



# acres news

*Australian Centre for Remote Sensing*

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## AUSTRALIA'S REMOTE SENSING STATION NOW WORLD CLASS

New facilities worth \$3.7 million were commissioned by the Minister for Administrative Services, Senator Nick Bolkus at the ACRES Data Acquisition Facility (DAF) in Alice Springs on 26 July 1990. The facilities include buildings, an improved antenna configuration and a range of sophisticated computer equipment.

'ACRES can now gain access to a wider range of satellites and their high resolution imagery' said Senator Bolkus.

'This will provide new opportunities in urban and regional planning and for topographic mapping applications.'

'There are substantial benefits to Australia by participating in high technology areas such as remote sensing.'

'For example, these facilities will provide Australia with a powerful capability to monitor and manage its natural resources and environment.'

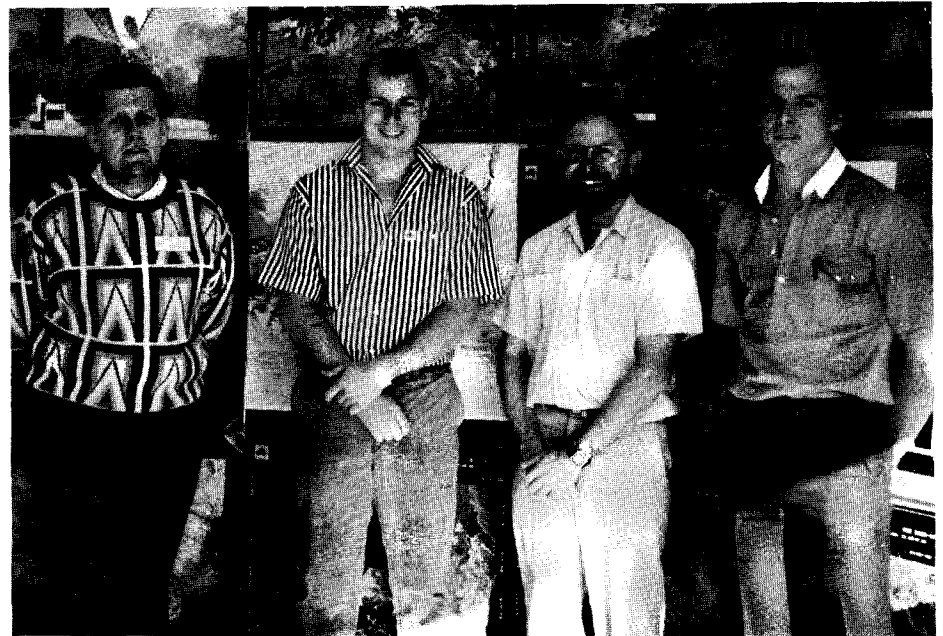
'Senator Bolkus said that Governments, both State and Federal, private industry and research organisations were increasingly using satellite images.'

'Images received can help to discover and accurately define mineral and forestry resources, manage the environment, provide a better understanding of the oceans surrounding Australia and monitor natural disasters such as floods and bushfires.'

'Our commitment to remote sensing in Australia is shown by the \$15 million invested in ACRES over the past four to five years' said Senator Bolkus.



## ACRES DATA ACQUISITION FACILITY



*DAF staff (left to right) Mr Warren Serrone, Mr Shaun Evans, Mr John Wollner and Mr William Willis.*

The ACRES Data Acquisition Facility (DAF) is situated on Heath Road, Alice Springs. This site was chosen because the whole Australian landmass and surrounding waters could be obtained from this single location. Data is acquired here with the aid of a 9.14m steerable parabolic dish antenna and associated electronic equipment.

The DAF is staffed by a team of highly trained technicians who monitor progress as each satellite within the antenna's range is tracked during almost every overpass. Each satellite is tracked from the moment it appears at the northern horizon, for up to 15 minutes, until the satellite disappears from range in the south. The satellite images are recorded in digital form on high density digital tapes as continuous streams of data and transferred by commercial airline to the data processing facility in Canberra where the tapes are catalogued and archived.

At present, ACRES receives data from LANDSAT 4 and 5, SPOT and NOAA. Data are recorded and archived by satellite pass which allows coverage over any region to be extracted by its geographical co-ordinates.

*Senator Nick Bolkus, Minister for Administrative and Mr Walter Lamond, Assistant General Manager, Policy and Information Services, AUSLIG at the commissioning of the DAF, 26 July 1990.*

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## MANAGERS MESSAGE



Carl McMaster, Manager ACRES

Many readers will know that ACRES data acquisition, processing and distribution functions are carried out by private industry under the terms of a contract with AUSLIG. Dennis Puniard as the Director — Operations oversees this contract on behalf of AUSLIG and Paul Wise Director — Applications leads the six AUSLIG staff at ACRES Applications who make value added products and provide project services.

AWA Limited have been the operations contractor for the past 4 years. However, following the public tender process Computer Sciences (CSA), will provide the operations service, beginning 1 October, 1990 for the next 3 years.

Most AWA ACRES staff will transfer to CSA and we are looking forward to servicing the satellite data requirements of Australia's remote sensing community. As you know, whilst LANDSAT and

SPOT are our primary satellites, MOS and NOAA products are also distributed and ERS-1 data should be available from mid 1991.

This contract will encompass a period of change within the industry both in the number of datasets available and in the variety of users.

ACRES believes it is in good shape to meet the challenges of these changes.

## FROM THE DIRECTOR'S DESK

Since taking over as Director of Operations in March 1990, I have seen a number of significant changes take place at ACRES. ACRES hosted a very rewarding and educational LGSWG meeting in Canberra in May. We issued a request for tender for operational and maintenance services for ACRES and have selected a new contractor — Computer Sciences of Australia jointly with

Macdonald Dettwiler of Canada. We officially began reception of SPOT data in May and issued new product lines and prices on 1 July. Our Minister, Senator Nick Bolkus, officially opened our upgraded facilities at Alice Springs on 26 July and we have recently taken delivery of our ERS-1 receiving equipment from British Aerospace at Alice Springs. We have also decided to meet customer needs and produce LANDSAT and SPOT data on floppy disks.

With new product lines, a new contractor and a more market oriented approach, the future looks good.

ACRES always strives to provide you, our customers, with quality products in an efficient manner and at the right price. Feedback from customers, positive or negative is always appreciated so don't hesitate to contact me or other relevant ACRES staff with your praises or brick bats.

DENNIS J PUNIARD  
*Director Operations*

## 5TH AUSTRALASIAN REMOTE SENSING CONFERENCE UPDATE

The Conference Chairman, Mr Henry Houghton advises that planning is proceeding on schedule. The Conference program has been developed to cater for the interests of all attendees. In addition to technical and poster sessions there will be presentations from the major satellite data providers: EOSAT (Mr C P Williams, President), SPOT Image (Mr G Brachet, Chairman and Managing Director), NOAA and NASDA, Japan (Mr Tasuku Tanaka, Director), on the status of existing Earth Observation Satellites, and on future plans for SPOT-3, 4, Landsat-6, JERS-1 and the Earth Observation Programme beyond the year 2000.

AUSTRADE and the Asian Development Bank (Environment and Remote Sensing Programme) will also provide presentations.

A number of workshops and user group meetings will run in conjunction with the conference program and include

- CSIRO Office of Space Science and Applications (COSSA) to be held on board the COSSA F-27 Fokker research aircraft
- Theory and Image Processing Workshop (demonstration ER Mapper)
- TYDAC Spans User Group
- DISIMP User Group; and
- microBRIAN International User Group.

Details on dates, times and locations for workshops and user group meetings can be obtained from the

Conference Secretariat,  
Remote Sensing Applications Centre,  
Department of Land Administration,  
PO Box 1215,  
WEST PERTH, WA, 6000,  
Telephone: 09 323 1520  
Fax 09 321 8576.

A diverse trade exhibition has also been organised. Companies exhibiting include: CSIRO Office of Space Science and

Applications  
Victorian Forests Commission  
James Cook University  
World Geoscience Corporation  
Earth Resources Mapping  
ESRI Australia  
Australian Centre for Remote Sensing  
Spot Imaging Services/SPOT IMAGE  
Centre for Remote Sensing, University  
of NSW  
Dames and Moore  
Geoscan  
MPA International  
W.A. Remote Sensing Applications  
Centre  
S.A. Centre for Remote Sensing  
PHM Western Australia  
PCI Incorporated  
TYDAC Technologies  
ITRES Research  
Australian Space Office  
National Resource Information Centre/  
W.A. Land Information Secretariat  
GS Corporation  
MacDonald Dettwiler Technologies Ltd  
Image-Tech International  
Exploration Computer Services  
Terra Marr

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

**DAS** Service  
is Our  
Business

# MARKETING AND SALES

ACRES data sales for the 1989 calendar year exceeded \$1m for the first time. Details of sales by product type and a comparison by customer segment appear below. The data was prepared for the 20th LGSWG meeting and is extracted from that report.

**TABLE 1**  
1989 DATA SALES BY PRODUCT TYPE

PRODUCT TYPE	TM VALUE \$	MSS VALUE \$
Full Scene CCT	266,239	145,936
CCT Quads	469,668	
Geocoded CCT	14,940	
Floppy disks	21,900	
Colour Photographic	34,585	136,508
B & W Photographic	5,006	12,633
Total	812,338	295,104

Total Landsat data sales for the period = \$1,107,442. The above statistics include the ACRES portion of AMIRA sales during the period.

**TABLE 2**  
DATA SALES, 1987-1989 BY CUSTOMER SEGMENT

CUSTOMER SEGMENT	% OF TOTAL		
	1989	1988	1987
Agriculture	14	6	10
Education	4	4	4
Environment	11	8	14
Forestry	5	3	3
Geology/Exploration	49	62	44
Water Resources	4	1	4
Marine Resources	3	5	2
Land Use/Mapping	4	8	14
Other	6	3	5

## ACRES SPOT NEWS

The ACRES SPOT direct reception archive has been growing consistently since 1 May 1990. ACRES also holds a limited SPOT archive (ex France) for data acquired pre May 1990. For further information please contact ACRES Customer Services, Marketing and Sales Section.

## SPOT Programming Requests

The first official programming request for SPOT data was acquired, cloud free, on the first attempt. ACRES SPOT Programming Requests (PR) are available at a programming fee of \$600 per scene, payable on successful acquisition. A PR may be placed with ACRES up to three months but not less than two weeks prior to its commencement. The **maximum duration** of a PR is **three months**.

A PR will not be accepted unless submitted on the appropriate ACRES PR form which can then be faxed or mailed to ACRES Customer Services personnel. (PR forms will be available on request from ACRES and all Distributors and Reference Centres.)

## LANDSAT Programming Requests

Because the data acquisition facility (DAF) at Alice Springs has only one antenna there is the possibility of conflicts between satellites. Therefore, clients who use LANDSAT data to monitor specific areas should place a LANDSAT PR for the particular Path/Row they require.

The LANDSAT PR should be forwarded to ACRES with the product order. The same time restrictions apply on LANDSAT PR's (ie up to three months before and not later than two weeks prior to commencement).

At present, no programming fees apply to LANDSAT PR's but this is subject to review in 1991.

## Conditions of Sale Agreement

The initial purchase of SPOT data by an organisation or individual has always involved the signing of a *Conditions of Sale of SPOT data Agreement*. As from 1 July 1990, it is also a prerequisite that all first time purchasers of LANDSAT data sign a *Conditions of Sale of LANDSAT Data Agreement*.

## LANDSAT MSS SIXTEENTH SCENE AND QUARTER SCENE ARCHIVED NEGATIVES

There are approximately 10,000 individual colour and black and white negatives in the ACRES archive. Customers wishing to order from the archives should contact Customer Services, ACRES Marketing and Sales on (06) 252 4411.

**NEW PRICE LISTS FOR LANDSAT MSS, TM, SPOT, FLOPPY DISKS, CUSTOMISED PRODUCTS AND IMAGE WRITING SERVICE ARE NOW AVAILABLE**

## "Priorities" are back

ACRES are offering priority processing at penalty rates for fast throughput of customer orders.

Priority 1 is available at 3.5 times standard prices and Priority 2 is available at double

standard prices. These rates apply to all ACRES data sets as well as the image writing service.

## 5TH AUSTRALASIAN REMOTE SENSING CONFERENCE

### Acres Trade Exhibit

Delegates and visitors are invited to view the ACRES stand at the forthcoming remote sensing conference at Observation City Resort, Scarborough Beach, Perth in October.

The ACRES "on-line catalogue" will be available for archived image enquiries and a color microfiche for Landsat, SPOT and NOAA-AVHRR will be available to support the text data base.

In addition, a range of data types and processing levels will be demonstrated both as hardcopy and on floppy disk.

Mr Joe Gatto from EOSAT will also be available to answer any enquiries.

## Distributor and Reference Centre Sales Meeting

ACRES will be holding a meeting of its Distributor and Reference Centre organisations on Sunday 7 October, preceding the Conference. Representatives from all organisations have been invited to attend.

## MicroImage Catalogues

Renewals on orders for the ACRES Landsat TM colour MicroImage Catalogue for the 1991 calendar year are due. Prices are as follows:

FORMAT	PRODUCT CODE	ANNUAL SUBSCRIPTION
<b>A) TOTAL IMAGE CATALOGUE:</b>		
9 Microfiche	FTOT	\$750.00
<b>B) PART CATALOGUE:</b>		
5 Microfiche	FPRT	\$500.00
4 Microfiche	FPRT	\$400.00
3 Microfiche	FPRT	\$300.00
2 Microfiche	FPRT	\$200.00
1 Microfiche	FPRT	\$100.00

**Note:**  
Catalogue consists of 2 parts — MicroImage (colour)  
Catalogue and a MicroData (text) Catalogue.

**TO ENCOURAGE SALES, ACRES LANDSAT THEMATIC MAPPER LEVELS 6 AND 9 CCT PRODUCTS WILL BE DISCOUNTED BY \$200.00.**

## Order Processing

ACRES Customer Service Officers would appreciate customers illustrating their area of interest as a rectangle on a 1:1 000 000 scale map sheet to facilitate correct calculation of the relative position of their required coverage area (relative to the scene framing). Such assistance would cut down the response time and error rate on processing of customer enquiries.

## Orders for Cloud Free Imagery

Regretfully, ACRES is unable to guarantee total cloud free data under normal order processing procedures. Customers requiring cloud free data need specialised order processing that will be subject to a surcharge.

Data products stated as "0000" assessed image quality fall into ACRES acceptable range as category 0 = 0-9% cloud or line dropouts per quadrant. To prevent any misunderstanding, it should be explained that image quality assessment is made on the basis of a 3 band data set for Landsat TM, SPOT XS and NOAA-AVHRR and a single band for SPOT PA. All data sets are viewed as decimated data.

A full sampling of every line and pixel across all available bands per data set can be carried out but this procedure is outside the normal ACRES cataloguing process.

ACRES does offer a specialised ordering service for customers requiring 100% cloud free, dropout free data sets and customers should state requirements for this procedure at time of order. Please contact ACRES Customer Services for more details.

## Rejected Products

Due to the large volume of ACRES throughput, some errors in data processing do occur however these are a very small percentage of the total. Rejected products are **only** those products which have data errors or have sustained damage in transit.

Rejected products do not include products ordered under normal processing requests as "0" cloud coverage which may contain 0-9% cloud as per ACRES definition. Customers requiring 100% cloud free, drop out free imagery should state their requirements at time of order. Please note these special processing requests attract a surcharge.

## Customer Image Writing

A new data sheet is available with prices and specifications for ACRES Customer Image Writing Service including details of colour and monochrome (1 band) output from the FIRE and black and white output from the Optronics image writers.

## ACRES PILOT PROJECTS

Remote sensing technology has gained increasing acceptance in Australia during the past decade. ACRES market research indicates that there are still many areas both within government and private industry that represent potential users. Unfortunately, many potential users have not been able to access the technology for various technical, social and economic reasons. However, these identified potential users can be converted into actual users by means of developmental programs aimed at specialised commercial applications. As a result, the ACRES Pilot Project Program is aimed at encouraging R & D and technology transfer organisations to develop techniques or specialised products and services for operational end users. All ACRES pilot projects should ultimately assist in developing existing and new markets for ACRES satellite data products and services and are designed to assist organisations who are interested in:

- developing new applications
- developing new processing techniques
- developing new and specialised products using ACRES data

Organisations who can achieve these objectives and have a demonstrated interest can obtain free data from ACRES by lodging a written request with the Director of Operations. Enquiries in the first instance should be addressed to Ms Jenny Weissel, Marketing Manager, (06) 252 4408.

Five pilot project studies are now registered with ACRES and have received no charge data. These are:

1. Western Australian Dept of Agriculture.  
Land Degradation Monitoring — Mapping salinity of farmland  
Status: successful — interim report received.
2. Bureau of Mineral Resources Geology and Geophysics  
Geological Mapping  
Status: in progress — no report yet received
3. CSIRO-Division of Mathematics and Statistics/Spectrascan Pty. Ltd.  
Evaluation of Landsat TM imagery for farm management purposes  
Status: in progress — no report yet received.
4. Department of Agriculture and Rural Affairs Vic/Resource Industry Associates  
Land degradation monitoring — identification of salinity effected areas  
Status: in progress — no report yet received
5. CLS- ARGOS Australasia  
Feasibility of using satellite imagery to identify the location of fishing vessel groups  
Status: shortly to begin.

The following summary has been prepared from an interim report "Mapping Dryland

Salinity in the Moora District of Western Australia.

This pilot project forms part of a project carried under the National Soil Conservation Programme (NSCP) and aims to

- further refine remote sensing methods of mapping salinity, water-logging, wind erosion hazard and remnant vegetation and
- use these methods to map the spatial extent of soil degradation and remnant vegetation in three specific agricultural regions of Western Australia.

The study has shown that LANDSAT TM data provides a practical means of detecting and mapping salinity within the study area. There is discrimination of salt affected areas in the spectral data but the report outlines the need to choose data from an appropriate time of year (September and November data were used for the project).

Anyone requiring information about the project should contact Buddy Wheaton, Division of Resource Management, Department of Agriculture, WA or Jeremy Wallace, Division of Mathematics and Statistics, CSIRO, WA.

## LANDSAT 6 CANADIAN SYSTEMS CONTRACT AWARDED

The Canadian Government has awarded their LANDSAT-6 systems contract to Macdonald Dettwiler. LANDSAT-6 will provide higher resolution data requiring more sophisticated ground processing than previous LANDSAT satellites. The two LANDSAT-6 systems being developed under the contract will be able to accept data directly from the satellite downlink providing a moving window display and then storing the data. The two systems will feature new Modular Multisatellite Preprocessors (MMSP's) which incorporate modular hardware and firmware designs permitting modular additions to the base unit to support preprocessing of data from multiple optical or synthetic aperture radar remote sensing satellites, all within a single computer controlled unit.

## GIS SOFTWARE RELEASE

The Geographic Resource Analysis Support System (GRASS) software developed by the US Army Construction Engineering Research Laboratory in Campaign IL is written entirely in the C programming language. GRASS includes extensive functions for vector digitizing and display, raster analysis and display, and image processing. Further information about this 'public domain' package can be obtained from TSG Inc, 3649 Cherbourg Road, Marietta GA 30062 USA.

# APPLICATIONS NEWS

## CUSTOMISED PRODUCTS

ACRES is now able to offer a range of customised products including digital mosaics, classifications, (with and without ground truth information) and enhancements. In addition, various integrated data sets (combined raster and vector information) and data packages can also be provided.

These customised products will allow ACRES clients to specify their requirements and receive a product tailored to their specific needs.

To discuss your requirements please contact Mr Craig Smith, ACRES APPLICATIONS on (06) 252 4442.

## MERGED DATA SETS — MULTISPECTRAL COLOUR WITH SPOT PANCHROMATIC SPATIAL RESOLUTION

Data over Australia, acquired by the LANDSAT Thematic Mapper sensor in six spectral bands with 30m spatial reso-

lution, has been available for several years. SPOT 1 and the recently launched SPOT 2 satellites with their High Resolution Visible sensors are able to acquire either three band multispectral data with 20m spatial resolution or single band panchromatic data with 10m resolution. Data from both satellites is now received directly by DAF (ACRES Data Acquisition Facility) in Australia.

The availability of both data types enables generation of a merged data set whereby SPOT HRV panchromatic (10m) is merged with either SPOT HRV or LANDSAT TM multispectral data to produce a new data set that retains the multispectral "colour" with 10m spatial resolution.

Merged data sets are essentially generated to improve the visual interpretation of the data. However the use of merged data sets is **not** recommended for classification or other pixel level computer analysis.

The major production steps are:

1. **Registration** — the SPOT or TM multispectral data must be registered to the SPOT panchromatic data using common ground control points (GCP's) in both images. If the final

data set is required on a map grid the panchromatic image must first be registered to the map grid also using GCP's and the panchromatic image resampled to the grid with 10m pixels.

2. **Resampling** — The transformation polynomial established in step 1 is used to remap each of the selected multispectral bands to the grid of the panchromatic data. Additionally the pixel values of each of the multispectral bands are used to compute new 10m pixel values for each band using cubic convolution interpolation. Each new 10m multispectral pixel now overlays its 10m panchromatic equivalent.
3. **Merging** — the panchromatic data is merged individually with each of the multispectral bands created in step 2 producing a merged band with 10m spatial resolution.

Several methods of merging have been tested and evaluated. The most acceptable results were generated using a variation of the IHS (Intensity, Hue, Saturation) transformation.

To discuss your merged data set requirements please contact Mr Craig Smith, ACRES Applications on (06) 252 4442.

## EOSAT MARKETS IMAGE PROCESSING SOFTWARE

Eidetic Digital Imaging Ltd of Brentwood Bay British Columbia, Canada has developed a low cost image processing package which will be marketed by EOSAT under a recently signed agreement. The RSVGA software package's image processing capabilities include several enhancement, classification, display and geometric correction functions. The software runs on an IBM PC/XT/AT or PS/2 with 640K memory, a hard disk with one or two floppy disks, an IBM PS/2 Display adaptor or VGA capability, matching colour monitor and math co-processor. For \$US300 this low price and user-friendly system should appeal to professionals, educators and students. For further information contact: EOSAT Customer Services, Maryland, USA. (301) 552 0537 or 800 344 9933.

## TURKISH GROUND STATION PLANNED

The Turkish Government has informed the Earth Observation Satellite Company (EOSAT) that it plans to build a satellite ground station to receive and process LANDSAT data. The station will be located near Ankara, Turkey and is scheduled to be operational by the launch of LANDSAT 6 in late 1991. The Ankara station will be the eighteenth ground station constructed to receive LANDSAT data.

## PHOTOLAB NEWS

### NEW HORIZONTAL ENLARGER IMPROVES EFFICIENCY

The arrival of the new Durst 2501 Horizontal enlarger has considerably assisted the efficiency of the ACRES printing process. As scale and focus are automatically selected, successive prints of differing enlargement factors can be quickly and conveniently produced.

### NEW ULTRASONIC CLEANING EQUIPMENT

The ACRES Photolab has a total of five separate processing machines for film, microfiche and print processing. With the large throughput of products, these processors need to be regularly cleaned to maintain product quality. This is a time consuming task and involves removing individual processing racks from each machine, soaking, scrubbing, rinsing and replacement.

New equipment has made this a much more efficient procedure. The Photosonic cleaning system employs an ultrasonic cavitation principle to ensure that even the most inaccessible parts of the processing racks can be rapidly freed of chemical

residue and returned to pristine condition in a very short time. The use of such techniques will not only ensure that photographic quality is maintained at the highest possible standard but also that the effective life of the processor is increased.

### JOHN HORN RETURNS TO ITC

ACRES Photographic Specialist and production co-ordinator, John Horn, was working at ACRES whilst on a two year period of sabbatical leave from The International Institute for Aerospace Survey and Earth Sciences, (ITC), Enschede, The Netherlands. Prior to joining ACRES on 17 October 1988, John was the Director of Studies for the Aerial Photography course at ITC and lectured in Photographic Theory. The two year secondment to ACRES was approved by ITC in order for John to expand his knowledge in the field of Remote Sensing Production.

John departed from ACRES at the end of August and will return to ITC by mid October. He will be responsible for setting up a course on Primary Data Acquisition and hopes to be involved in a number of ITC overseas training programmes as well as research into the conversion of digital data to hardcopy products.

# CONFERENCE REPORTS

## LANDSAT GROUND STATION OPERATORS WORKING GROUP (LGSOWG)

Australia was host to the 20th LGSOWG Meeting which was held at the National Capital Park Royal in Canberra from 21 — 25 May 1990. The meeting was attended by representatives of most countries which operate LANDSAT ground stations and was jointly chaired by NOAA and EOSAT.

The first two days of the meeting were occupied by marketing and sales reports at the LANDSAT Data Distribution and Marketing Working Group (LDDMWG) meeting.

On Tuesday afternoon (22 May 1990) delegates visited the ACRES processing facility where a presentation of the Australian remote sensing industry was provided by ACRES Manager, Director Operations, and Director Applications. This presentation was followed by an outline of developments at the CSIRO Division of Information Technology, presented by Mr Mike Clarke. Steve Jones of the same division demonstrated DISIMP to LGSOWG delegates demonstrating a rewritable magnetic optical disk system and microBRIAN was demonstrated by CSIRO's Division of Water Resources. Resource Industry Associates demonstrated products including AMIRAScan and the Magellan — Nov 1000 Probe — a portable GPS receiver and the ACRES DIPICS system was outlined and demonstrated by representatives of Computer Sciences of Australia (CSA).

During the last three days of the meeting, reports from each of the ground station operators and EOSAT were presented.

The conference provided information about worldwide technical developments on data reception.

**Attendees:** USA, Canada, Thailand, China, Europe, South Africa, Japan and Australia.

EOSAT and NOAA hosted a cocktail reception on Monday evening (21 May) and the event was attended by the Minister for Administrative Services, Senator Nick Bolkus. Ambassadors from each of the countries operating LANDSAT ground stations were invited together with senior AUSLIG and ACRES staff.

A formal dinner was held for delegates on Wednesday evening, however the highlight of organised social events was a visit to the Gundaroo Pub on Thursday evening. This event was hosted by ACRES and the visit featured huge barbecue steaks, a bush band and roving busker.



Discussing remote sensing at the 20th LGSOWG (left to right) Peter Norris — EOSAT, John Hussey — NOAA, Graham Lindsay — AUSLIG and Senator Nick Bolkus, Minister of Administrative Services.

The evening's high point was an impromptu performance by two Japanese delegates Shigeshi Sugiyama and Yasushi Muranaka who sang Click go the Shears — in Japanese!

## LANDSAT DATA RECEPTION, PROCESSING, SALES AND DISTRIBUTION

Total worldwide sales of LANDSAT data in 1989 were \$17.4 million (US). US sales comprised around \$10m of total sales and Australia contributed \$US.8m.

On a worldwide basis, 57% (by volume) of sales were photographic products, however by value, photographic products accounted for only 20% of total sales. Digital products comprised the remaining 80%.

Developments in other nations include:-

- Canada took delivery of its first CREO optical tape recorder in May 1990. The optical tape recorder is capable of storing a terrabyte of data on one tape (worth approx \$10,000). ACRES is keen to take on this technology.

- China has taken delivery of a Color Fire Imagewriter similar to ACRES.
- The European Space Agency (ESA) is distributing catalogue data on CD-ROM.
- Japan is moving towards a 1992 launch of their JERS-1 satellite.
- ERS-1 is due for launch in early 1991.
- South Africa is looking to expand its reception capabilities to cover Central Africa.
- China has some interesting approaches to marketing and copyright issues (the people's data!).

EOSAT reported on the progress of the LANDSAT 6 program. The satellite will have 8 co-registered bands, 1 X 15m panchromatic, 6 X 30m visible, near infrared and far infrared and 1 X thermal infrared bands. A December 1991 launch still looks possible.

In all a most fruitful and enjoyable meeting was held with accolades to ACRES, in particular Carl McMaster and Bob Jones for their efforts in organising the event.

The next LGSOWG will be in May 1991 at Maspalomas in the Canary Islands (off western Africa) hosted by ESA and Spain.



Delegates to the 20th LGSOWG during their visit to ACRES

## REPRESENTATION AT AUSTRALIAN COUNTER DISASTER COLLEGE

On 18 July, former ACRES production co-ordinator, John Horn, gave a presentation during the "Information Exchange Needs Assessment Workshop" at the Australian Counter Disaster College at Mount Macedon, Victoria. This workshop was attended by senior members of interstate Rescue, Police, Fire Services, Military, and Meteorological services.

The timely provision of remotely sensed images provides an important data source for the assessment and management of natural disasters such as fire and flood. A barrier to effective use of such data was the relatively slow re-visit capability of a single satellite. However, with the commencement of ACRES SPOT-1 reception, a particular scene in mid-latitude Australia may be re-visited approximately 3-4 times in a 26 day cycle, (subject to acquisition conflicts) by utilization of the off nadir viewing capability.

When added to the continuing ability of LANDSAT-TM to acquire data over an area every 16 days, it may be possible to maintain close surveillance of disaster areas as often as every 3-4 days.

By using Priority service at the ACRES Data Processing Facility, disaster management authorities will have access to a regularly updated supply of high quality imagery to assist in crucial decision making during national emergencies.

## PRESENTATION TO THE ARMY SURVEY REGIMENT AT BENDIGO

Following the above, John Horn gave a second presentation to members of the Army Survey Regiment at Bendigo Victoria, the subject of which was the "Use of Geocoded Satellite Images for Map Revision".

ACRES now offers geocoded imagery from both LANDSAT-5 Thematic Mapper and SPOT-1 data. The major attribute of geocoded imagery is that the original data is resampled and the pixels aligned with a standard map sheet coordinate system. Processing may be either "Systematic" or "Precision". In the former case, is desired from known satellite/sensor/scene parameters. Satellite position and altitude is predicted by a spacecraft model based on orbital elements and telemetry. In the case of precision processing geometric accuracy is improved by marking ground control points (typically from 1:100 000 scale maps sheets), and image correction is performed to rectify the image.

Precision geocoded images may be produced in which the positional accuracy of a given point is approximately equal

theoretically up to the dimension of a single pixel. Such images have a very great potential for the revision of existing maps. In the simplest form, enlarged transparent image overlays can be produced by the ACRES photographic laboratory, and these used to rapidly detect changes on the existing map sheet. These changes can then be incorporated in the next map revision. In the case of digital map revision, geocoded digital data can be supplied by ACRES on CCT, and sub sections of a map sheet could be digitised and displayed as a vector overlay on an existing digital geocoded image in order to facilitate convenient and rapid revision.

The data output format from LANDSAT 5-TM imagery is consistent with a full 1:100 000 scale map sheet, whilst from SPOT-1 data a quadrant of a 1:100 000 scale sheet is produced. The photographic negatives produced by ACRES are actually at scales of 1 : 333 333 and 1 : 166 666 from LS-5 TM and SPOT respectively. The negatives are photographically enlarged 3.333 times in order to produce final prints or transparencies at scales of 1:100 000 and 1:50 000 respectively.

In situations where a given map sheet area does not fall completely within a particular satellite image scene, data sets from adjoining paths may be independently geocoded and mosaiced to produce a single image. This procedure can be carried out by ACRES using its Meridian Image Processing System.

Orientation of geocoded data being aligned to grid north, is completely independent of the satellite orbital path; data sets from different sensors offering the most favourable spectral or spatial

attributes may be merged in order to maximize the information available. For example, the high ground resolution capability of SPOT-1 Panchromatic data may be coupled with the greater spectral discrimination properties of LANDSAT-5 TM.

The use of ACRES high quality precision geocoded data offers a considerable time and cost advantage over conventional techniques for rapid map revision.

## NEW CONTRACTOR AT ACRES

In March 1990, a Request for Tender was issued for operation and maintenance of ACRES. The contract has been operated by AWA Electronic Services for the past 4 years. Submissions were received from AWA, British Aerospace Australia, BHP and Computer Sciences Australia in conjunction with Macdonald Dettwiler Associates of Canada.

After an extensive assessment procedure by ACRES senior management, AUSLIG and the Department of Administrative Services, the CSA/MDA bid has been accepted. A phase in period for the new contractor began on 1 September with official takeover on 1 October. CSA have offered most existing staff new contracts. CSA have a wide range of skills and experience in computer based operations and remote sensing and ACRES looks forward to a mutually rewarding relationship with CSA.

Our thanks go to AWA for the service they have provided to ACRES and its customers over the past few years.



*The ACRES staff who will become CSA employees on 1 October, 1990.*

## STAFF CHANGES

During the past three months, there have been a number of staff changes at ACRES. After a ten year association with ACRES, we say farewell to Mr Colin Purbrick, who has left ACRES to join AWA in Hong Kong. Farewell also to Ms Svet Taska, Finance and Statistics Officer and Mr Robin Buckley, ACRES Chief Engineer.

ACRES welcomes 21 year old Craig Ransome, a graduate from Charles Sturt University who has recently joined ACRES as an ORACLE programmer.

# CONFERENCE CALENDAR AND COMING EVENTS

## THE UNIVERSITY OF NEW SOUTH WALES CENTRE FOR REMOTE SENSING

*"Introduction to Remote Sensing"*

Sydney, Australia  
Nov 5-7 1990

The course has been designed to introduce participants to the theoretical and practical aspects of remote sensing. The principles of remote sensing and the data available from a range of sensors will be discussed. Workshops will enable participants to gain experience in interpreting a range of remotely sensed data. Cost for the 3 day workshop is \$450.00.

*"Imagery processing on the PC with ESIPP"*

Sydney, Australia  
Nov 5-7 1990

This course is designed for new entrants in the field of image processing and for experienced practitioners who wish to extend their use of image processing into the operational environment.

Practical examples will be drawn from the fields of geology, land use and environmental studies but the technology and software demonstrated has potential for application in a wide range of disciplines and the educational market.

For further details contact:

Dawn Williamson  
Centre for Remote Sensing  
University of New South Wales  
PO Box 1  
KENSINGTON NSW 2033  
Telephone: 02 697 4397

## INTERNATIONAL SPACE INDUSTRIES AND TECHNOLOGIES EXHIBITION

*"Technospace"*

Brussels Exhibition Complex  
Nov 6-10 1990

Further information may be obtained from:

Technospace SA  
Headquarters 12 place de la Bourse  
33076 Bordeaux Cedex  
FRANCE

## INTERNATIONAL SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING (ISPRS) FIFTH INTERNATIONAL COLLOQUIUM

*"Physical Measurements and Signatures in Remote Sensing"*

Courchevel, France  
Jan 14-18 1991

For further information contact:

Secretariat du Comite Scientifique  
Dr Gerard Guyot  
INRA Bioclimatologie BP91  
F84143 Mohtfavet Cedex  
FRANCE

## PTC's 13TH ANNUAL CONFERENCE — PTC '91

*"Accessing the Global Network: Weaving Technology and Trade in the Pacific"*

Honolulu, Hawaii  
Jan 13-16 1991

Further information can be obtained from:

Pacific Telecommunications Council (PTC)  
1110 University Avenue, Suite 308  
Honolulu, Hawaii 96826 USA

## THIRD INTERNATIONAL CONFERENCE ON GEOGRAPHIC INFORMATION SYSTEMS

Ottawa, Canada  
Mar 18-21 1991

The main themes of this conference include management issues, applications and case studies, technology issues and education and training. Further information can be obtained from:

The Canadian Conference on GIS  
Box 5378  
Station F  
Ottawa  
CANADA K2C 3J1

## ACSM/ASPRS AUTO CARTO 10 ANNUAL CONVENTION AND EXPOSITION

*"Advanced Research in Automated Cartography and Geographic Information Systems"*

Baltimore, Maryland U.S.A.  
Mar 26-29 1991

The conference will investigate changes that shape our world and our industry in the 1990. Around 50 advanced and introductory technical sessions will be presented and the accompanying exhibition will feature displays of hardware, software, surveying and photogrammetric instruments and photographic equipment.

For further information contact:

ACSM/ASPRS/Auto Carto 10  
5410 Grosvenor Lane, Suite 100  
Bethesda MD 20814

## EIGHTH THEMATIC CONFERENCE — GEOLOGIC REMOTE SENSING

*"Exploration, Engineering and Environment"*

Denver, Colorado, USA  
Apr 29-May 2 1991

The program will comprise over 200 technical presentations covering all aspects of geological remote sensing from fundamental principles and techniques to advanced data processing and geological interpretation. Further information can be obtained from:

ERIM/Thematic Conferences  
PO Box 8618  
ANN ARBOR, MI 48107-8618

## INTERNATIONAL AEROSPACE CONGRESS 1991

*"Focus on the Future"*

Melbourne, Australia  
May 12-16 1991

The conference program will incorporate papers addressing the theme of advancing aerospace technology and international collaboration. Further information can be obtained from:

The Conference Secretariat  
International Aerospace Congress 1991  
GPO Box 358F  
MELBOURNE VIC 3001  
AUSTRALIA

## EUROPEAN ASSOCIATION OF REMOTE SENSING LABORATORIES (EARSel)

*"Microwave Imaging and Related Techniques Workshop"*

Alpbach, Austria  
May 13-15 1991  
Ispra, Italy  
May 16-17 1991

Topics covered will include:

- Theory and application of three-dimensional microwave imaging and microwave holography;
- Use of polarimetric measurements in microwave imaging;
- Imaging of complex and extended scatterers and of objects having non-uniform dielectric properties. Identification of scatterers within a compound target;
- Effects of propagation in possibly dispersive, nonhomogeneous and anisotropic media;
- Effects of multiple scattering and the implications of the use of long wavelengths and of close spacing of target scatterers. Numerical instabilities and inaccuracies in reconstruction algorithms;
- New applications and unconventional imaging geometries.

For further information contact:

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Institute of Remote Sensing Applications  
Joint Research Centre  
21020 Ispra, Varese, Italy.