Australian Centre for Remote Sensing

ACRES UPDATE

Manager's Message

Most readers will be aware of the replacement late last year of the Australian Space Board by an Australian Space Council, with a wider representation, chaired by Professor Don Watts.

Ken McCracken chaired the Board's Remote Sensing Committee, which advised the Board on priorities for allocating national space program funds.

The Committee also recommended on Australia's requirements for data, infrastructure, research and development and on coordination issues in Observing Australia, published in 1992 by the Australian Space Office on behalf of the Board.

These issues were being pursued by the Committee in consultation with a cross section of people who were able to bring a wider view to the issues, particularly from the user perspective.

Under the new arrangements, the Deputy Chairman of the Council, Professor John Richards, is chairing the Council's interim Working Committee on Earth Observation. Our task is to prepare for the Council a five year outlook on remote sensing. Ken McCracken's Committee's work, which used a process of wide consultation with the remote sensing community, has laid the foundation for this work.

As a constituency that is primarily concerned with remote sensing, while recognising that we have an interest in other Council issues such as communications, I feel we can be confident that remote sensing will have a high profile with the Council.

Carl McMaster

NARGIS 93

North Australian Remote Sensing and Geographic Information Systems Forum

Darwin

9–11 August 1993

Call for Papers and Registration

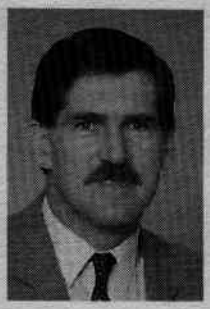
The aim of this forum is to promote the exchange of ideas about, and discussion of, the use of remote sensing and geographic information systems applications as tools in the management of the vast and sparsely populated areas of northern Australia.

See pages 14 and 15 for details.

INSIDE

April 1993

EDITORIAL



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.

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ACRES Staff and Organisation News

Ana Grzic left us in February to commence maternity leave and had a baby girl (Kristina) on 27 February. Both well. Congratulations!

Karen Thomsett has joined us as our face and voice to the outside world.

Ainsley Niblett has taken over the despatch duties as Merv Trubee moved to the computer room.

Jillian Healand has moved from Administration to Sales and Marketing as Marketing Support Person.

Jim Mollison has joined the Sales Team. He comes from an agricultural background in Queensland and will look after Queensland as his territory.

Jim

Karen

Ainsley

Peter Radonyi with the ERS-1 Fast Delivery Processor

The position of Senior Engineer at ACRES has been filled by Peter Radonyi. Peter has a Bachelor of Science degree from the University of Sydney. He has experience in VAX systems and networking at the University of New England-Northern Rivers. He also has experience as a Computer Engineer working on trouble shooting problems associated with Radar Systems on the Jindalee Over the Horizon Radar facility at Alice Springs. He has written programs in ORACLE/Pascal/Fortran/DCL. Peter's intellect is biased towards that of mathematics.

Peter's combination of skills, especially in the analytical, VMS systems, and signal processing areas, makes him particularly attractive to have for the AETHERS-1 SAR integration and ACRES network requirements to be put in place for communication with satellite operators in the 1993 area. It is these two areas where Peter will be given his primary tasks.

The image in the margin on each page is an ERS-1 SAR Image of Irian Jaya.

Sales Team Territories Defined

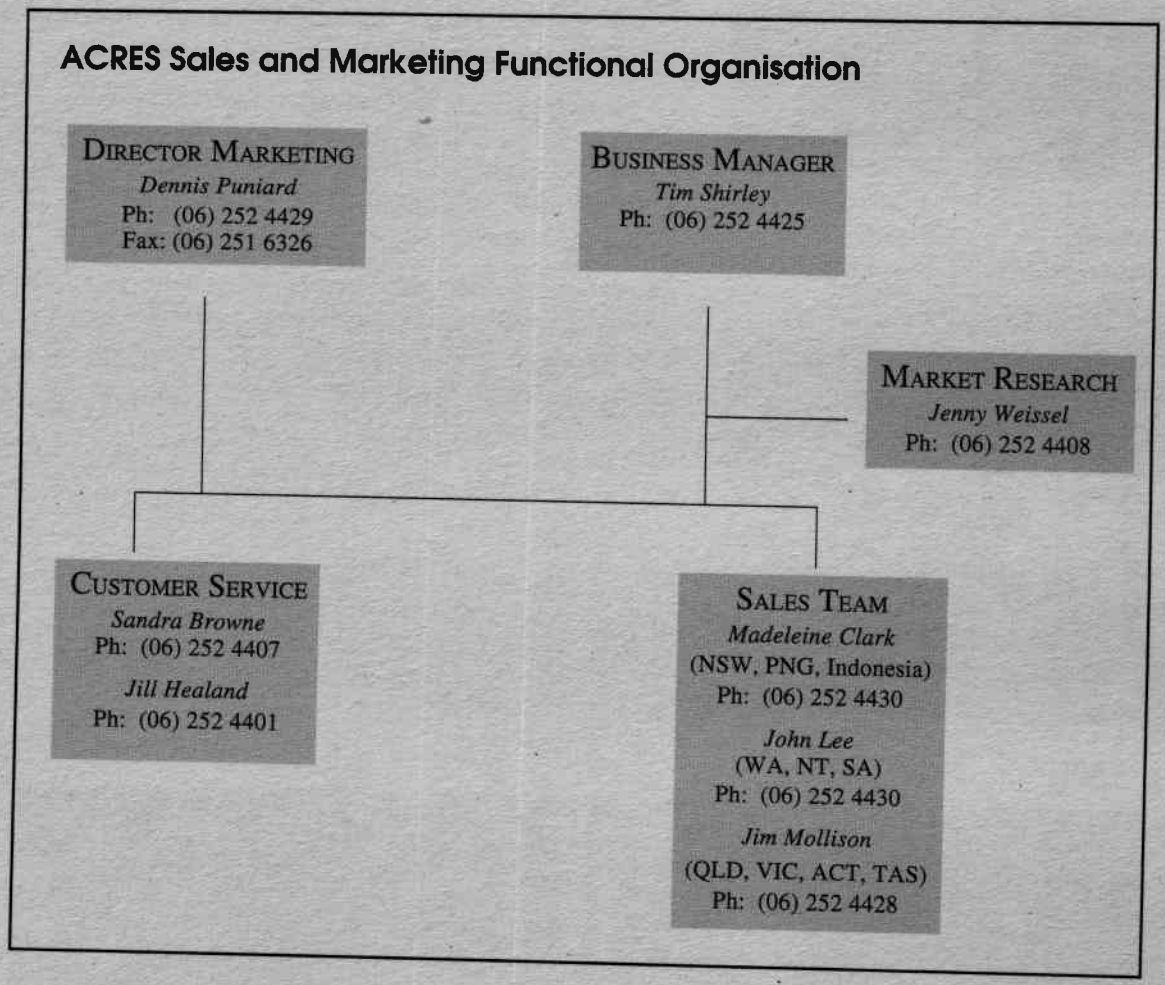
To facilitate a customer focus, the sales team has been allocated territories and will look after all clients in their territories. The responsibilities are:

- NSW, PNG, Indonesia:
  Madeleine Clark
- WA, SA, NT:
  John Lee
- QLD, VIC, ACT, TAS:
  Jim Mollison

Also, Erik Elmar has moved back to his Project Engineering role. Tim Shirley will take on day to day administration for the Sales Team, but with the well defined territories will not have a major role externally.

Dennis Puniard will continue to have responsibility for marketing including agreements and pricing issues.

ACRES Sales and Marketing Functional Organisation



Major Upgrade to the ACRES Production System

The production system at ACRES has undergone another major upgrade. During the period January to March this year the Canadian contractor, Macdonald Dettwiler and Associates (MDA), has been working on site at ACRES to provide:

- the capability to program the LANDSAT-6 spacecraft and process data from the Enhanced Thematic Mapper (ETM);
- the ability to program and process JERS-1 optical data (for scientific use at this time);
- the processing of SPOT data with variable gain;
- extended capabilities to produce geocoded data sets;
- automatic queuing of digital data to be written to film; and
- a three times increased throughput capacity, as compared to the pre-upgrade system.

To be able to take full advantage of the additional programming capabilities offered by various satellite owners, a dedicated team consisting of Rosalie Booth and Steve Alder are now devoting their entire efforts to satellite programming tasks.

There has been considerable impact on our ability to deliver our normal high standard of service during the upgrade, however we are now beginning to see the benefits of more effective and productive systems.

Frederick Chien, MDA Project Manager, signs off the acceptance of the new system, with Carl McMaster observing.

Mike Halliday, MDA Project Leader, in action.

The team in the computer room. Left to Right: Anton Albina (ACRES), Frederick Chien (MDA), Laurie Oliver (ACRES), Robert Denize (ACRES Project Leader), Mike Halliday (MDA), Arlene Mark (MDA), Mike Linney, Lien Ly, Paul Gardner (All ACRES)

Satellite Imagery for Global Forest Assessment

Tropical Ecosystem Environment Observations by Satellites (TREES)

*by Paul Millin**

Increasing concern in Europe over the loss of tropical forest ecosystems and the well documented implications for the carbon cycle, hydrologic cycle and genetic resources, has led to a global scale project to assess the existing area of forest and to provide a rapid means of monitoring changes in forest cover.

The only practical means of obtaining sufficient long term and consistent data sets on a global scale is by observation of the earth from space using remote sensing techniques. From this need, the Tropical Ecosystem Environment Observation by Satellites (TREES) project was conceived.

The overall objectives of the TREES project are to ascertain the area of tropical rain forest and to try and gauge the amount of forest degradation occurring through farming, logging, natural and other processes. More specifically, the objectives are:

(a) to provide quantitative data sets and information on the *spatial* distribution and *temporal* evolution of the tropical ecosystems, e.g. rate of change in forest cover, biomass burning, etc., for improved scientific assessment of their impact on global change;

(b) to establish an integrated satellite observation programme for long-term, continuous and *operational* monitoring of forest cover and rates of deforestation in the tropical regions.

The Papua New Guinea University of Technology (UNITECH) has recently signed a contract with the Institute of Remote Sensing Applications of the Joint Research Centre (JRC) of the European Community to work on a local scale in PNG/Irian Jaya as part of the global project. The expertise available within each country has proved invaluable for the verification stage of the project. UNITECH is fortunate in having staff with both a knowledge of the local environment and expertise in remote sensing, so much of the image interpretation can be done in-country.

The methodology involves a multi-level approach using low and high resolution satellite imagery. Two types of satellite imagery are being used for this project: imagery from weather satellites with a large pixel size and therefore low resolution; and imagery from earth resources satellites with a much smaller pixel size and therefore a higher resolution.

Firstly, satellite imagery with a pixel size of 1.1 km (low-resolution) will be retrieved from existing archives for 1990 and 1991 from the *whole* of the tropical region. This imagery is gathered by satellites on a daily basis, thereby offering potential as an effective monitoring tool. This enormous volume of data can be computer enhanced to give a simple classification comprising the following broad categories:

- closed canopy rainforest;
- degraded rainforest where regional forest cover is less than 70% with various patterns identified;
- deforestation from an area, identified using change detection indicators such as fire and roads; and
- secondary forest.

This stage of the project will be undertaken by the JRC together with the CSIRO Division of Wildlife and Ecology.

Secondly, LANDSAT imagery, with a pixel size of 30 metres (high-resolution) is also being gathered, but on a selective basis in order to refine and verify the above classification. Because of the greater amount of detail that can be seen in the high-resolution images, errors in the low-resolution global classification can be determined and then used to quantify the classification's overall accuracy. The Department of Surveying and Land Studies at UNITECH is coordinating the PNG/Irian Jaya section of the project. Five high resolution images of PNG/Irian Jaya from 1990/91 have been selected from the Australian Centre for Remote Sensing (ACRES) in Canberra and will undergo interpretation by staff at UNITECH.

The five sample images have been selected using the following two criteria:

(a) Complex areas of known recent disturbance;

(b) 'representative' areas where the ground cover type is relatively uniform and understood.

Extensive field data collection by staff from UNITECH and PNG Forest Authority will also be undertaken in these five areas to assist with verification of the overall classification. Field checking is always an essential part of any remote sensing project, because even