

ACRES

UPDATE



Lost in space! LANDSAT 6 fails to operate after 'successful' launch

Shouts of jubilation at Vandenberg Air Force Base in California, USA, on 5 October turned to despair when operators failed to communicate with LANDSAT 6 after an apparently successful launch. The Titan 2 launch vehicle appears to have performed its task, however failure to track the satellite and failure of all attempts at communication indicate that the apogee kick motor on the satellite either failed to operate or otherwise malfunctioned. It is probable the satellite reentered the atmosphere and burned up somewhere over the Pacific Ocean.

The loss of LANDSAT 6 is a major challenge to the USA and international earth observation programs, particularly the loss of the enhanced Thematic Mapper with its 15m Panchromatic sensor that was set to challenge SPOT's large market share.

It now becomes critical that the ageing LANDSAT 5 is kept operational for as long as possible, as a new LANDSAT 6 or 7 could not be launched for some three to four years. We await with more than a passing interest announcements from Washington.

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Manager's Message

The international remote sensing community has suffered a setback with the loss of the long-delayed LANDSAT 6 satellite. We were all looking forward to the continued availability of the multi-spectral Thematic Mapper data, particularly with the opportunity of simultaneous reception of the new 15 metre panchromatic band.

Along with other ground stations, ACRES had upgraded our reception and processing equipment in advance of the launch.

At the same time, we installed a JERS processing capability for the multi-band OPS sensor. Despite the perhaps only minor degradation in data quality because of an on-board problem, JERS has suddenly become more important.

Feedback from NASDA's international principal investigators and our complementary Australian research projects has become urgent. AUSLIG will give priority to requesting NASDA to extend our Agreement for the reception and distribution of JERS data for research to allow for its commercial use.

Of course, SPOT data continuity is assured with the successful launch of SPOT 3 in September and LANDSAT 5 continues to operate normally. Although it would be optimistic to expect LANDSAT 5 to remain operational until the launch of LANDSAT 7, currently planned for early 1998. Perhaps the United States will delight us all with a re-scheduled program.

Carl McMaster

Earth Observation Working Party gets to work

The Australian Space Council has appointed four Working Groups to provide advice to the Council. The groups are Launch Services, Space Science, Communications and Earth Observation. The Earth Observation Working Group is chaired by Professor John Richards (ADFA), who is also Deputy Chair of the Council. The members of the Group are:

- Carl McMaster, ACRES
- Brian Embleton, COSSA
- Doug Gauntlet, BOM
- Ian Tuohy, BAeA
- David Green, DEST
- Neil Williams, DPIE
- Richard Brabin-Smith, DOD
- Mike Aubrey, Technical and Field Surveys
- Colin Simpson, AGSO

The Working Group is presently developing Terms of Reference for three proposed consultancies, namely:

- Market Opportunities for Earth Observation Educational Services in Australia and the Region;
- Pre Feasibility Studies for the Development of an Australian Earth Observation Data Network; and
- Feasibility and Market Studies for the Development of Earth Observation Value Added Services.

For more information contact:

Donn Corcoran
Tel: (06) 276 1944, Fax: (06) 276 1223.

New order form and licence conditions for ACRES products

A new 'user friendly' order form has been introduced for ACRES products. There are now three order forms:

- One for SPOT/LANDSAT;
- One for ERS1 SAR; and
- One for Image Writing.

The order forms for satellite data now incorporate the licence conditions on the reverse and each order must be signed by the end customer, acknowledging these conditions of sale and the copyright nature of the data.

Editorial Information

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

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

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

Contact:

Dennis Puniard
Editor/Director Marketing
Tel: (06) 252 4429
Fax: (06) 251 6326.

The image in the margin on each page is an ERS-1 SAR image of Sulawesi, Indonesia.

ACRES management contract renewed

The management contract to operate ACRES facilities in Canberra and Alice Springs has been extended for another year to October 1994. The current three year contract expired on 1 October 1993 and an option to extend the contract has been exercised by Graham Bashford, General Manager of AUSLIG, ACRES parent organization.

Computer Sciences of Australia (CSA) is the contractor. The CSA Business Manager for ACRES, Tim Shirley, commented on the extension of the Contract, "CSA is pleased to be continuing to operate ACRES. Over the next 12 months we will continue to improve the quality and reliability of our products and our service to customers. In line with AUSLIG we expect to achieve AS3901 accreditation during 1994."

New appointments in the Australian Space Office

Malcolm Farrow has been appointed to replace Bruce Middleton as the Executive Director of the Australian Space Office. His previous position was as First Assistant Secretary, Construction and Service Industries Division, in DITARD. Donn Corcoran, previously a Counsellor (Industry, Science and Technology) at the Australian Embassy in Japan, has been appointed to the position of Director, Earth Observation. Other key appointments are summarised below.

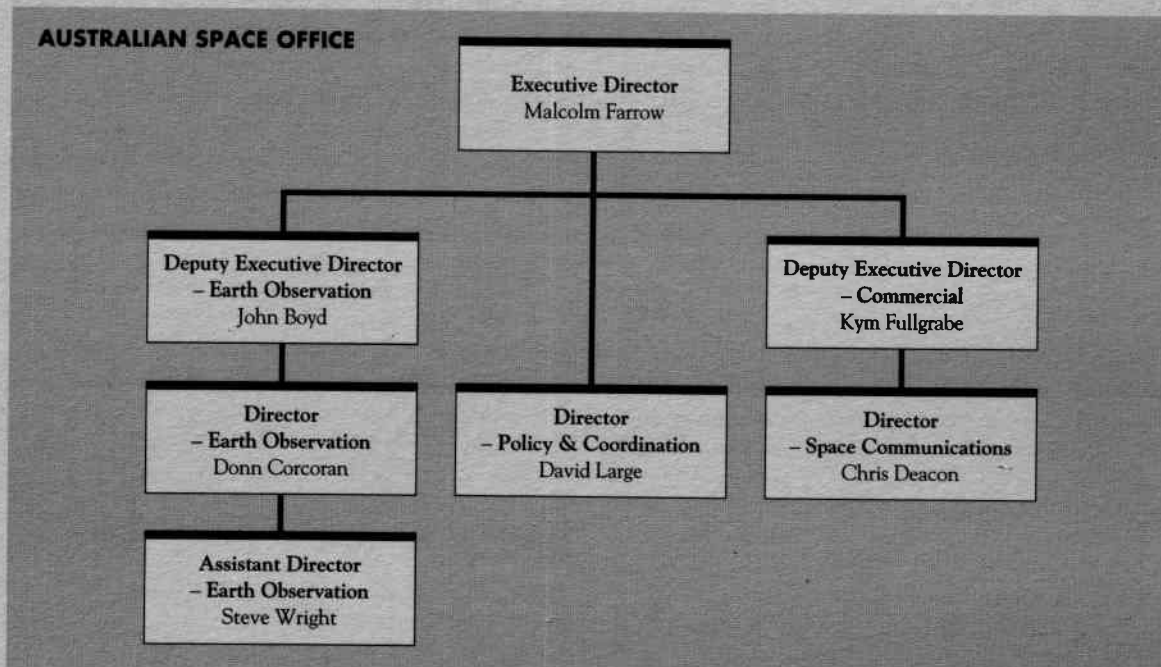
1996 Remote Sensing Conference to be held in Canberra

The Committee of Remote Sensing and Photogrammetry Australia has accepted an offer from a Canberra based committee to run the 8th Australasian Remote Sensing Conference in Canberra. The National Convention Centre has been booked for late March 1996 and an ACT based conference organizer appointed. The committee is chaired by Dennis Puniard (ACRES). The Deputy Chair is Don De Vries (COSSA) and the other committee members are: Stephen Wright (Space Office), Brian Button (Uni of Canberra), Barbara Harrison (CSIRO Water Resources), Robyn Johnston (BRR), Craig Smith, Laurie Oliver and Madeleine Clark (all ACRES).

ACRES image writing service gets new impetus

For several years ACRES has offered an Image Writing Service to its customer base to write film or photographic copies of digital image data supplied by customers. With the delivery of an additional FIRE Film Writer, ACRES is now in a position to offer an even better service to write negatives or transparencies on film, or for specially tailored photographic prints on very high quality paper at prices very comparable with any photographic laboratory. Enlargement factors up to 15 times are possible, the only limitation being the 1.25m width of our paper and processor. Both colour and black and white products can be processed.

For further details see enclosed information sheet or contact the ACRES sales team.





Which way now? Some intriguing possibilities

Some key events in the past few months have put a completely new perspective on space based remote sensing. LANDSAT 6 has failed; SPOT 3 has successfully launched and the race for the first high resolution space sensors has intensified.

From the USA perspective, the failure of LANDSAT 6 is a major disaster. The possibility that LANDSAT 5 could fail at any time (it is several years past its expected life) means there is a real prospect that with SPOT 2 and 3 both operational, the French could dominate the high resolution market for some years to come.

On the other hand, two major proposals have emerged from the US for high resolution (1-3m) sensors to be launched in the next 2-5 years. Lockheed Corporation has well advanced plans for its Commercial Remote Sensing System (CRSS) with a 1m resolution PAN sensor and 3m resolution multispectral sensor. They are seeking international funding partners and have recently visited Australia. The first of these satellites is proposed for a possible 1996 launch. An even more interesting proposal has come from the WorldView Corporation, who propose a constellation of commercial satellites with 3m resolution PAN and 15m multispectral sensors and aim for two day repeat coverage. The first satellite is proposed for 1995 launch. Although official US Government sanction of these higher resolutions has not yet been confirmed, it seems imminent. With the threatened demise of the LANDSAT series, the US Government should be supportive.

The other interesting prospect is that the Japanese may now be more interested in the commercial release of data from the JERS optical sensor, if some data quality problems can be solved. Of course their ADEOS satellite is under development and it would not surprise to see it accelerated to an earlier (1994/5) launch date.

On the radar scene, RADARSAT seems to be on track for 1994/95 launch and the European ERS2 is also planned for 1995 launch.

In the looming race for the first high resolution sensors in space, the French are unlikely to concede easily here. The military HELIOS system is due for launch soon. It is said to be capable of 1m resolution. Could it be demilitarized? Of course the Russians are also potential players. ALMAZ 2 (SAR) is proposed for 1995 launch, however with their economic and political problems in the CIS, there is some doubt on what they can deliver.

All in all, the hiatus left by the demise of LANDSAT 6 has created some interesting scenarios. Stay tuned for the next instalment of the race for 'eyes in space'.

Dennis Puniard

ACRES staff on the move

Erik Elmar, ACRES Senior Engineer, has accepted an offer to move to the USA and work for Datron Systems. He and his wife, Matilda, who for the past few months has also been working in the photolab at ACRES, left for the US in October.

Erik's departure has resulted in some reorganisation of some key ACRES staff.

- Karl Nissen has moved from Production Manager to the vacant Senior Engineer (Projects) position.
- Mike Pasfield has taken over as Production Manager.
- Mike Linney is now Production Coordinator, whilst Lorree Aalders will supervise computer room operations.



Erik Elmar at his farewell dinner with Lien Ly in the background.

ACRES retires its MSS processor

After 13 years of sterling service, the original ACRES computer system will be permanently put to rest in early December. The latest upgrade to ACRES processing system was completed by MacDonald Dettwiler and Associates (MDA) in September. MSS processing has now been transferred to the GICS system and this will allow the production of a wider range of product formats similar to the current LANDSAT TM product range. The new product range and price list will be announced in November for availability on 1 December 1993.



Robert Denize (ACRES Chief Engineer), Pat Campbell (MDA) and Carl McMaster seem relieved that the MSS Upgrade is complete.

LANDSAT 21 years old

Report on the celebrations at the University of New South Wales Advanced Remote Sensing Conference 19-23 July 1993

Oh, what a rage it was! All the family were there; well almost all. While the birthday kid became a little spaced out – a number of us were blaming the new designer drugs from the US on this – the parents' generation reminisced about past achievements with a panel session, and also gazed into the crystal ball and sagely stated what the future may hold.

Following the usual 21st birthday party conventions, the proud father (BF) acted as host and introduced his family and friends, as they offered advice to the younger generation. Father was positively glowing with pride and optimistically said that the youngster had generated a critical mass of friends which would ensure future successes. Mother (AKM) seemed a little concerned about the employment prospects for the youngster in the private sector and thought that the Government should be doing more to help her offspring.

The famous uncle (JAR) made it to the early part of the party, but unfortunately could not be found to make a speech during the latter part of the celebrations. "Typical...", sniffed the birthday kid, but luckily a favourite god-father (BJT) volunteered at the eleventh hour to stand in and gave a thoughtful speech.

Father then introduced the boss of the 21 year old (CM), who commented that greater productivity was required – perhaps an Australia wide data base. The boss's son (DP) gave some facts and figures to support this idea. It is always so difficult to separate business and pleasure!

A rather embarrassing speech by a distant relative from France (on the mother's side) (PvG) followed. The French 'reli' told the parents and the boss that they should have brought their child up better and that a lack of discipline and direction was stunting the child's development! Bloody cheek! Mother said it was lucky that the French didn't play cricket!

However, this outrage was mild compared with the eccentric of the family (JH), who told the assembled friends and family that he thought the birthday kid was retarded! What was required was some 'hot-housing' to develop the 21 year old more fully. The eccentric reported that his offspring already had two degrees and a PhD, even though his child was only nine years old.

A token Pom (PC) was flown in to talk about the old country, and gave some advice on how to win political favours. Rather unkindly, mother made a comment about putting his own house in order first and winning at cricket or rugby first. A young American cousin (JC) talked of his experiences with alternative lifestyles, but nobody really understood what he was saying.

The youngest uncle (AKS) told the gathering that they were all wrong in the way they were educating the youngster and that modern parenting required a new vision about how the output of the child should be best utilised.

By this stage the youngster and mates were totally bored with proceedings and retired to the University Club to continue the party. The 21 year old was last seen talking to an elegant French person, as well as a Japanese and a Canadian, in terms that none of the older generation fully understood.

We all missed the speech by the third cousin twice removed from Western Australia (NC), but at least that meant there was more drinking time.

Happy Birthday, LANDSAT – long may you prosper!

Note 1: To aid interpretation for the less initiated, this article was composed by AKS – Andy Skidmore (UNSW). Other personalities are: BF – Bruce Forster (UNSW); AKM – Tony Milne (UNSW); JAR – John Richards (ADFA); BJT – Brian Tuner (ANU); CM – Carl McMaster (ACRES); DP – Dennis Puniard (ACRES); PvG – Patrick van Grunderbeeck (SPOT); JH – John Huntington (CSIRO); PC – Paul Curran (UK); JC – John Curlander (USA); NC – Norm Campbell (CSIRO).

Director of Malaysian Centre visits Australia

Mr Nik Nasruddin, the Director of the Malaysian Centre for Remote Sensing (MACRES), recently spent some time in Perth, Canberra and Sydney, exploring some possible cooperative ventures between MACRES and Australian agencies. A major upgrade of capabilities in Malaysia is presently in the planning stages. He attended the opening of the Leeuwin Centre in Perth and spent some time at ACRES and UNSW.



Don Gray (L), ex Manager ACRES, Carl McMaster (current Manager) and Mr Nasruddin, at the ACRES display at the Leeuwin Centre in Perth.

Graziers are getting smart with satellite image technology

Hundreds of graziers in Queensland have purchased recent satellite images over their properties to help manage them and apply for government permits for tree pulling and drought assistance.

The satellite property images are supplied by a Townsville company, Mapping & Monitoring Technology Pty Ltd, from \$200 per property. Dr Debbie Kuchler from the company said that "the satellite image gives the grazier a lot more power to negotiate with suppliers and government bodies and to plan for the properties' future".

Dr Kuchler says that the company custom makes each satellite property image to suit the individual property and its owners' requirements. To design the product, a telephone discussion is held with the owner on their property information needs and their intended use for the product.

The satellite acquires the image using digital recording scanners and thus the image is processed on computers using special programs. When the processing is being performed, it is possible to colour enhance the image so that features of particular interest to the land owner are highlighted. Many land owners request that roads on the property be highlighted, or fence lines, dams, vegetation clearings, fire scars, different types of crops, outcrops of rock, healthy and diseased vegetation, rivers, soil erosion and many other land cover features. Because the satellite image is computer processed, many of these features can be highlighted in one image.

The satellite property image is a colour satellite image of a property on photographic paper and similar to a high altitude aerial photograph. However, the image is different to an aerial photograph in that the image is true to the layout of the land and therefore very accurate ground measurements can be made on it. An aerial photograph cannot be accurately used in this way since it has several distortions in it due to the aircraft movement and the camera.

The satellite property image is very versatile. It comes in different views and different sizes, depending on the size of the farm or property and how the land owners would like to see their property presented. Both detailed or broad perspective views of the property are available. The date on which the image captures the property is also selectable by the property owner. Since 1972, the satellite has been taking one snapshot a month of every property in Australia, so there are many, many dates available. Some owners like to choose a date when the property was suffering under a drought while others prefer to get information on how their property responds in a wet season. Many land

owners simply want a very recent image, up to a few weeks old, of their property, so that they can get an overview of its current condition. Some owners want an image to illustrate their property when being offered for sale.

The satellite property image is being put to practical use by many different types of people on the land. Graziers are using it to map out a plan of their property and then to update the plan as they add new paddocks, dams and so on. It is also being used to get a long-term overview of how the property has changed over several years. Once it is displayed on a wall, it becomes a mind-jogger of work tasks that still have to be done.

The people at Mapping & Monitoring Technology work in close association with Department of Primary Industries, Land Management Unit, to educate the grazier in how to use the product. Mapping & Monitoring Technology can be contacted on: (077) 71 6622.

Reader Feedback

Below is an edited copy of a letter received by the Manager ACRES. Feedback is always appreciated!

Dear Mr McMaster,

I have just received a copy of the July 1993 issue of "ACRES UPDATE" with your picture and message on the front page. Frankly what caught my attention was a photograph of quite a familiar face with whom I had spent long hours of discussions during the Remote Sensing Seminar at Tehran in December 1992.

In the "ACRES UPDATE" I particularly found articles entitled "Raster/Vector Integrated GIS" and "Eliminating Geometric Distortions in Remotely sensed Satellite Data" very interesting. Information available in this issue on various remotely sensed data processing, display and GIS equipment is also quite relevant to those engaged in the remote sensing/GIS programmes. It appears that the Australian Centre for Remote Sensing is doing quite well under your leadership. Please keep me posted with further developments at your Centre.

With warm personal regards

Yours sincerely

Salim Mehmud
Chief Scientist and Scientific Advisor
Ministry of Defence
Pakistan

1 September 1993

Conference Reports

NARGIS 93 Conference

9–11 August 1993

Darwin, NT, Australia

The 1993 North Australian Remote Sensing and Geographic Information Systems Forum (NARGIS 93) was held at the Northern Territory Museum of Arts & Sciences in Darwin from 9–11 August. The more than 90 participants came from industry, Commonwealth and State Governments, Universities and CSIRO. A total of 37 papers were presented at the forum, with two being delivered by overseas participants. In addition, there was a display of posters and other materials, including demonstrations of a variety of RS and GIS software. ACRES, and our NT Distributor, Geoimage Pty Ltd, displayed imagery and software, including the ACRES MAC based interactive display.

Professor Don Watts, Chairman of the Australian Space Council, delivered a paper on the plans of the Australian Space Council.

The emphasis of the Forum was on the application of remote sensing and geographic information systems to practical situations. This emphasis is evident from the topics covered in the papers, which range from the management of National Parks in Central Australia using GIS, to gradient methods and remote sensing to determine grazing impacts, and the use of GIS in local government accounting. There were four sessions, each devoted to a single theme, and each session began with an address by a keynote speaker. The four themes and keynote speakers were:

- *Resource Assessment* – Dennis Puniard (Australian Centre for Remote Sensing)
- *Environmental Modelling* – Peter Burrough (University of Utrecht, The Netherlands)
- *Information Systems as Management Tools* – Andrew Skidmore (Associate Professor UNSW)
- *Resource Monitoring and Management* – Tony Milne (Associate Professor UNSW)



John Lee (ACRES), Bob Walker and Bernie Fitzpatrick (Geoimage) with ACRES/Geoimage display.

Dennis Puniard outlined recent development in remote sensing, highlighting the breadth of data available to the researcher and practitioner. Peter Burrough highlighted the advances that have been made in modelling biophysical systems within GIS, particularly the modelling of point data and spatially continuous data. Andrew Skidmore discussed the management aspects of GIS and RS, whilst Tony Milne presented the case for using RS in monitoring and understanding biophysical systems, using examples from Australia and Alaska to illustrate the utility of RS. One theme that was common to all keynote speakers was an emphasis on the variety of RS and GIS that should be available to, and used by, the practitioner. No individual system or technology in RS or GIS is universally applicable.

One great strength of the Forum, mentioned repeatedly by the keynote speakers in the final discussion, was the opportunity that NARGIS 93 had provided to bring together the RS and GIS communities.

The proceedings will be published and available soon. Contact:

Chris Davenport (NTU),
Steve Riley (OSS) or Jenny Hutchison
(AURISA, ACT; Tel: (06) 273 4054).



The panel of experts summarize: L to R – Tony Milne (UNSW), Dennis Puniard, Andy Skidmore (UNSW) and Peter Burroughs.



Dennis Puniard delivers Keynote Address.

WORLDVIEW Imaging Corporation announces new high resolution satellites

A small California company has been licensed by the US Government to launch a series of satellites that will make it possible for customers to directly dial up high-resolution images of Earth and view them on their personal computers.

WorldView Imaging Corporation of Livermore, California, has announced the signing of a significant partner in its program to build and launch a constellation of commercial high-resolution, imaging satellites. A strategic partnership and equity investment agreement has been reached with CTA Incorporated of Rockville, MI, and its subsidiary Defense Systems Inc (DSI) of McLean, VA.

Under terms of the agreement CTA/DSI will construct the first two satellite bus platforms for the WorldView high-resolution imaging sensor payloads currently under development.

The new system, even though capable of producing the highest quality commercially available images from space, will not approach the close-up power of military spy satellites, which is why the Department of Defense agreed to permit the license for the relatively weaker system. The system will, however, have significantly more resolution than is currently available from systems like LANDSAT. Military satellites can discern objects as small as one foot in diameter, civilian experts say. The permit is the first granted under a law passed last year by the US Congress.

The agreement with CTA/DSI represents an important milestone in the program. CTA brings a significant financial investment coupled with a proven technical ability to produce working satellites. In addition, their related experience and success in the fields of oceanographic, meteorological, surveillance and environmental sensors offer future interesting remote sensing integration prospects with space-based imaging platforms.

The WorldView sensor and system design represents a breakthrough in image resolution, image quality and revisit time, with an ability to image the ground at a three meter resolution and revisit any point of interest on the Earth's surface at 1.5 to 2.5 day intervals. WorldView imagery is expected to have a significant impact on the Geographic Information Systems (GIS), mapping, environmental management and urban planning application markets.

New head for COSSA

Dr Brian J Embleton, a geophysicist who has made major contributions to the Australian oil and minerals exploration industry through the development of specialist geophysical techniques, is the new Head of the CSIRO Office of Space Science and Applications.

After completing undergraduate and graduate studies in the UK, leading to the award of a PhD by the University of Newcastle-upon-Tyne, Dr Embleton moved to Australia in 1971, taking up a research fellowship in palaeomagnetism at the Australian National University. In 1975 he joined CSIRO in Sydney and began investigating applications of rock magnetism for elucidating the geological evolution of economically important mineral provinces in Australia, and the development of improved techniques for interpreting magnetic survey data in mineral exploration.

Dr Embleton was appointed Chief of the new CSIRO Division of Exploration Geoscience in 1986 and became increasingly involved with the development of Earth observation technologies and remote sensing applications. To move research closer to the main exploration action, he presided over the transfer of Divisional headquarters from Sydney to Perth in 1988.

Through negotiations with the Western Australian State Government, Dr Embleton initiated the construction of a multi-million dollar facility for remote sensing in Perth, known as "The Leeuwin Centre for Earth Sensing Technologies". He resigned as Chief of Division in 1991 and concentrated on the successful completion of the new centre, which now provides, in a single location, the infrastructural support for Federal, State and private sector agencies working in remote sensing, including universities and other tertiary training institutions. The centre is a one-stop shop for business, education and training in Earth sensing technologies for environmental monitoring and resource management.

Dr Embleton joined COSSA at the beginning of August and is based in Canberra. He aims to further improve coordination of CSIRO's remote sensing research and data acquisition and management, and to strengthen the role of CSIRO - Australia's largest R&D agency - in international space science programs such as the "Mission to Planet Earth".

Dr Embleton's contact numbers are:

Tel: (06) 279 0800, Fax: (06) 279 0812.

Resource Industry Associates presents Australia from Space with Terrascan

Resource Industry Associates, a major distributor of ACRES and SPOT imagery, has produced a CD-ROM (ISO 9660) ideal for new and established remote sensing users.

The CD-ROM has a registered copy of TerraScan Lite image processing software and 500Mb of full resolution satellite data stored in raw format for access by any image processing program. Minimum hardware requirements for running TerraScan are a 386 computer with 4Mb of RAM and Microsoft Windows 3.1 with 256 colour display.

Australia from Space also contains some of the Landsat sub scenes used in the remote sensing courses prepared by the AMIRA/CSIRO Technology Transfer Project 256 and the Geography Teachers Association of Victoria.

As RIA is also the Australian National distributor of Magellan and SONY GPS, we have included a GPS Tutorial and PC Satellite Simulation Software on the CD-ROM.

All satellite data supplied on the CD-ROM "Australia from Space" is protected by Copyrights held by CNES 1986-92, EOSAT, ACRES and the Commonwealth of Australia. TerraScan Lite software is protected by Copyright held by Elvin Slavik 1992-93.

"Australia from Space"

Published by Resource Industry Associates
ACN 007 188 490, Copyright, 1993.

Price: \$300

Contact:

Jeff Bailey or Terry Boyd at RIA
Tel: (03) 482 4945, Fax: (03) 4824956.

LIST OF IMAGERY

Title	Sensor	Area	Size(Mb)
Australia	NOAA		50
	DTM		1
Canberra	LANDSAT TM	Map Sheet	52
	SPOT XS	12k*12k	2
Sydney	LANDSAT TM	Qtr Scene	50
	SPOT PAN	10k*10k	1
	ERS-1	Full Scene	32
Melbourne	LANDSAT TM	Qtr Scene	65
	SPOT PAN	10k*10k	1
Hobart	SPOT PAN	10k*10k	1
	SPOT XS	10k*10k	1
Tas W Coast	SPOT XS	10k*10k	1
Adelaide	LANDSAT TM	Qtr Scene	65
	SPOT PAN	10k*10k	1
	ERS-1	Full Scene	32
Wellington (NZ)	SPOT PAN	10k*10k	1
	SPOT XS	10k*10k	1
Hammersley Range	LANDSAT TM	15k*15k	1
Kalgoorlie	LANDSAT TM	30k*30k	7
Coolgardie	SPOT PAN	10k*10k	1
Darwin	SPOT PAN	10k*10k	1
Kakadu	SPOT PAN	10k*10k	1
	SPOT XS	10k*10k	1
Ayers Rock	SPOT PAN	10k*10k	1
	SPOT XS	10k*10k	1
Cairns	LANDSAT TM	Qtr Scene	65
Mt Isa	SPOT XS	10k*10k	1
Brisbane	SPOT PAN	10k*10k	1
	SPOT XS	10k*10k	1
Perth	SPOT PAN	10k*10k	1
	SPOT XS	10k*10k	1
Darling Range	LANDSAT TM	40k*40k	20
Broome	LANDSAT Band 6	Full Scene	41
McArthur River	LANDSAT TM	15k*15k	1

ESRI Australia joins ACRES distribution network

ESRI Australia has recently signed an Agreement with ACRES to become our newest Distributor. ESRI Australia Chairman, Ron Hutchison, sees the emerging opportunities for remote sensing in GIS as an excellent business opportunity and sees ACRES product range as an important companion to ESRI's existing products. ESRI provides the ARC/INFO range of software products as well as the ERDAS Image Processing system. The new ARCVIEW product will provide a powerful capability to view ACRES imagery as part of a desktop, windows based GIS. For further information contact:

Tom Giles (ESRI Head Office)
Tel: (09) 242 1005
Fax: (09) 242 4412, or any ESRI office.

Pasture maps for determining fertiliser requirements by satellite

P J Vickery and E P Furnivel

CSIRO Division of Animal Production,

Armidale, and

R N D Reid

Department of Primary Industry and Fisheries

New Norfolk, Tasmania

INTRODUCTION

CSIRO has developed procedures for using the data from the earth resources satellites such as LANDSAT and SPOT to find areas of improved and semi-improved pastures which are most in need of fertilisation. By relating the satellite data to the reflectance characteristics of pastures with known histories of fertiliser treatment it has been possible to calibrate the measurements from the satellite and then use them to predict and map the likely responsiveness of particular areas of improved pastures. The procedures make use of parts of databases containing property and paddock boundaries and also data on roads and railways. The road and boundary data are used as an overlay on the map to allow easy location of properties and fence lines are included to allow reports on the fertiliser responsiveness of individual paddocks to be given.

COLOUR MAPS

A colour-coded map is produced with a personal computer based geographic information system (GIS) containing the processed satellite data and the ancillary database. In this form, colour-coded pasture status maps are suitable for use by agricultural extension officers with minimal training in satellite image interpretation. These maps and associated reports on individual paddocks enable the officer to advise farmers which parts of their property would be most responsive to fertilisers and which ones require only maintenance treatment. The technology also indicates where to soil test, and also monitors the state of areas which do not need investigation, thus improving the efficiency of soil testing and fertiliser use on improved pastures. The maps do not provide information or requirements for specific elements, but rather highlight problem areas for investigation.

TASMANIAN PROJECT

To produce the maps used, SPOT data over Tasmania has been processed to fit the Australian map grid. The grazing property, 'Bloomfield', in the Derwent Valley has been analysed at paddock level, together with the various classes of pasture responsiveness.

INTERPRETATION OF THE MAPS

Based on individual properties, the maps produced show the relative responsiveness of the pastures to fertiliser. The most actively growing pastures which require only maintenance applications of fertiliser; under average rainfall conditions such pastures could be expected to produce up to 12,000kg/ha of dry matter on an annual basis, in the Derwent Valley and Midlands. The next three classes represent more slowly growing pastures; these pastures will be extremely responsive to added fertiliser but they will not be as productive as the first class unless extra nutrients are added. The pastures with the lowest growth status under average conditions may be improved pastures which have become degraded or native pastures.

In the initial phases of developing phosphate fertiliser recommendations for a particular property, the growth status maps should be used with the recommended soil test (Colwell P) for the district. This will provide a continuity with existing information and allow for improved resolution in estimating the actual responsiveness of paddocks for the property in question. In this context the maps can also be used to select monitor sites for soil testing so that they are truly representative of each paddock.

For more information contact:

Peter Vickery

Tel: (067) 78 4000, or

Bob Reid

Tel: (002) 61 2022.

Conference Reports

AURISA hosts Remote Sensing Seminar in Launceston

On Friday, 13 August (it was black and raining), in Launceston, AURISA hosted a seminar titled Remote Sensing – Bringing it Back to Earth. Over 70 attendees, including a large number of students from the University of Tasmania, attended. An excellent programme included presentations by:

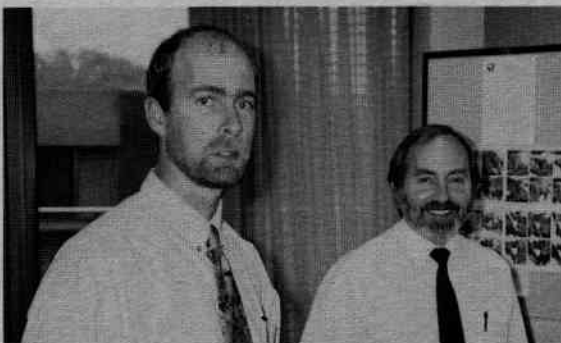
- Manuel Nunez of the Uni of Tasmania on the use of AVHRR data in climate studies.
- Graeme Tupper (NSW Agriculture Department) on agricultural applications.
- Bob Reid, DPI, Tasmania, on SPOT data to study fertilizer success in agriculture.
- Greg Street from World Geoscience gave an overview of the use of both airborne and space techniques in geoscience.



Bob Reid and Geoffrey Fenn (AURISA Chairman, Tasmania) discuss a technical point.



Glen Roberts explains some point of debate to Manuel Nunez, with Bob Reid finishing his lunch.



Jim Mollison entertaining a client in Tasmania.

South Australia Towards 2000

The Remote Sensing Association of South Australia hosted a one day seminar on 22 September in the Mawson Lecture Theatre at the University of Adelaide. Over 60 attendees were addressed by 14 speakers who spoke on topics ranging from airborne radar, AVHRR applications to neural networks. The opening address was given by Dennis Puniard for ACRES.

Highlights included:

- An overview of AUSAR, the DSTO built airborne SAR, was given by project leader, Mike Burgess.
- Denis Barber spoke on the use of the NOAA AVHRR greenacre index in monitoring seasonal rainfall in arid rangelands.
- Iain Grierson from Roseworthy College gave a presentation on Low Cost Airborne Videography.
- Paul Whitbread from DSTO gave a 'simple' explanation of pattern recognition with neural networks.
- Vittala Shettigara gave a very interesting explanation of a technique for the detection of small man made objects.
- Peter Deer, DSTO/Uni of Adelaide, outlined a research project of a change detection in environmental monitoring.
- An excellent paper was presented by Steven Kirkby on dryland salinization.

The SA committee chaired by Peter Petruserics put together an excellent event with a small technical exposition. Copies of the papers can be obtained from:

The Secretary,
John Willoughby
Tel: (08) 303 4540



David Hart and Desi Asaris keep the Army up to date.

Book Review

Cities of the World as seen from Space

Published by Geocarta International Centre
Hong Kong 16711, RRP: \$25US (\$39A)

This moderately priced paperback is an interesting addition to the collection of books as compendiums of imagery from space. As the title suggests, this collection concentrates on the urban environments of our 'home' planet with 60 images presented of all the major cities on earth. Not surprising, the majority of images are from SPOT or LANDSAT Thematic Mapper, although a sprinkling of images from other sensors provide a different perspective. Images from IRS (India), ALMAZ (Russian SAR), MOS (Japan), Space Shuttle Photography, ERS1 (Europe) and NOAA-AVHRR are presented as well as some merged SPOT/TM images. There are also three introductory chapters by Bengt Paulsson (Swedish Space Corporation) on remote sensing applications in urban areas, Kamlesh Lulla of NASA/Johnson Space Centre on Space Shuttle Imagery and a group of authors from the Environment and Research Institute of Michigan (ERIM) on Satellite Image Processing. The contributions by Paulsson and the ERIM group are excellent, easy to read introductions for non technical readers.

An interesting image of Melbourne (Australia) is provided as part of Lulla's contribution. The image was

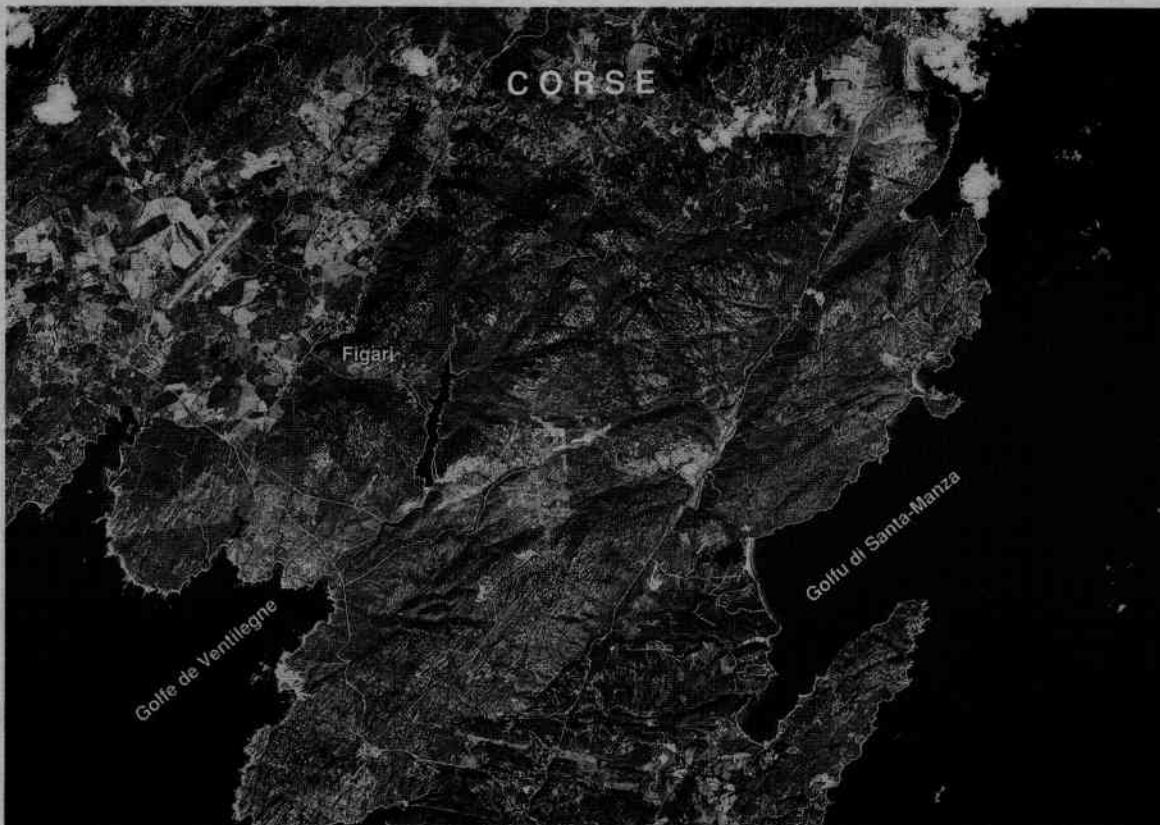
taken from the shuttle using the HERCULES digital camera. HERCULES is Hand-held, Earth-oriented, Real-time, Cooperative, User-friendly, Location-targetting and Environmental System – only the good old US of A could give us such a gem!

The images of the 60 cities vary considerably in quality. Although the reproduction is quite good quality, some of the images do not do justice to the technology. Four Australian cities are presented – Adelaide, Canberra and Perth (merged SPOT/TM) and Sydney (TM only). In my (slightly biased) opinion, the Adelaide image is the best quality image in the book. The ACRES applications group processed the Australian images, but by comparison to the other 50 plus images, the Australian contribution stands up very well.

The authors note that by the year 2000 more people on earth will live in cities than in rural areas. This book provides an excellent 'snapshot' view of the earth's major urban population centres and should provide urban analysts and geographers with a useful overview. The book would be an excellent addition to any remote sensing library.

Enquiries or orders should be directed to:

Geocarta International
GPO Box 4122, Hong Kong,
Tel: 852 546 4262, Fax: 852 559 3419.



Corsica as seen from SPOT 3.

SPOT news

SPOT 3 successfully launched

SPOT 3 was successfully launched from Kourou, French Guiana, on 25 September. Madeleine Clark from ACRES attended the actual launch, courtesy of SPOT Image and CNES, the French space agency. The satellite transmitted its first images on 27 September; the first PAN image was recorded over Corsica, a part of France on the shores of the Mediterranean Sea, shown below.

This panchromatic image was recorded by SPOT 3 at 10:30:10 UTC on 27 September 1993. Resolution: 10m.

Features to note:

- To the West, Figari Plain, with its cultivated alluvial soils and international airport.
- To the South, the town of Bonifacio, with its limestone headland and, to the East, Point Sperone, with its golf course and tourist complex (not shown on currently available maps).
- Extensive built-up areas on the Lavozi Islands and the airport on the northern end of Cavallo Island.

Note also the clear geological contrast between the granites covering most of the area, with fractures running in various directions and the Miocene limestones around Bonifacio. These appear dark grey and are more uniform, with East-West structuring. These formations are in contact with the Bonifacio fault. This feature corresponds to the valley, running from Bonifacio to the North-East, which is also the location of the Bonifacio-Porto Vecchio Road.

Check out of the satellite continues; however, all systems look fine at present and ACRES expect to commence using SPOT 3 over Australia in November/December. The capabilities of SPOT 3 are virtually the same as SPOT 1/2, except for functional recorders and some better options for low/high gain imaging.

SPOT Imaging Services changes over

Patrick van Grunderbeeck departed Australia in late August and has been replaced by Yves Bechacq as the Managing Director of SIS.

Yves left his job as head of Project Management department to take over from Patrick van Grunderbeeck. Patrick, who has been in Sydney for the last two years to help develop the market in Australia, will go back to MÈTÈO, France, the French weather bureau. Thirty-nine year old engineer, Yves, trained at the Ecole des Arts et MÈtiers, joined SPOT Image in June 1991 as head of Project Management. He and his team's job was to manage major projects, providing complete services from image programming, image processing through to training future users or supplying hardware and software.

As head of SIS, Yves will continue the excellent work his colleagues have done in developing the market for SPOT products since 1989.



Yves with Karen Fordham, SIS (SPOT Art representative).



Patrick tries on his Dri-As-A-Bone coat, presented by SIS staff.



Patrick dons the All Black colours, presented by Stella Bellis from NZ.

COMING EVENTS

AURISA GIS/ Remote Sensing Seminar

Thursday, 18 November 1993

10am

AIS Theatre, Bruce,
Canberra, ACT

The ACT Chapter of AURISA is presenting a full day seminar to present some case studies of the successful integration of remote sensing into GIS.

Speakers confirmed are:

- Tim McVicar, CSIRO Water Resources
- Phillip Tickle, Bureau of Rural Sciences
- Colin Pain, AGSO
- Major Mike Barnham,
Royal Australian Survey Corps
- Ms Laurie Chisholm, Charles Sturt University
- Ms Kim Bryscon, Bureau of Rural Resources/QDPI
- Rob Gourlay, ERIC
- Craig Smith, ACRES
- Frank Bullen, ERIN
- Brian Button, AGRECON

For more information contact:

Dennis Puniard (ACRES): (06) 252 4429

Keith Bell (AUSLIG): (06) 201 4337

Jenny Hutchison (AURISA): 273 4054

AURISA 93 Conference and Workshop

22 - 26 November 1993

Ramada Grand Hotel, Glenelg,
Adelaide, South Australia

OUTLINE PROGRAM

Workshops

Monday, 22 November 1993

- Workshop 1 Marketing GIS (All day)
- Workshop 2 Utility Workshop (All day)
- Workshop 3 Public Safety Network (All day)
- Workshop 4 Spatial Data Modelling (Morning)
- Workshop 5 Object Oriented CASE Tools
(Afternoon)
- Workshop 6 Social Planning and Community Services
- Applications for GIS (All day)
- Workshop 7 Data Standards and Directories (All day)

Tuesday, 23 November 1993

- Workshop 8 Project Life Cycle (All day)
- Workshop 9 Spatial Data Bases (All day)
- Workshop 10 Maps in the 90s and Beyond -
Getting the Message Across (All day)

■ Evening 6.00 pm - 8.00 pm

Technical Exhibit

- Opening of the Technical Exhibition

Conference

Wednesday, 24 November 1993

■ Morning

Opening Address

- Setting the Agenda - Robyn Williams

Keynote Papers - Urban Planning

- Transportation Management & Environmental Issues within Urban Centres - Neil Peterson
- Planning for Sustainable Urban Settlement - Bruce Harper

■ Afternoon

Focus Parallel Sessions - Delivering Business Benefits

A. GIS in Business

- Tony Farquhar - Manager,
Customer Services, Melbourne Water
- Bev Brooks - Director Land Information,
Dept of Environment and Land Management (SA)
- Brian Birley - General Manager Spatial Systems,
MITS
- Prof Ian Williamson - University of Melbourne

B. GIS in the Local Community

- Jim Hullick, Secretary, Local Government Association of SA
- Vern Robson - City Manager, City of Warrnambool
- Winsome McCaughey - Greening Australia

C. GIS Technologies

- Presenters to be advised

Keynote Papers - Social Planning

- GIS in Human Services Planning & Operation:
A New Dimension - Dr James Welsh
- The Role of GIS in Solving Socio-Economic Issues
Associated with Sustainable Urban Settlement -
Professor Graeme Hugo

Thursday, 25 November 1993

■ Morning

Parallel Sessions

- A. Information Technology
- B. Information Management
- C. Resource Management
- D. Asset Management

Keynote Papers - Environmental Planning

- Setting the Environmental Agenda -
David Buckingham
- The Role of GIS & Expert Systems in
Environmental Management -
Dr Kurt Fedra

■ Afternoon

Parallel Sessions

- A1. Social Planning
- A2. Standards
- B1. Strategic Issues
- B2. Emergency Services
- C1. Standards
- C2. Education
- D1. Local Government
- D2. Environmental
Management

Friday, 26 November 1993

■ Morning

Keynote Papers – Future Trends in GIS

- Trends in Data Base Technology – Professor Michael Goodchild
- GIS Directions – Ed Crane

AURISA Annual General Meeting

Parallel Sessions

- A. Information Technology
- B. Information Management
- C. Local Government
- D. Critical Business Issues

Lunch and Presentations

Conference ends at 3.00 pm

SPECIAL INTEREST GROUPS

Meetings

Special interest groups will hold meetings during the two pre-conference days. They are:

- Geodis User's Forum
Monday 22 November 1pm – 5pm
Tuesday 23 November 9am – 5pm
- Water Authorities Forum
Monday 22 November 1pm – 5pm
- National Genamap User's Group
Tuesday 23 November 9am – 5pm

Arrangements are being made for these meetings to be held at the Ramada Grand. Details can be obtained from the groups involved.

TECHNICAL TOURS

The Technical Tour will depart from the Ramada Grand Hotel at 1.00 pm, Tuesday, 23 November, and will visit:

- Port Adelaide GIS System
- Engineering and Water Supply Department DFIS Project, Grenfell Street, Adelaide
- Police Computer Aided Despatch System, Angas Street, Adelaide

TECHNICAL EXHIBITION

A major exhibit of GIS and related technologies is an integral part of the Conference.

REGISTRATION FEES

Full Registration (Wednesday, Thursday and Friday)

- Luncheon on all three days
- Morning and afternoon teas on all three days
- Cocktail Party on Tuesday evening
- Foods of the World dinner on Wednesday evening
- The Barossa Affair on Thursday evening
- All educational sessions on all three days
- Unlimited entry to the Technical Exhibition
- Conference satchel
- Conference papers/diskette

After 1/11/93

Members \$495
Non-Members* \$570

Student Registration (Wednesday, Thursday, Friday)

- Morning and afternoon teas on Wednesday and Thursday and morning tea only on Friday
- Lunch on Wednesday and Thursday
- All educational sessions on all three days
- Unlimited entry to the Technical Exhibition

Student Registration Fee:

	Full	Day
Members	\$180	\$50
Non-Members	\$200	\$80

Contact:

AURISA 93 Secretariat
Tel: (08) 363 1307, Fax: (08) 363 1604

Capitalising on Earth Observing Technology

Market & Finance Opportunities in GIS and Remote Sensing

8 December 1993

Anaheim, California, USA

A one-day symposium sponsored by:

- Earth Data Analysis Center
- John C Stennis Space Center
- American Society for Photogrammetry and Remote Sensing

In conjunction with:

Technology 2003 Fourth National Technology Transfer Conference & Exposition

7 – 9 December 1993

Anaheim, California Convention Center

Cost: Capitalising Earth Observing Technology Symposium US\$75;

Complete Conference Registration US\$250

For Further Information About the Symposium contact:

Stan Morain,
Earth Data Analysis Center
0011 1 505 277 4000.

7th Australasian Remote Sensing Conference, PORSEC and ISPRS Photogrammetric Conference

1 - 4 March 1994,

The World Congress

Melbourne, Victoria, Australia

Theme: "Mapping Resources, Monitoring the Environment and Managing the Future"

CONFERENCE OUTLINE PROGRAM

Opening Address

Dr Noel Brown - Director of the United Nations Environment Programme

Mapping Resources, Monitoring the Environment and Managing the Future

Dr Brown will explore the major problems of overpopulation, land degradation, pollution, deforestation, global warming and ozone layer destruction. He will examine the role of the Earth Summit Convention and roles for individual nations and communities in ecologically sustainable management.

Keynote Address - *Remote Sensing and the Decade Ahead: An Australian Space Council Perspective*

- Professor John Richards - Head of the Department of Electrical Engineering and Deputy Rector at the University College, Australian Defence Force Academy

Keynote Speaker - *New Uses of Global Satellite Data in Studying the Earth's Climate System*

- Professor Graeme Stephens - Professor of Atmospheric Sciences at Colorado State University, USA

Conference Keynote Speakers

- Dr Graeme Bonham-Carter - Research Scientist in the Geomathematics Section of the Geological Survey of Canada
Combining Evidence from Regional Datasets to Map Mineral Potential
- Professor Steve Drury - Open University of the UK in 1972
Remote Sensing and Enablement in Eritrea
- Dr Jim Gower - Institute of Ocean Sciences, Sidney, BC, Canada
Detection of "Red Tide" Events using AVHRR Imagery
- Dr Dean Graetz - Principal Research Scientist with the CSIRO Division of Wildlife and Ecology
Surface Parameters for Monitoring the Environment
- Dr Hiroshi Kawamura - Japan
Necessity of Regional Validation of Satellite-Derived Parameters for Oceanography
- Dr Brian Lees - Geography Department, Australian National University
Decision Trees, Artificial Neural Networks and Genetic Classification Techniques for Classification of Remotely Sensed and Ancillary Data

- Dr Mahta Moghaddam - Jet Propulsion Laboratory, California Institute of Technology in Pasadena, USA
JPL AIRSAR: System Overview and Introduction to Recent Advancements in Data Interpretation
- Mr John Morgan - Director of the European Organisation for Meteorological Satellites, EUMETSAT
EUMETSAT Satellite Programs and Plans
- Dr Thierry Phulpin - Centre National de Recherches Meteorologiques in Toulouse, France
An Overview of CNES Remote Sensing Programs for Environmental Monitoring
- Dr Jose Stuardo - Professor of Biological Oceanography, University of Concepcion, Chile
Imagery and Sensors for Studying Oceanographic and Ecological Phenomena

THE PACIFIC OCEAN REMOTE CONFERENCE, PORSEC '94

The Pacific Ocean Remote Sensing Conference, PORSEC '94, will coincide with the 7th Australasian Remote Sensing Conference and two photogrammetry conferences. The concurrent conferences will bring together much of the world's expertise in remote sensing of land, oceanic and atmospheric phenomena and processes and therefore represent an excellent opportunity for the free exchange of ideas and techniques, from the very practical to the highly esoteric.

PORSEC '94 will feature presentations from internationally-known experts in the field of remote sensing, including: Dr Robert Stewart (Canada), Professor Bill Smith (USA), Dr Hiroshi Kawamura (Japan) and Dr Leonid Mitnik (Russia).

ISPRS COMMISSION V INTERCONGRESS SYMPOSIUM AND 2ND AUSTRALIAN PHOTOGRAMMETRIC CONFERENCE

The Australian Photogrammetric and Remote Sensing Society (APRSS), on behalf of Australia currently holds the responsibility for Technical Commission V of the International Society for Photogrammetry and Remote Sensing (ISPRS).

Papers with a topic within the broad disciplines of close range photogrammetry and machine vision have been requested for the ISPRS Commission V Symposium, including:

- knowledge-based vision metrology
- close range imaging systems and their performance
- structural and industrial measurements with consideration of CAD/CAM aspects
- photogrammetry in architecture and archaeology biostereometrics and medical imaging
- image sequence analysis

The Second Australian Photogrammetric Conference will be held in conjunction with the Commission V Symposium to take advantage of the wider audience. Papers will address photointerpretation and aerial mapping soft copy photogrammetry, stereo matching and digital orthophotography.

WORKSHOPS

Monday 28 February 1994

AVHRR Workshop

The workshop will emphasise applications to studies of land surface processes, particularly to the new program to produce an AVHRR global one-kilometre resolution land dataset.

Monday, 28 February 1994

Remote Sensing of Optical Water Quality

The workshop will focus particularly on opportunities provided by the processing of airborne high spectral resolution data, such as that available from the CASI instrument, as well as more familiar and accessible airborne and space data, such as Daedalus and SPOT/TM data. The fee of \$50 will include lunch and morning and afternoon tea as well as prepared documentation.

REGISTRATION INFORMATION

Registration Fees (Australian Dollars)

Category	By 1/12/93	By 1/1/94	After 1/1/94
Full delegate	\$450	\$550	\$600
Full time student*	\$100	\$100	\$100
Accompanying persons	\$100	\$100	\$100
Day registration	\$150		

Contact:

Conference Secretariat
PO Box 29,
Parkville Vic 3052, Australia
Tel: +613 387 9955
Fax: +613 387 3120.

Meeting announcement

And call for poster papers

The Future of Tropical Savannas: Managing Resources and Resolving Conflicts

17 - 22 July 1994

Townsville, Queensland, Australia

This symposium is about people living in tropical savannas and how science can help resolve conflicts that arise from their activities. Resolving those conflicts will depend on how successfully different perceptions of land use and management can be accommodated. Scientific information, societal needs and values and economic costs and benefits must all be integrated into policy if sustainable land use is to be a reality.

The meeting will consist of invited speakers on a range of topics that include pastoralism, tourism, mining, aboriginal use, cropping, parks and conservation and conflict resolution. In addition, the Organising Committee invites the submission of abstracts for contributed poster papers that address the theme of the meeting. Abstracts will be evaluated and authors notified to develop a poster paper for the meeting. Authors of selected posters will be invited to submit a two-page paper for publication in the proceedings of the meeting. Criteria for selection will include relevance to the theme of the meeting and originality.

Please submit abstracts of 300 words or less by 1 December 1993 to:

Joel Brown
CSIRO-Davies Laboratory
Private Mail Bag,
PO Aitkenvale, Queensland 4814
Australia.

CALENDAR

Remote Sensing and Associated Events

1993

18 November Canberra, ACT

GIS and Remote Sensing

A Torrid Engagement or Happy Marriage. A one day AURISA seminar.

Contact: ACRES or AURISA, (06).

24 - 26 November Adelaide, SA, Australia

AURISA 93 Environmental, Urban and Social Planning - The Winning Vision

Contact: Secretariat,

Tel: (08) 363 1307, Fax: (08) 363 1604.

6 - 10 December Nedlands, WA, Australia

International Congress on Modelling and Simulation 1993

Modelling change in environmental and socioeconomic systems.

Contact: International Congress Secretariat, Department of Economics, University of Western Australia, Nedlands, WA, 6009.

1994

17 - 21 Jan Val d'Isere, France

Physical Measurements and Signatures in Remote Sensing

The sixth international symposium on this topic will incorporate presentations on data pre-processing, active and passive microwaves and future EO systems. The meeting is being prepared by the International Society of Photogrammetry and Remote Sensing, and organised by the French National Center for Space Studies (CNES).

Contact: Mr Alain Thabaud, 173 avenue de Lautrec, 81100 Castres, France, Tel: 33 6372 3100, Fax: 33 6372 3032.

31 Jan - 2 Feb New Orleans, USA

Remote Sensing for Marine and Coastal Environments

Contact: Second ERIM Conference, Robert Rogers, ERIM Box 134001, Ann Arbor, MI, USA, Tel: 0011 1 313 994 5123, Fax: 0011 1 313 994 1200.

21 - 24 Feb Toronto, Ontario, Canada

Eighth Annual Symposium on Geographic Information Systems

Contact: GIS '94 Symposium Office, Suite 207, 1002 Homer Street, Vancouver, BC, Canada, V6B 2X6, Tel: 604 688 0188, Fax: 604 688 1573.

28 Feb - 4 Mar Melbourne, Victoria, Australia

Seventh Australasian Remote Sensing Conference

Contact: Secretariat, Tel: (03) 387 9955, Fax: (03) 387 3120.

5 - 12 Mar Melbourne, Victoria, Australia

FIG XX International Congress

Contact: ICMS, Tel: (03) 387 9955, Fax: (03) 387 3120.

16 - 20 May Williamsburg, USA

International Symposium on the Spatial Accuracy of Natural Resource Databases

Contact: Dr James L Smith, Department of Forestry, Virginia Tech University, Blacksburg, Virginia, Tel: 24061 0324.

June Cardiff, Wales, UK

Education & Remote Sensing '94

The second conference of its kind aims to bring together educators, industry and space companies to provide a sensible approach to space education and remote sensing in particular.

Contact: Annette Temple, Director, The Satellite Project, Dyfed LEA Satellite Centre, Newcastle Emlyn, Dyfed SA38 9DB, UK, Tel: 44 239 710 662, Fax: 44 239 710 985.

29 June - 2 July Hobart, Tasmania, Australia

Coast to Coast '94 - A National Coastal Management Conference

Contact: Penelope Archer, GPO Box 844, Hobart, Tasmania 7011, Tel: (002) 313223, Fax: (002) 313224.

14 Aug - 3 Sep Dundee, UK

The Determination of Geophysical Parameters from Remotely-Sensed Data

Contact: 8th Dundee Summer School on Remote Sensing, Robin Vaughan, Department of APEME, University of Dundee, Dundee, UK.

ITC announces launch of ILWIS 1.4

ILWIS 1.4, the latest version of ITC's geoinformation and remote sensing system, is now available. ILWIS (the Integrated Land and Water Information System) is a user-friendly PC DOS-based software package which operates on a relatively low budget, offering the facility to integrate conventional GIS techniques, image processing, raster-based spatial modelling and tabular databases.

ILWIS not only supports methodologies for land use zoning and watershed management in keeping with its original design objectives; it has also diversified into other applications in urban analysis, land evaluation, environmental management, hazard monitoring and rural development.

ILWIS 1.4 contains many improvements for established functions including: enhanced file security and user facilities; Postscript level 2 output; extended flexibility for patterning and incorporating different text fonts in map annotation; assigning arbitrary coordinates to non-referenced raster maps for experimenting with transient data models.

Important new features include: random number generation in Table Calculations for Monte Carlo's simulation; pattern analysis and spatial correlation on point files; optimised boundary extensions for neighbourhood operations.

ILWIS runs on a minimum hardware platform of:

- IBM-AT 80286, 80386, 80386SX, 80486 or compatible, with appropriate math coprocessor;
- colour graphics monitor with a choice of graphics boards;

- monochrome monitor with MDA or Hercules card.

A variety of digitisers, printers and plotters are supported.

ILWIS is one of the most successful products of recent research and development at ITC (International Institute for Aerospace Survey and Earth Sciences) in the Netherlands and is now available through a network of distributors around the world. Because of its adaptability; it has become an essential tool for diverse users in educational institutions, government organisations, private enterprise and international aid agencies.

Currently, more than 1200 ILWIS systems are operative in 86 countries. The Coffee Growers Association of Colombia, the European Community (in the CORINE program, Europe's largest environmental database), the Food and Agricultural Organisation (for ARTEMIS) and the Canadian International Development Agency, with an international oil consortium sponsoring the African Magnetic Mapping Project, are among our many successful users.

The ILWIS manual has been completely revised to facilitate use by both beginners and experts. A number of case studies and training packages are also available.

ILWIS is available in Version 1.4 at \$7 500 for non-profit organisations (government departments and educational institutions) and \$20 000 for commercial use, based on current exchange rates. Substantial reductions apply to multiple user copies.

Further information or demonstration can be arranged by contacting Mike Aubrey or Tom Bradbury at:

Technical & Field Surveys PTY LTD,
Tel: (02) 887 8642, Fax (02) 887 8647.



Subscription Form

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

ACRES Update
PO Box 28
Belconnen ACT 2616
Australia

or: Fax: (06) 251 6326

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Organisation

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..... Postcode

Phone..... Fax

ACRES Official Distributors

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Indooroopilly Qld 4068
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Fax: (07) 871 0042

Dept of Lands Qld
Locked Bag 40
Coorparoo Delivery Centre Qld 4151
Mr Bob McIntosh, Manager
Remote Sensing
Tel: (07) 896 3218
Fax: (07) 896 3510

Mapping & Monitoring Technology P/L
37 Tully Street
Townsville Qld 4810
Dr Debbie Kuchler, Managing Director
Tel: (077) 71 6622
Fax: (077) 71 6626

NEW SOUTH WALES

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Remote Sensing Unit
PO Box 143
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Milton's Point NSW 2061
Dr David Pratt, Director
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Fax: (02) 922 6141

SPOT Imaging Services P/L
Suite 502
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St Leonards NSW 2065
Mr Yves Bechacq, Manager
Tel: (02) 906 1733
Fax: (02) 906 5109

VICTORIA

Resource Industry Associates
538 Brunswick Street
North Fitzroy Vic 3068
Mr Terry Boyd, Manager
Tel: (03) 482 4945
Fax: (03) 482 4956

WESTERN AUSTRALIA

Dept of Land Administration
Remote Sensing Applications Centre
65 Brockway Road
Floreat WA 6014
Mr Ken Dawbin, Manager
Tel: (09) 340 9330
Fax: (09) 383 7142

ESRI Australia
The Garden Office Park
345 Harborne Street
Tom Giles, Sales Director
Herdsman WA 6017
Tel: (09) 242 1005
Fax: (09) 242 4412

SOUTH AUSTRALIA

Dept of Environment & Land
Management
Resource Information Group
Image Data Services
282 Richmond Road
Netley SA 5037
Mr Tom Tadrowski,
Coordinator Image Data
Tel: (08) 226 4903
Fax: (08) 293 4898

AUSTRALIAN CAPITAL TERRITORY

AgRecon Pty Ltd
University of Canberra
PO Box 1
Belconnen ACT 2616
Dr Brian Button, Managing Director
Tel: (06) 201 2565
Fax: (06) 201 5030

NORTHERN TERRITORY

Geoimage Pty Ltd
Ground Floor
CML Building
59 Smith Street
Darwin NT 0800
Mr Bernard Fitzpatrick, Manager
Tel: (089) 413 677
Fax: (089) 413 670

WORLDWIDE

EOSAT
4300 Forbes Boulevard
Lanham
Maryland 20706
USA
Dr Steven Cox, Executive Director
Marketing and Sales
Tel: 1 301 552 0565
Fax: 1 301 552 3762

INDONESIA

PT Indica Dharma Consulting Services
Jl Teluk Betung No 54
Jakarta Pusat 10230
Mr Muhammad Isnaini
Tel: 62 21 321 478
Fax: 62 21 321 406

Specialist Consultants

ERIC
8 Trickett Street
Holt ACT 2615
Mr Rob Gourlay
Tel: (06) 255 1398

Southern Remote Sensing
24 Curtis Street
North Adelaide SA 5006
Mr Richard DuRieu
Tel: (08) 267 3983
Fax: (08) 267 3983

Technical and Field Surveys
Building 3
CSIRO Complex
30 Delhi Road
North Ryde NSW 2113
Mr Michael Aubrey
Tel: (02) 887 8642
Fax: (02) 887 8647

Spectrascan P/L
2/184 Harbourne Street
Wembley WA 6014
Mr Bill Holman
Tel: (09) 387 8188
Fax: (09) 387 8400

Australian Centre for Remote Sensing

Dunlop Court
Fern Hill Park
Bruce ACT 2617 PO Box 28
Belconnen ACT 2616
Phone: (06) 252 4411
Fax: (06) 251 6326
Telex: AA 6151

