

ACRES New Range of SAR Products



GUEST PRESENTERS AT THE ERS SAR SEMINAR SERIES HELD LATE LAST YEAR WERE GAUTE SOLAAS (LEFT) FROM ESRIN, ITALY, AND ROB SCHUMANN (RIGHT), ESA'S SOUTH EAST ASIA REPRESENTATIVE.

ACRES is now offering a new range of Synthetic Aperture Radar (SAR) products. These products are available in a greater variety of processing levels than previously available, allowing customers to choose a product more suited to their needs.

SAR data is unlike optical remote sensing data in that images can be acquired through cloud, smoke and haze. Interpretation of SAR data is also different to that of optical data.

Initially ACRES will only be processing SAR data it acquires from the European Space Agency's Earth Resource Satellite (ERS). The ERS satellites have

been orbiting Earth for over 5 years, during which time ACRES has accumulated a comprehensive archive of about 24,000 scenes over Australia, New Zealand and most of Papua New Guinea. Each scene is about 100 km x 100 km, and can be framed anywhere along the path of the satellite. ACRES is currently working on the processing of SAR data from the Japanese satellite, JERS.

The new range of SAR products has been available since 1 January 1997, thanks to the installation of ACRES' new Synthetic Aperture Radar Processing System, purchased from Vexcel Corp of Boulder, USA.

At this stage the most popular product is likely to be the "Bulk Path Image Product" which has a high degree of radiometric and geometric processing. By April this year additional products will also be available.

For more details, please contact ACRES, your ACRES Distributor or refer to the ACRES web pages on <http://www.auslig.gov.au/acres/index.htm>.

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Manager's Message



I have been Acting Manager of ACRES while Paul Trezise is Acting Assistant General Manager for AUSLIG. Although the appointment was initially for three months in August 1996, the extended period of appointment has allowed me to participate more extensively in ACRES' strategic planning processes, as well as operational activities.

There are certainly many exciting issues facing ACRES at the moment. There will be an explosion of new high-resolution satellites within the next two years, and decisions need to be made by ACRES which require a detailed risk analysis. The market for radar imagery is still in its infancy in Australia, and ACRES needs to work closely with value-adding resellers and users to make sure that this important source of data is fully exploited. ACRES is also involved in the ARIES project, a major project on the international scene which has a unique marketing profile and tremendous potential.

Internally, ACRES is planning to maintain its leading position as a quality provider of data to users. Developments will include the upgrading of our reception facilities to enable, among other things, viewing of the data catalogue within one day of reception. A new processing system will improve delivery times for all products, and will provide flexibility to add additional satellites. A media-server project now under way, will allow more flexible input/output, including CD-R. The catalogue system is being upgraded to include the improvements requested by users since its release a year ago.

I am excited to be able to assist with these projects which will bring such benefits to all users of remote sensing data.

Ian Shepherd

Editor's Note

Jim Mollison

You will notice that this edition of ACRES Update is the first to have an Issue Number quoted on the front cover. This will help all recipients of ACRES Update to maintain an accurate chronological record of issues received.

Articles for publication in ACRES Update are gladly accepted from a variety of sources. Please forward any relevant articles to "The Editor, ACRES Update" at the address shown on the back cover.

Thanks is extended to all those who provided articles for this edition, and to our in-house photographers Anton Albina and Col Ellis.

ERS SAR Seminars around Australia

During September 1996, ACRES, our Distributors and the European Space Agency (ESA) conducted a series of information seminars around the country on ERS SAR data. Seminars were held in Perth, Adelaide, Melbourne, Canberra, Brisbane and Sydney.

We were fortunate in having two expert speakers from ESA. The first was Rob Schumann, ESA's South East Asia Representative, who spoke about basic SAR theory, practical data handling techniques, common difficulties and how they can be overcome, and ways to manipulate, combine and display data for real applications.

The second speaker was Gaute Solaas from ESRIN in Italy. ESRIN is that part of ESA concerned with ERS SAR data. Gaute is a SAR applications expert, and his seminar presentation compared ERS SAR to other SAR sensors, and described numerous ERS SAR applications.

Jim Mollison from ACRES also spoke briefly about ACRES large SAR archive, the status of ACRES' new SAR processing system, and some of the products that would be available.

ACRES Distributors at each location supported the seminars by organising venues, providing refreshments and attracting attendees.

The seminars were well received by the majority of people who attended. Most attendees were relatively new to SAR technology, so the seminars provided some useful grounding for future learning.

Restructuring of AUSLIG

Ian Shepherd

In our last edition of ACRES Update, we reported that the Federal Government had reaffirmed AUSLIG's continued program responsibility for remote sensing. The way in which ACRES' services are delivered is not being changed. However, many of AUSLIG's other service delivery mechanisms are being market tested, and this process has now become well advanced.

An Invitation to Register Interest in the purchase of AUSLIG's commercial activities (primarily surveying and customised mapping) has been issued, and a shortlist of 11 groups has been selected to respond to a Tender. It is expected that the sale process will be completed by the end of May this year.

A Tender for the market testing of AUSLIG's map and (non-remote sensing) data production will be issued in March, with the outcome decided in May 1997.

Requests for Proposals for the market testing of AUSLIG's distribution arrangements for non-remote sensing data, and the delivery of satellite laser ranging services will be issued in April 1997.

A restructuring of AUSLIG is also taking place, in order to reflect its new program management focus. This restructuring will be complete by the end of June 1997.

ACRES new ERS SAR Processing Levels

At this stage (February 1997), ACRES new SAR processing system allows us to produce the following processing levels. (The three character codes, in brackets after each name, are the codes used by the European Space Agency.)

ANNOTATED RAW DATA (RAW)

This data is minimally preprocessed raw SAR data suitable for input into other SAR processors. It is mainly used as a ground station interchange format or by research institutes interested in full SAR data processing. Such data cannot be ingested by an image processing system.

SINGLE LOOK COMPLEX DATA (SLC)

Data at this processing level is mainly used for interferometry (DTM generation) and for the development, calibration, testing and use of SAR algorithms. The data are "slant range" which basically means that relationships between observed objects are based on time differences between radar pulses. (This is in contrast to other processing levels in "ground range", meaning that observed objects are spatially related to the Earth as an approximate flat image.)

BULK PATH IMAGE (PRI)

This is a path oriented and system corrected product, being the basic product used for a variety of remote sensing applications. This product is noise reduced (4 looks) which results in less speckle on the image. The four looks also help to achieve the equal sized square pixels. The data is able to be calibrated by use of a calibration constant supplied in the header file of the product.

ADDITIONAL PROCESSING LEVELS

Additional processing levels will be progressively available from ACRES, with the next level due for release in April 1997. It will be system corrected but rectified to a map grid.

ERS SAR Research and Demonstration Purchasing Category

ACRES has implemented a special category for potential customers of ERS SAR data who wish to use the data for research and/or demonstration purposes. This category has been established according to ESA guidelines whereby customers can purchase data at a reduced price if their usage is in accordance with the criteria listed below. The offer is available only for ERS SAR *digital* data.

1. The data shall be used for specific projects such as:
 - scientific research;
 - demonstration, education or training;
 - development of *new* algorithms, products or applications.
2. In addition to the above points, the usage of data must be non-commercial (eg. no financial return from the use of that data) and non-operational (eg. not part of normal operating procedures).
3. A final report stating the major results of the project must be provided to ACRES. ACRES may choose to summarise this report for publication.
4. The number of data products allowable per project will be restricted to the minimum number of scenes necessary for achieving the project's objectives. ACRES will have the final decision on the number of scenes made available.
5. In return for receiving this reduced priced data, the customer must agree to contribute to the promotion of the ERS Programme and its application, eg. presentation of results in conferences, where appropriate; provision of inputs for the production of ERS application fact sheets; articles for ACRES publications.
6. ESA and ACRES shall be acknowledged as the data source and distributor in any publications.
7. The data is to be used only for the above mentioned purposes and there may be no onward transmission to Third Parties.

Applications for purchasing data under this category must be made on the "ERS SAR Research and Demonstration Usage Project Form". Applications will be considered on a case by case basis, with no guarantee of reduced pricing being granted. Copies of the R&D Usage Project Form and other related details are available from ACRES, our Distributors or from ACRES web pages at:

http://www.auslig.gov.au/acres/prod_ser/ers_r&d.htm

SAR Research with UNSW

An Agreement has been signed by ACRES with the School of Geomatic Engineering, University of New South Wales, that will enable UNSW to use the facilities of ACRES for processing SAR data, and test the quality of elevations determined from the data. Mr Majid Mirbagheri, a postgraduate student, will be working with Craig Smith and other ACRES staff on this project. As well as testing ACRES' new SAR processing system in a non-standard application, both parties expect to benefit by a clearer understanding of the potential application of SAR interferometric data in mapping.

Synthetic Aperture Radar Short Course

The University of NSW will soon be holding a short course on Synthetic Aperture Radar (SAR).

The course has been designed to provide a good understanding of the theory and application of radar remote sensing. This includes the nature of surface and volume scattering, image distortion and correction and an introduction to radar applications in agriculture, forestry, geology, oceanography, engineering, urban areas and mapping. Other topics will include an introduction to SAR signal and image processing, passive microwave remote sensing, radar interferometry, quad-polarised radar, polarisation signatures and backscatter modelling, and a special session on AirSAR and RADARSAT

When: 7-9 and 12-13 May 1997, from 9.00 am to 5.00 pm each day

Where: Room 136, 1st Floor Geography and Surveying Building, The University of New South Wales, Kensington, NSW.

Presenters: The course will be presented by Professor Bruce Forster (Theory), with specialist lectures by Associate Professor Tony Milne (Applications), and Dr Yunhan Dong (Post Doctoral Fellow and expert in radar backscatter modelling).

Cost: The cost of the course, including notes, tutorial and practical material, and morning and afternoon teas, is \$1000. Payments should be made to the Centre for Remote sensing and GIS, UNSW.

For further information: Please contact Professor Bruce Forster on 02 9385 4172 or Fax 02 9313 7493, E-mail B.Forster@unsw.edu.au.

ACRES Annual Distributors Meeting

John Payne, Retail Sales Manager



JO PLUNKETT FROM QUEENSLAND'S DEPARTMENT OF NATURAL RESOURCES ACCEPTS THE GOLD AWARD FOR DISTRIBUTOR SALES FROM PAUL TREZISE, AUSLIG'S ACTING ASSISTANT GENERAL MANAGER.

Late November 1996 saw the gathering in Canberra of the ACRES Distributors for the annual distributor meeting. In line with previous meetings there was a good exchange of views in relation to sales and marketing, as well as detailed briefings on production and distribution issues.

An addition to this year's forum were briefings on strategic issues from representatives from EOSAT and ANTRIX Corporation on IRS imagery, the Swedish Space Corporation on RESURS imagery, and a telephone hook-up with RADARSAT International from Canada. This new agenda proved popular with all distributors and every effort will be made to continue this practice at future meetings.

The annual awards were also presented to the top sales achievers for 1995/96. The criteria used for calculating these awards were the total distributor data sales, excluding SPOT data sales. The three award winners were:

Gold Award: Department of Natural Resources, Qld

Silver Award: Geoimage Pty Ltd

Bronze Award: Remote Sensing Services, DOLA, WA

Paul Trezise, AUSLIG's acting Assistant General Manager, gave a briefing on the impact of the Federal Government's Budget on AUSLIG and ACRES operations. Distributors were pleased to hear that the impact on ACRES operations in particular would be minimal.

ACRES acting Manager, Ian Shepherd, provided an interesting session on the key issues and status of operations with regard SPOT, RESURS, TERSS, ARIES, RADARSAT, Landsat, EOSAT and IRS.



BOB WALKER OF GEOIMAGE RECEIVED THE SILVER AWARD.



RICHARD SMITH FROM REMOTE SENSING SERVICES, DOLA, WA, WAS PRESENTED WITH THE BRONZE AWARD.

Sessions were also provided on new products such as AUSLIG's GEODATA 9 second DEM, the proposed new Entry Level Product, and proposed developments for the ACRES digital catalogue.

The meeting ended with an open forum and a presentation from Richard Smith, Remote Sensing Services, WA, on proposals for X-band reception in Western Australia.

At the close of the meeting distributors were asked to complete a detailed questionnaire which sought their views on what they thought of the meeting format, and the range and type of agenda items. The purpose of the questionnaire was to provide greater focus to future meetings and to ascertain whether we were sat-

isfying distributor's needs. Analysis of the results has revealed that the current content and format were very well received with additional information requested on future marketing plans and proposed new products.

The opportunity to listen to and discuss issues with representatives from the satellite operators proved very popular and every endeavour will be made to ensure that this is continued for future meetings.

Following the meeting a relaxing time was had by all at the evening dinner, which had a decidedly Christmas theme.



THE FEMALE CONTINGENT AT THE DISTRIBUTORS' DINNER KINDLY ALLOWED RICHARD SMITH, DOLA, TO POSE WITH THEM FOR THIS PHOTO.

Space Imaging acquire EOSAT

On 5 November 1996 Space Imaging and Lockheed Martin announced they had reached an agreement concerning the purchase of EOSAT, a Lockheed Martin company, by Space Imaging. Under the terms of the agreement, Space Imaging will acquire all of the assets of EOSAT through a new subsidiary – Space Imaging, the Earth Observation Satellite Co. (SII/EOSAT), which will maintain the existing distribution agreements EOSAT has with its global satellite imagery suppliers. These include agreements to distribute Landsat imagery, as well as exclusive agreements with the ANTRIX Corp. Ltd. of India, the commercial marketing arm of the Indian Space Research Organisation, to distribute its Indian Remote Sensing (IRS) satellite imagery – the best of which provides 5.8 meter resolution imagery.

“This is a major step in Space Imaging’s strategy to become the world’s preeminent supplier of earth information and derivative products and services”, said John Copple, Space Imaging’s chief executive officer. “The combination of imagery from a variety of sources – our own satellites, other satellites, and aerial photography sources – will enable us to satisfy the needs of a broad range of customers in a variety of businesses. EOSAT’s exclusive access to multiple satellite systems, as well as its archive of previously collected imagery, moves us much closer to fulfilling this goal”.

At the time of the merger, EOSAT was the largest US provider of the world’s primary sources of space-based remote sensing imagery of the earth for use in commercial, government, research and academic applications. The company evolved from being the US Government partner charged with commercialising the Landsat program, to a global earth observation and information company that has partnerships and alliances with many of the leading remote sensing enterprises worldwide.

The acquisition provides Space Imaging with an established international distribution network, customer base and highly capable workforce, and it makes the company one of the world’s largest suppliers of imagery and information products. This role will expand further when Space Imaging launches the world’s first commercial 1 meter resolution satellite, CARTERRA™, in late 1997. All the information the company produces will be available in GIS-ready, digital formats, as well as in hardcopy formats, to customers worldwide.

EOSAT’s archive of historic imagery will complement Space Imaging’s CARTERRA™ digital archive, giving customers the opportunity to perform change analysis for many applications.



SUSAN SINCLAIR, DIRECTOR OF WORLDWIDE DISTRIBUTION NETWORK FOR SPACE IMAGING EOSAT, PRESENTS THE ACRES AWARD TO JIM MOLLISON, ACRES PRODUCT MANAGER.

ACRES Wins Space Imaging EOSAT Award

ACRES has won yet another worldwide award for being an outstanding regional representative for Space Imaging EOSAT in 1996. The award predominantly recognises the large volume of Landsat data sales by ACRES and our network of distributors. ACRES won a similar award last year for 1995 sales.

The award was presented to ACRES Product Manager, Jim Mollison, at the Space Imaging EOSAT Global Distributors Meeting recently held in Florida, USA.

New SPOT Distribution Agreement

AUSLIG has concluded a new agreement, with the French company SPOT IMAGE, to continue to acquire and distribute satellite data from the SPOT series of satellites in Australia for a further three years.

The new agreement covers access by both Alice Springs and Hobart receiving stations. The agreement also increases the access time available from the SPOT satellites.

SPOT data products are distributed by SPOT Imaging Services in Sydney who have sub-licenceses in all the Australian Capital cities.

Regular reception of SPOT data by ACRES began at Alice Springs in 1990. The data archive includes approximately 325,000 SPOT scenes from within the station’s zone of visibility which covers Australia, Papua New Guinea and southern Indonesia. The Hobart station, operated by ACRES from 1996, extends the area covered to New Zealand.