, Warsaw Agricultural University, Faculty of Forestry, 26/30 Rakowiecka str., 02-528, Warsaw, Poland.
Fax: 48 22 491 375; Email: tzawila@giswitch.sggw.waw.pl

21–24 June 1999 — **Ottawa, Canada**

4th International Airborne Remote Sensing Conference

Contact: ERIM Airborne Conference
Tel: 1 313 994 1200; Fax: 1 313 994 5123
Email: wallman@erim.org

28–30 June 1999 — **Darwin, Australia**

4th North Australian Remote Sensing and Geographic Information Systems Conference

Contact: NARGIS 99, Science Faculty, Northern Territory University, Darwin, NT, 0909, Australia.
Tel: 61 8 8946 7218; Fax: 61 8 8946 7088
Email: nargis@ntu.edu.au

28 June – 2 July 1999 — **Hamburg, Germany**

IGARSS'99. Remote Sensing of System Earth

Contact: IEE GRSS, 17906 St Emilion Court, Spring, TX, 77379, USA.
Tel: 1 281 251 6067; Fax: 1 281 251 6068
Email: tstien@pheonix.net; Web: www.igarss.org

16–20 August 1999 — **Enschede, The Netherlands**

2nd International Symposium on the Operationalization of Remote Sensing

Contact: Attn Ms Loes Colenbrander, c/o ITC, PO Box 6, 7500 AA Enschede, The Netherlands
Tel: 31 53 487 4534; Fax: 31 53 487 4466
Email: colenbrander@itc.nl; Web: www.itc.nl/ags/symposium.htm

October 1999 — **Hong Kong, Peoples Republic of China**

20th Asian Remote Sensing Conference

Contact: chiwa@shunji.iis.u~tokyo.ac.jp

22–26 November 1999 — **Leura, NSW, Australia**

AURISA 99

Contact: ACTS, GPO Box 2200, Canberra, ACT, 2601
Tel: 61 2 6257 3299; Fax: 61 2 6257 3256
Email: aurisa@acts.ccmail.compuserve.com

10–12 January 2000 — **Florida, USA**

Second International Conference on Geospatial Information in Agriculture & Forestry

Contact: ERIM International, PO Box 134008, Ann Arbor, MI 48113-4008
Tel: 1 734 994 1200, ext. 3234; Fax: 1 734 994 5123
Email: wallman@erim-int.com (inquiries only)

16-23 July 2000 — **Amsterdam, The Netherlands**

ISPRS 2000

Contact: ISPRS Organising Committee, C/- ITC, PO Box 6, 7500AA, Enschede, The Netherlands
Tel: 31 53 487 4358; Fax: 31 53 487 4335
Email: ISPRS@itc.nl; Web: www.itc.nl/~isprs

A JERS SAR image of Alice Springs.

NASDA TERMINATES JERS SATELLITE OPERATIONS

A malfunction on the Japanese Earth Resources Satellite (JERS-1) has caused NASDA to transmit commands to terminate the operation of the satellite. The cause of the malfunction is under investigation and NASDA will inform ACRES of the outcome of this study.

The mission of JERS-1 was only meant to last two years, but in the end it was possible to obtain a comprehensive world-wide archive of imagery for about six and a half years.

ACRES has been downlinking JERS-1 data since 24 September 1993 and has an extensive archive of about 17,000 scenes, mainly from the L-band SAR instrument. This valuable dataset will still be available from ACRES and can now be found on ACRES Digital Catalogue at www.auslig.gov.au.

A number of media releases can be viewed at the NASDA Internet site at www.nasda.go.jp

RIA OPENS CANBERRA OFFICE

Mr Terry Boyd and Mr Jeff Bailey, Directors of Resource Industry Associates (RIA) are pleased to announce the opening of their new Canberra Office.

The manager is John Lee, who has 30 years experience in the surveying, mapping and remote sensing industry, including seven years as the ACRES Account Manager.

RIA distributes:

- ACRES services and products
- AUSLIG digital data
- Mr SID — data compression software
- MapInfo — GIS
- ArcView — GIS

and also sells:

- Terrascan — Image Analysis System
- Map Pad — GPS
- Map Pad — Drillog
- Terra Explorer — ArcView Tools
- Flight Simulator Products.

Photo courtesy RIA.

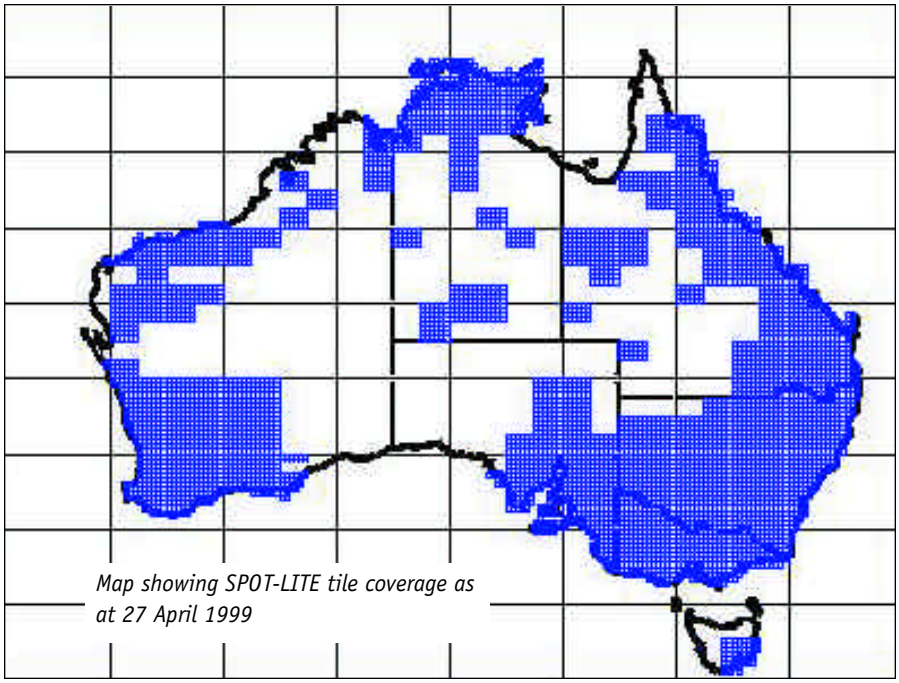
John Lee

Contact details:
37 Hutchins Street
Yarralumla ACT 2600
Tel: 02 6260 5377
Fax: 02 6260 5388
Mobile: 0408 634 471
Email:
johnlee@ria.com.au
Web: www.ria.com.au

UPCOMING REMOTE SENSING SATELLITES

Satellite	Operators	Brief Description	Launch Date	More Information
TERRA	NASA	Multi sensor EOS mission	28 July 1999	terra.nasa.gov
OrbView-3	Orbital Imaging	1m PAN, 4m MS	September 1999	www.orbimage.com
QuickBird 1	EarthWatch	1m PAN, 4m MS	November 1999	www.digitalglobe.com
EO-1	NASA	10m PAN, 30m MS	15 December 1999	eo1.gsfc.nasa.gov
EROS A+ 1	West Indian Space	1.8m MS	Last Quarter of 1999	www.coresw.com
OrbView-4	Orbital Imaging	1m PAN, 4m MS, 8m HS	June 2000	www.orbimage.com
ENVISAT	ESA	Multi sensor mission	Mid 2000	envisat.estec.esa.nl
PM-1	NASA	Microwave Scanning Radiometer	2000	www.ghcc.msfc.nasa.gov
EROS A+ 2	West Indian Space	1.8m MS	2000	www.coresw.com
RADARSAT 2	CSA, Orbital Imaging	3-100m SAR	Late 2001	www.rsi.ca
EROS B 1	West Indian Space	0.8m MS	2001	www.coresw.com
SPOT 5	CNES, Spot Image	3.5m PAN, 10 MS	2002	www.spotimage.fr
ALOS	NASDA	2.5m PAN & MS, 10-100m SAR	2002	www.nasda.go.jp

Satellite imagery of Australia can now be obtained within moments of placing an order through the Internet.



Map showing SPOT-LITE tile coverage as at 27 April 1999

GEODATA SPOT-LITE IS NOW ONLINE!

Launched late last year, GEODATA SPOT-LITE comprises satellite images acquired by ACRES from the French SPOT earth observation satellites.

'There are only a few comparable systems in the world and these have been developed by giant multi-nationals such as the Microsoft Corporation,' said Mr Warren Entsch, Parliamentary Secretary to the Minister for Industry, Science and Resources.

Mr Warren Entsch

'Satellite imagery provides unique benefits as it covers vast tracts of land,' he said. 'The images offered through SPOT-LITE provide accurate, detailed photographic and computer-ready views of the earth's surface.

SPOT-LITE is an orthorectified SPOT Pan image tile corresponding to a 1:50K map sheet area and is available in both UTM and equirectangular projections with either the GDA94 or AGD66 datums. The SPOT-LITE web site can be found at www.auslig.gov.au/spotlite.

'These images were originally used for AUSLIG's national mapping program and, as a by-product of that program, have been made available to the public at a very reasonable price.

'SPOT-LITE should prove useful to a diverse range of organisations within industries such as mining and telecommunications, emergency services, local government and other agencies, as well as being an important component of geographic information systems.'

Trying his hand at the new online catalogue of SPOT satellite imagery is Drew Clarke (left) who launched SPOT-LITE on behalf of Warren Entsch, the Parliamentary Secretary to the Minister for Industry, Science and Resources, with Paul Trezise, Manager of ACRES.

Current SPOT-LITE coverage includes all Australian capital cities and surrounding areas. The database will be updated regularly with images processed for AUSLIG's on-going national mapping program.

SPOT-LITE's cataloguing and distribution system was developed by CSIRO and a national network of SPOT-LITE distributors has been established to provide direct local support to users across Australia.

SPOT-LITE data coverage

The SPOT-LITE database is growing steadily. Currently, the total number of image tiles in the database is 5,777, covering the entire state of Victoria, most of New South Wales, and portions of Western Australia, South Australia, Tasmania, Queensland and Northern Territory, as shown in the map to the left. The average age of SPOT image tiles in the SPOT-LITE database is about 2.4 years.

To purchase SPOT-LITE data follow these easy steps.

1. Go to the SPOT-LITE catalogue and click on the map to find your area of interest and view a browse image of the SPOT-LITE tiles. You can also find your image by specifying a town name in the box provided.
2. Choose your images and add them to the 'shopping basket' list. You can choose up to five images in a single order. Select the 'Download Images' button to order your images.
3. Enter your details into the form provided and choose your preferred distributor from the pick list provided.
4. Download your shopping basket and save it to your local disk. This file is in encrypted format and needs to be decrypted. When you download your shopping basket your distributor is automatically advised of your purchase. You will be contacted to arrange payment and the distributor will then supply the decryption code needed to decrypt your order. Decrypted and decompressed SPOT-LITE images are GIS ready and can be read by most of the desktop GIS packages.

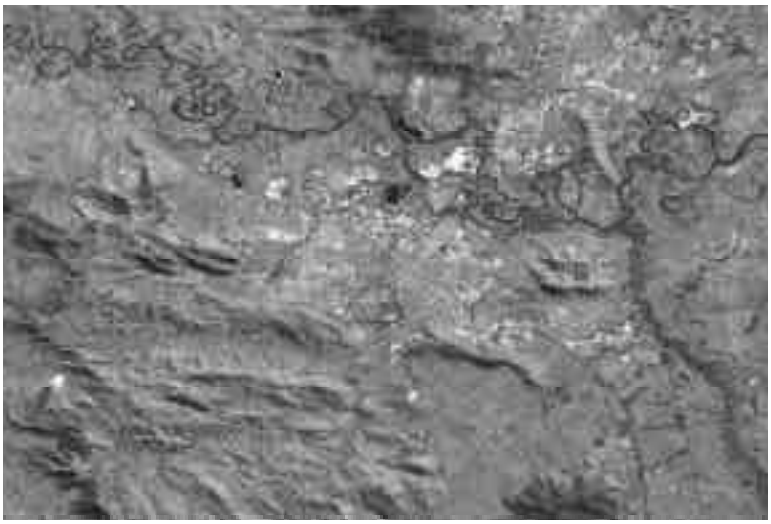
If you need further assistance, the SPOT-LITE web site contains a detailed description on how to purchase SPOT-LITE data.

Customer response to SPOT-LITE web site

The customer response has been very good since the launch. Average weekly statistics since November are as follows:

- 108 unique users access the catalogue page each week;
- an average of 272 tiles are browsed by customers per week.

ACRES has been promoting SPOT-LITE through various means including a launch and media release, advertisements in industry magazines such as *GIS User* and presentations to prospective user groups. ACRES Account Manager Jim Mollison has given several presentations, including the online technology conference in Albury in February, which has generated much interest.



Albury/Wodonga SPOT-LITE imagery.

Esperance SPOT-LITE imagery.

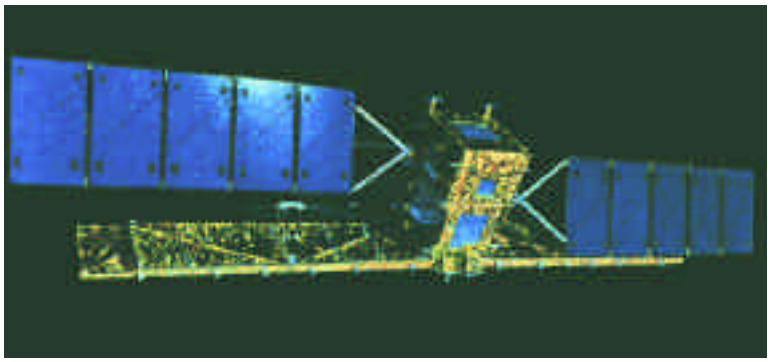
SPOT-LITE ONLINE POPULAR AT AURISA

To support the growing interest in remote sensing products by the GIS market in Australia, AUSLIG exhibited at the AURISA 98 conference last November in Perth.

The focus of the display was to demonstrate AUSLIG's three new products: GEODATA SPOT-LITE, GEODATA TOPO-250K Series 2 and MAPDATA TOPO-2.5M.

The SPOT-LITE product was well received by delegates, many of whom had not used satellite imagery in the past. Many were impressed by the web interface and the ability to select imagery online.

Significant natural hydrocarbon seepage has been detected in the eastern areas of the Great Australian Bight using satellite-based Synthetic Aperture Radar (SAR) data.



SAR IMAGERY MAY REVEAL NEW OIL RESERVES IN GREAT AUSTRALIAN BIGHT

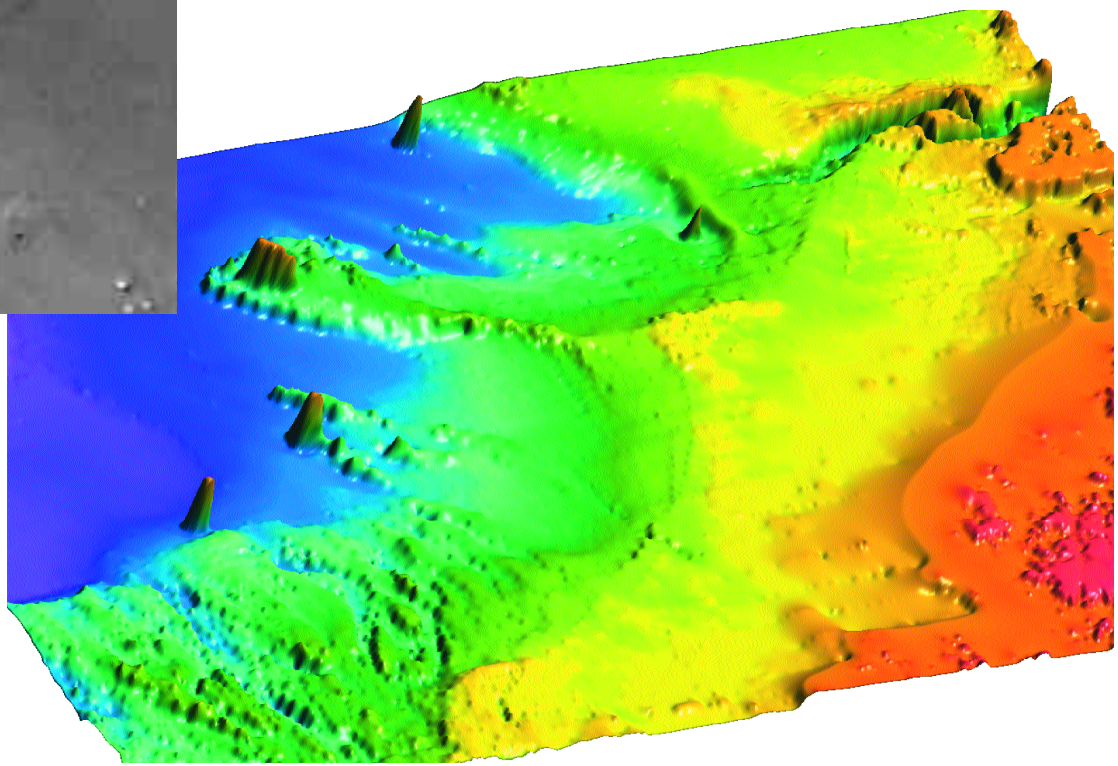
A multinational team of researchers presented the results of their research to the petroleum exploration industry at a workshop in Perth in April.

'SAR data can detect the presence of natural oil slicks caused by the seepage of hydrocarbons from beneath the sea floor because they rise to the surface of the sea and produce a smoothing of the sea's surface. This, in turn, produces a dark area on the SAR image,' said research team leader Dr Geoffrey O'Brien, from the Australian Geological Survey Organisation (AGSO).

The results may indicate the presence of major, as yet undiscovered oil reserves in this virtually unexplored region and were released simultaneously with the Federal Government announcement of new exploration areas in the Great Australian Bight open for bidding.

'The study was possible because we were able to bring together a team of government and industry scientists from AGSO, the Australian Surveying and Land Information Group (AUSLIG), Nigel Press and Associates (NPA) of the UK, and RadarSat International (RSI) of Canada,' said Parliamentary Secretary to the Minister for Industry, Science and Resources, Warren Entsch.

The ongoing investigation of the natural hydrocarbon seepage within the entire Great Australian Bight requires the interpretation of more than 60 RADARSAT Wide 1 Beam images and integrating these results with AGSO's extensive seismic and geological information from the region. The study is due for completion by October.



Above: Natural oil slicks are detectable as black patches on this RADARSAT wide subscene showing part of the Cornea Field, in the Timor Sea, located North of Australia.

TESTING OF SAR DATA CAPABILITY TO DETECT OIL SPILLS IN NEW ZEALAND

Two Landcare researchers are gathering data about New Zealand's five major ports which will be vital for mapping and monitoring in the event of a disastrous oil spill.

Research scientists Stephen McNeill and Stella Belliss, with the cooperation of the New Zealand Maritime Safety Authority (MSA) and several regional councils and harbour authorities, started collecting data and ground truthing in January.

They are testing the use of ERS and RADARSAT C-band synthetic aperture radar (SAR) data to detect oil in the New Zealand marine environment. RADARSAT is also providing an equivalent set of data for the investigation.

By testing the ability of satellite imagery to aid in oil spill detection, the project will help local authorities deal with future oil spills.

Project title

A proving test for ERS/ENVISAT data for oil spill provenance in the New Zealand marine environment: baseline mapping, ship discharge incident investigation and prosecution.

Description

The project involves the acquisition of data over five New Zealand ports: Northland, Tauranga, New Plymouth, Wellington and Lyttelton. These will then be processed and analysed. The first acquisitions, over Taranaki and Tuaranga, began in January. The five ERS-2 scenes of New Zealand will be acquired by the Australian Centre for Remote Sensing (ACRES) via the Hobart receiving station. RADARSAT data will be acquired via the onboard tape recorders.

Background

In New Zealand, the responsibility for oil spill response depends on the effective interaction between a variety of agencies in central, regional and local government, industry and other public bodies.

Regional councils are responsible for keeping coastlines and harbours pollution-free, and the MSA is responsible for investigating ship discharge incidents. To successfully prosecute ship owners, it is necessary to prove the provenance of a given oil spill.

Detection in the New Zealand environment

Given that New Zealand has the fourth largest Exclusive Economic Zone (EEZ) in the world, to some extent routine monitoring of New Zealand's whole EEZ is uneconomic. It is more practical to use sophisticated monitoring methods close to land where a spill has been noted, and for subsequent monitoring and mitigation of known disasters, and especially for the provenance of the oil spill.

In the case of accidents, the spill is likely to be reported and SAR imagery may be used to keep track of the drift and spread of the oil slick. However, illegal discharges from ships cleaning their tanks and from their bilges may prove to be a much more serious source of pollution. A practical limitation within New Zealand waters is the fact that oil-spill monitoring using space-based SAR data is typically limited to a range defined by upper (10-12m s-1, or 19-23 knots) and lower (2-3m s-1 or 4-6 knots) wind speed limits. Below 2-3m s-1, SAR images of the ocean become dark because the Bragg scattering waves are not present. In this case, it is almost impossible to distinguish different features on the sea surface. Above 10m s-1, most kinds of oil are dispersed by the wind waves, although they can reappear during subsequent calm weather.

The New Zealand maritime environment sees relatively high average wind speeds. Average harbour windspeeds of 15-20 knots are not uncommon. This places some constraints on the likelihood of oil detection from SAR imagery on a number of given days per year. The distribution of average windspeeds in New Zealand harbour does not change appreciably over the year.

Project plan

On the days of data acquisition, the researchers are gathering in situ ground truth on the harbour state, co-incident optical satellite data, and the meterological conditions for all harbours. Local natural and man-made oil spills will be noted for all these harbours, in an effort to match random natural and illegal spills with fixed SAR backscatter responses.

Later, the SAR data will be automatically geocoded, enhanced using a pre-defined procedure, then dispatched by automated electronic delivery to trained interpreters to view along with ground truth data.

If the use of SAR data for oil spill detection proves successful in the pilot project, then MSA, in conjunction with Landcare Research, would be able to develop its use to improve the way it manages such disasters.

INTRODUCING THREE NEW ACCOUNT MANAGERS

Following external advertisement last year, AUSLIG appointed three new staff as Remote Sensing Account Managers.

Jim Mollison

Jim Mollison left the warmth of Central Queensland about six years ago (as a single man!) to take up the role of Account Manager at ACRES. Prior to this Jim had worked as a sales agronomist with Queensland Cotton in Biloela, a high school teacher of agriculture in the Solomon Islands and a soil convervationist in Emerald with the Queensland Department of Primary Industries. As you may guess, his qualifications and interests are in Agricultural Science (and he also married a Rockhampton girl, Claire, during one of his pilgrimages back to Queensland).

Jim Mollison

Jim's role as an Account Manager at ACRES has changed over the years so that now he is the dedicated Account Manager for all ACRES distributors. He is involved in any activity which can help distributors and the success of their remote sensing business. Jim feels that his experience with Qld Cotton as a distributor of agricultural products gave him first hand knowledge and experience in the types of issues and problems that can affect any distributor.

'I also enjoy the contact with people that this job brings, especially distributors. The diversity of issues needing attention and the timing with which they arise ensures that my average workday is rarely predictable or boring. I quite enjoy helping customers as best I can,' Jim said.

Jim's experience with ACRES also gave him the background to perform the roles of Acting Retail Sales Manager and Acting Remote Sensing Product Manager for two and a half years.

Despite never having acclimatised to the chilly southern weather ('the nine-month long winters'), Jim is enjoying living in close proximity to the beautiful scenery, national parks and beaches of southern Australia.

Alla Metlenko

Alla Metlenko started with AUSLIG in January 1998 with the Maritime Boundaries Program. Recently she 'jumped ship' to join the Information Access Program. As the ACRES direct client Account Manager, her main focus is to ensure her direct clients are provided with all the necessary assistance and information when purchasing ACRES products. Her aim is to provide good and friendly service, with assistance to any technical queries that may arise. With a Bachelor Degree with Honours in Land Information and a Masters in Remote Sensing and GIS, she feels confident in providing advice (if required) in remote sensing applications. One of her main interests in life is to keep fit by playing competition squash, running and going to the gym occasionally. She loves to read, go horse riding and fishing when on holidays and enjoys a good 'drop of Australian red'. Her ambition is to be successful in whatever she attempts and be happy when doing it.

Alla Metlenko

Medhavy Thankappan

Medhavy was a scientist at the Space Applications Centre of the Indian Space Research Organisation for nine years before he migrated to Australia. He brings with him an extensive experience of using a range of digital satellite data from optical and microwave sensors for various remote sensing applications. With a Masters degree in Agronomy his main application area was crop production forecasting using remote sensing. He was also involved in the transfer of technology in remote sensing applications to various organisations in India and has a number of remote sensing publications to his credit. After a brief stint with the State Rail Authority of New South Wales in Sydney, in a totally different field, he joined AUSLIG because 'the addiction to remote sensing was far too strong to ignore'.

Medhavy Thankappan

Now in the Information Access Program at AUSLIG, he is working on a joint project with the Australian Geological Survey Organisation in developing an educational resource kit called 'Discovering Remote Sensing' for high school students. The project aims to increase awareness about remote sensing and generate interest for the subject amongst students. He will be involved in promotional activities and in developing new market opportunities for ACRES products. SPOT-LITE is a recent introduction to the data products market and is high on his agenda for promotion. SPOT-LITE offers customers the convenience of buying satellite imagery through the internet. Liaising with strategic partners for development of new applications for ACRES products is another area where he would be involved.

He thinks that his initial apprehensions about leaving Sydney were quite unfounded as he and his wife Sujaya, along with daughters five-year old Aditi and two-year old Arti, find Canberra a great place to live.

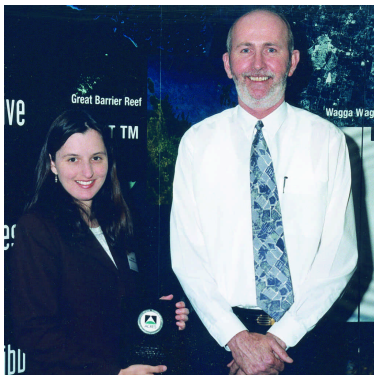
Medhavy enjoys his new role, with its emphasis on customer orientation and thinks that helpful and friendly colleagues make the working environment at AUSLIG excellent.

ACRES ANNUAL DISTRIBUTORS MEETING

Ross Lincolne of Space Images, Tasmania, accepts the ACRES Gold Award for Excellence in Sales Growth.

Richard Smith accepts the Bronze Award for Excellence in Overall Sales on behalf of Satellite Remote Sensing Services (DOLA), WA.

Bob Walker of GEOIMAGE, receives the Gold Award for Excellence in Overall Sales from Peter Holland, AUSLIG General Manager.



From Queensland, Jo Plunkett accepts the Silver Award for Excellence in Overall Sales for the Remote Sensing Unit of DNR QLD.

ACRES held its annual distributor meeting in early December, in conjunction with SPOT Imaging Services. The meeting provided the opportunity for ACRES distributors to share ideas about the remote sensing market.

It also provides a forum for the exchange of ideas and information between ACRES and its distributors, especially the impact of Landsat 7 and its distribution.

Awards for excellence in sales of remote sensing products were also announced.

GOLD *for excellence in overall sales*

GEOIMAGE

GOLD *for excellence in sales growth*

Space Images, Tasmania

SILVER *for excellence in overall sales*

Remote Sensing Unit, DNR Qld

BRONZE *for excellence in overall sales*

Satellite Remote Sensing Services (DOLA), WA

Below: Ross Lincolne (left), of Spaces Images, Tasmania and David Hart, Department for Environment, Heritage and Aboriginal Affairs (SA) unwind towards the end of the ACRES dinner with distributors.

RADARSAT DISTRIBUTORS MEET

Late last year, ACRES and RSI held a meeting in Sydney for the Australasian distributors of RADARSAT data. These distributors are GEOIMAGE, Geo Mapping Technologies, ERIC, Landcare Research, Satellite Remote Sensing Services (DOLA) and AGRECON.

The meeting was a useful forum to update ACRES RADARSAT distributors on the latest products and services from RSI and associated applications. Of particular interest was RSI's new Emergency Response Subscription Service and its benefits.

Guest speakers included Dr Vern Singhroy from the Canadian Centre for Remote Sensing who spoke about geological and geomorphological mapping, and Ahmed Mahmood from the Canadian Space Agency who gave an insight into RADARSAT's background mission.

ACRES RADARSAT distributors also gave presentations describing various local projects that they have been undertaking using RADARSAT imagery.

RSI also presented awards to Australasian distributors. GEOIMAGE received the Excellence in Sales Award whilst an Innovations Award was given to both Environmental Research & Information Consortium (ERIC) and Geo Mapping Technologies.

ACRES DISTRIBUTORS

AUSTRALIAN CAPITAL TERRITORY

AGRECON
170 Hayden Drive
Bruce ACT 2617
PO Box 1
Belconnen ACT 2616
Tel: (02) 6201 2565 (BH)
Fax: (02) 6201 5353 (BH)
Tel/Fax: (02) 6227 5021 (AH)
Mobile: 0413 048 863
Email:
buttonb@agrecon.canberra.edu.au
Web: www.agrecon.canberra.edu.au

Environmental Research & Information Consortium (ERIC)
2 Napier Close
PO Box 179
Deakin West ACT 2600
Tel: (02) 6260 5161
Fax: (02) 6260 5162
Email: ericpl@ozemail.com.au
Web: www.eric.com.au

Resource Industry Associates (RIA)
37 Hutchins Street
Yarralumla ACT 2600
Tel: 02 6260 5377
Fax: 02 6260 5388
Mobile: 0408 634 471
Email: johnlee@ria.com.au
Web: www.ria.com.au

NEW SOUTH WALES

ENCOM Technology
Level 2, 118 Alfred Street
PO Box 422
Milsons Point NSW 2061
Tel: (02) 9957 4117
Fax: (02) 9922 6141
Email: info@encom.com.au
Web: www.encom.com.au

SPOT Imaging Services (SIS)
Suite 202
156 Pacific Highway
PO Box 197
St Leonards NSW 2065
Tel: (02) 9906 1733
Fax: (02) 9906 5109
Email:
spotimage@spotimage.com.au
Web: www.spotimage.com.au

Land Information Centre (LIC)
Department of Information Technology and Management
Panorama Avenue
PO Box 143
Bathurst NSW 2795
Tel: (02) 6332 8419
Fax: (02) 6332 8296
Email: info@lic.gov.au
Web: www.lic.gov.au

NORTHERN TERRITORY

GEOIMAGE
Suite G7 Paspalis Centrepoint Building
48-50 The Smith Street Mall
Darwin NT 0800
GPO Box 3499
Darwin NT 0801
Tel: (08) 8941 3677
Fax: (08) 8941 3670
Email: darwin@geoimage.com.au
Web: www.geoimage.com.au

QUEENSLAND

Department of Natural Resources
Remote Sensing Unit
Cnr Main and Vulture Streets
Woolloongabba QLD 4102
Locked Bag 40
Coorparoo Delivery Cntr QLD 4151
Tel: (07) 3896 3187
Fax: (07) 3406 2762
Email:
jo.plunkett@dnr.qld.gov.au
Web: www.dnr.qld.gov.au/slats

GEOIMAGE
13/180 Moggill Road
Taringa QLD 4068
PO Box 789
Indooroopilly QLD 4068
Tel: (07) 3871 0088
Fax: (07) 3871 0042
Email:
geoimage@geoimage.com.au
Web: www.geoimage.com.au

Geo Mapping Technologies
Suite 2B, 17 Peel Street
PO Box 3857
South Brisbane QLD 4101
Tel: (07) 3846 2992
Fax: (07) 3846 2588
Email: geomap@ozemail.com.au
Web: www.geomap.com.au

SOUTH AUSTRALIA

Department for Environment, Heritage and Aboriginal Affairs (DEHAA)
Resource Information
Image Data
Mapland, Building 2
300 Richmond Road
Netley SA 5037
PO Box 550
Marleston SA 5033
Tel: (08) 8226 4903
Fax: (08) 8226 4906
Email: jcameron@dehaa.sa.gov.au
Web: www.dehaa.sa.gov.au

TASMANIA

Space Images
Central Science Laboratory
University of Tasmania
Sandy Bay TAS 7005
GPO Box 252-74
Hobart TAS 7001
Tel: (03) 6226 2156
Fax: (03) 6226 2494
Answering Machine:
(03) 6223 3975
Email: enquiries@spaceimages.utas.edu.au
Web: www.spaceimages.utas.edu.au

VICTORIA

Resource Industry Associates (RIA)
538 Brunswick Street
North Fitzroy VIC 3068
Tel: (03) 9482 4945
Fax: (03) 9482 4956
Email: info@ria.com.au
Web: www.ria.com.au

GEODATA SPOT-LITE ONLY
Natural Resource Systems (NRS)
Level 2, 121 William Street
Melbourne VIC 3000
PO Box 20
Collins Street West, VIC 8007
Tel: (03) 9269 4575
Fax: (03) 9269 4500
Email: j.white@nrsc.com.au
Web: www.nrsc.com.au

GEODATA SPOT-LITE ONLY
ERSIS Australia
Level 2, 436 St Kilda Road
South Melbourne VIC 3205
Tel: (03) 9867 7322
Fax: (03) 9867 7422
Email: adriant@ersis.com.au
Web: www.datamall.com.au

WESTERN AUSTRALIA

GEOIMAGE
Unit 1, 66 Mill Point Road
South Perth WA 6151
PO Box 1065
South Perth WA 6951
Tel: (08) 9367 6700
Fax: (08) 9367 6745
Email: perth@geoimage.com.au
Web: www.geoimage.com.au

Satellite Remote Sensing Services
Department of Land Administration
65 Brockway Road
Floreat WA 6014
PO Box 471
Wembley WA 6014
Tel: (08) 9340 9330
Fax: (08) 9383 7142
Email: richard_smith@notes.dola.wa.gov.au
Web: www.rss.dola.wa.gov.au

GEODATA SPOT-LITE ONLY
NGIS Australia
Level 1, 161 Great Eastern HWY
Belmont WA 6104
Tel: (08) 9277 9600
Fax: (08) 9277 9611
Email: ngis@ngis.com.au
Web: www.ngis.com.au

INTERNATIONAL

Landcare Research
Canterbury Agriculture & Science Centre
Gerald Street
PO Box 69
Lincoln 8152
New Zealand
Tel: +64 3 325 6700
Fax: +64 3 325 2418
Email: bellisss@landcare.cri.nz
Web: www.landcare.cri.nz

PT Indica Dharma Consulting Services
Golden Plaza Blok 43-44
Fatmawati No 15, Jakarta
Indonesia
Tel: +62 21 750 8986
Fax: +62 21 750 8985
Email: indica@server.indo.net.id

Space Imaging
International Headquarters
4300 Forbes Boulevard
Lanham Maryland 20706 USA
Tel: +1 301 552 0537
Fax: +1 301 552 3762
Web: www.spaceimaging.com

Australian Centre for Remote Sensing
Scrivener Building,
Dunlop Court, Fern Hill Park,
Bruce ACT 2617
PO Box 28
Belconnen ACT 2616
Freecall 1800 800 173
Tel: (02) 6201 4107
Fax: (02) 6201 4240
Email: acres@auslig.gov.au
Web: www.auslig.gov.au

ACRES

ACRES is a business unit of Australia's national mapping agency, AUSLIG, Commonwealth Department of Industry, Science and Resources.

AUSLIG

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