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NEWSLETTER

WELCOME TO LANDSAT '81

The Director and staff of ALS extend a warm welcome to all delegates to LANDSAT '81, the Second Australasian Remote Sensing Conference.

During the Conference we will be happy to see you at our booth in the technical display area and to service your queries. Very limited visits to the Station itself will be available — many of the staff will be involved in the Conference — and these must be "booked" at the Registration Desk. Visits will be run on Tuesday 1 September, Wednesday 2 September and Thursday 3 September, afternoons only.

NEW PRICES, PRIORITY PROCESSING

New prices were published at the beginning of July, as a result of the need to recover increased costs. At that time two levels of priority were introduced to cater for urgent needs. The Station queues orders chronologically as received; by payment of premiums, the queue can be "jumped" to two levels — Priority 1, next image produced (turn-around 2-5 days), and Priority 2 with a turn-around of 5-10 days. Priority order turnaround is frequently better than these times.

IMPROVED TURN-AROUND

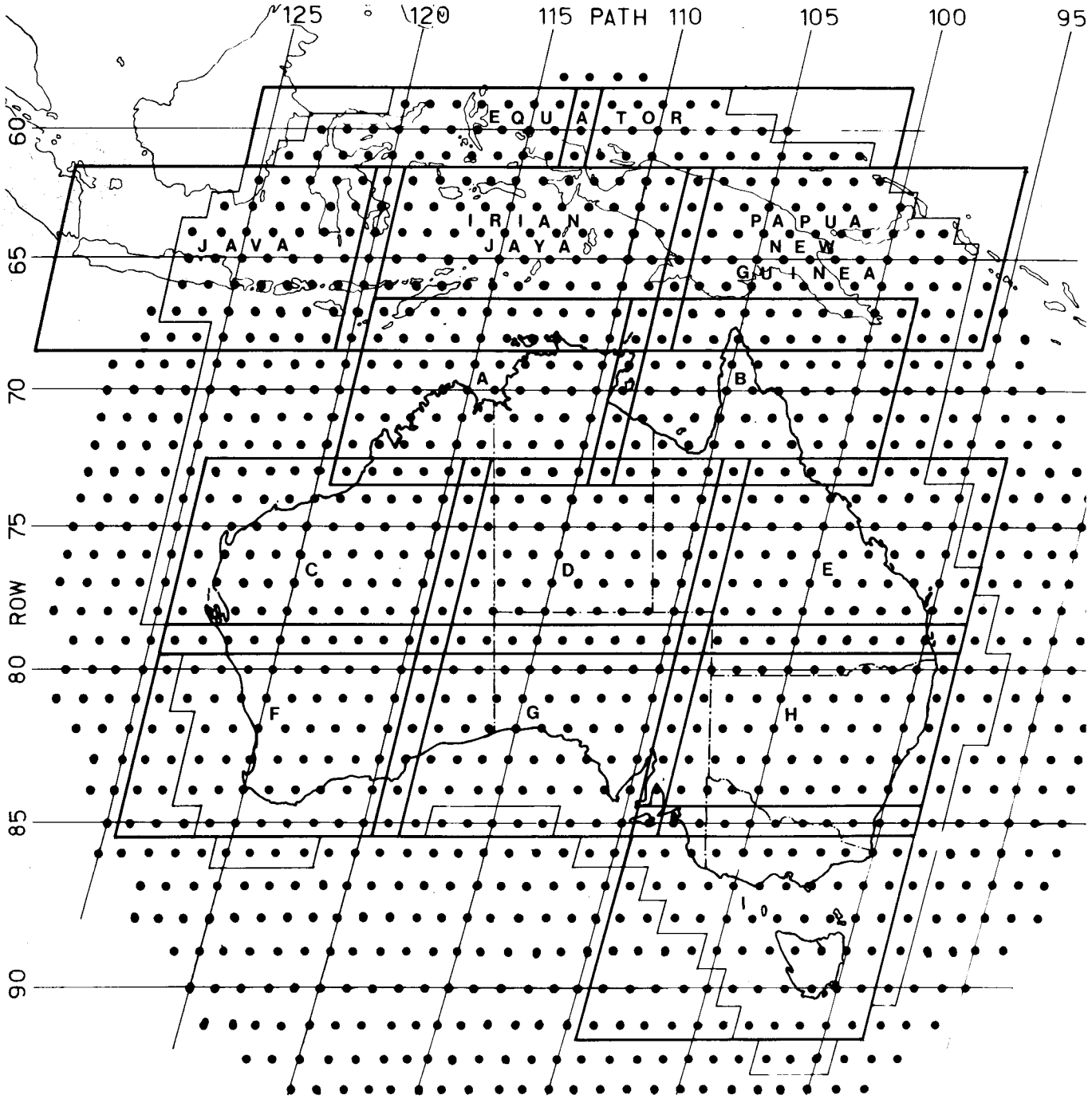
Since the last Newsletter in April 1981, the Australian Landsat Station has increased operating hours from a single day shift to 24 hours 7 days a week.

As a result, order turn-around has improved from 26 weeks just before the change to 12 weeks as at 31 July 1981, and is showing signs of further improvement. We hope to reduce turn-around still further.

SPACECRAFT STATUS

Recent variations in spacecraft operational status (continued from April "Newsletter") have been:

25 March 1981	LANDSAT 2	MSS operations curtailed due to reduced solar power availability.
	LANDSAT 3	Recovery of MSS digitizer. Spacecraft again operational (on request only).
22 April 1981	LANDSAT 2	Changes in power status allowed for increased coverage — total ALS acquisition area available.
2 June 1981	LANDSAT 2	Path 107 only — severe diagonal distortion possibly due to 45° yaw angle.
19 June 1981	LANDSAT 2	Decline in solar array current due to decreasing sun intensity. MSS reduced to 25 minutes per orbit. Affected stations to be notified (not ALS to date).
14 July 1981	LANDSAT 3	All spacecraft activity curtailed during orbit 17090.
24 July 1981	LANDSAT 3	Recorders operational (fault was in controllers). Commenced experimental MSS data recording.
5 August 1981	LANDSAT 3	Successful workarounds established for commanding spacecraft sub-systems including MSS, RBV and wide band tape recorders. Spacecraft and instruments fully operational (LSA persists).



Landsat 2 and 3 standard acquisition and micro-image catalogue map. Microfiche outlines heavy, standard acquisition light outlines. Micro-catalogue names as shown.

NEW MICRO-IMAGE CATALOGUES

Because of demand for imagery outside Australia, ALS is preparing microfiche of quick-look images for Papua New Guinea, Irian Jaya, Java and Equator zones. This will result in less expensive and more widely available cloud assessment data for users in those areas, who had previously to order quick-look prints. Quick-look prints are still available on order.

Because of perennial cloud cover in most tropical scenes, user selection is essential in these zones, and the new microfiche will provide economical viewing of **all** scenes acquired by ALS.

Each microfiche is available for individual subscription at $A35 per annum, or all four for $A135 per annum. Airmail charges are an additional 5% to Papua New Guinea or 10% elsewhere overseas.

The map illustrates the area covered by each fiche (dark outlines) and ALS standard acquisition area (light outlines). Papua New Guinea users may not require the Equator fiche unless they need to view the Ninigo or St Matthias Groups or Manus Island.

The first seven PNG fiche for 1981 were prepared on a slightly different pattern, but no user difficulties should arise.

SUB-SCENES AND MOSAICING

As one of the few Landsat Ground Stations offering digital enlargements or non-standard framing, ALS has received many queries regarding mosaicing.

Because paths are received as continuous digital data, it is possible to reframe anywhere down the path, and to maintain resampling techniques to give similar reflectance characteristics for nearby scenes. However, because the digital data is on physically separate tapes, it is not practicable to combine frames from adjacent paths.

Generally speaking, in Australia there is about 20% sidelap between paths. Sidelap varies with latitude, from 14% at the Equator to 25% at 30°N or S. There is overlap between scenes in a row of 12.7%.

SUB-SCENES

Alpha-numeric grids, familiar to some users, are overlaid on a *standard full scene* (Note: Allowance for overlap must be made when using quick-look prints) and the grid intersection identifies the centre to be quoted in the "Sub-scene" column of ALS order.

East-West

In the east-west direction, line length of 3240 pixels is divided into eight equal segments of approximately 405 pixels — it is "approximate" to the extent of line length correction and minor adjustment. East-west, therefore, sub-scenes may be considered to *abut*. Sidelap (adjacent paths) depends on latitude.

Large prints only, because of present enlargement constraints, have their sides trimmed.

North-South

In the north-south direction, there is a slightly less straightforward arrangement.

A full film scene is 2340 scan lines deep, whereas nominal scene centres (i.e. row latitudes) are only 2043 scan lines apart, and therefore 297 scan lines are common to adjoining full frame nominal scenes (12.7% overlap). However, sub-scene north and south grids are 290 scan lines apart, with four intervals symmetrically about the scene centre (grid D). Their overall depth, 2320 scan lines, omits 10 scan lines from the north and south overlap zones.

When writing the digital enlargement, however, one quarter or one half of the full film scan lines are written symmetrically about the grid lines.

Sixteenth Scenes

Sixteenth scenes are thus 585 scan lines (3240/4) deep and each overlap by 5 scan lines. As can be seen from the diagram, grid A is only 3 scan lines removed from the overlap of the *previous* film scene. For practical purposes they can be assumed identical, and so any sixteenth scene from a standard frame will effectively produce a sixteenth scene "non-standard" frame. At scene extremities, only 7 scan lines of the overlap zone are omitted.

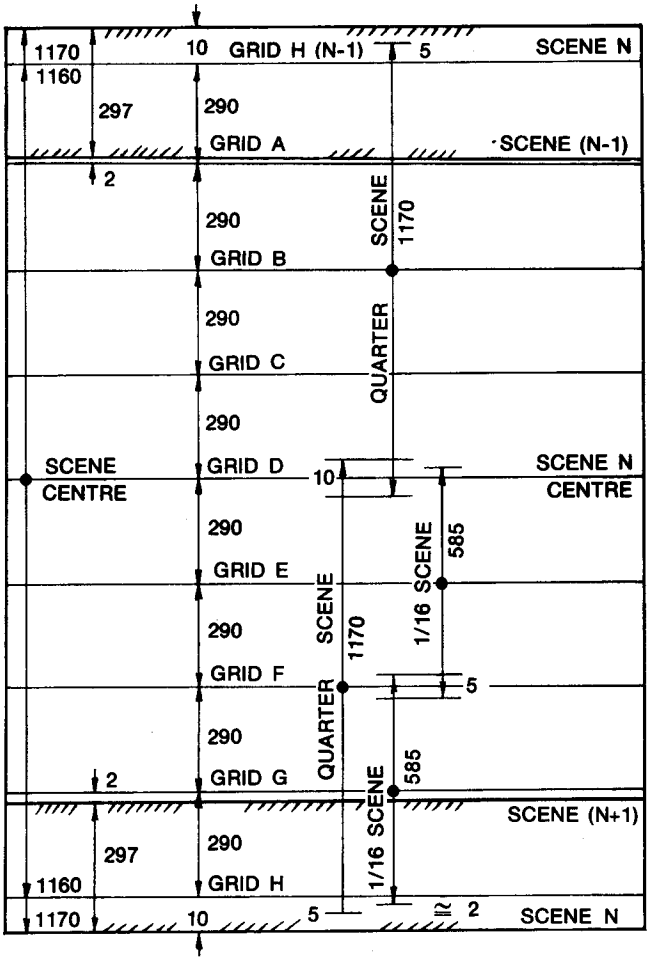


Photo image sub-scene centres along path, showing numbers of scan lines.

Quarter Scenes

Quarter scenes are 1170 scan lines (3240/2) deep and each overlap by 10 scan lines, and at scene extremities omit only 5 scan lines of the standard overlap zone. They cannot be specified for grids A or G of a standard scene.

Non-standard Framing

Full film scenes along a path may be centred on *any* alphabetic grid from A to H — grid H is 10 scan lines above the top of the next lower scene. By definition non-standard framing falls on column 4.

MOSAICING

Sub-scenes

Because they overlap north and south and abut, east to west, sub-scenes may be mosaiced. Sub-scenes are produced using identical contrast stretch to the full scene, and should have the same colour characteristics; nonetheless, photographic processes will permit variation. If users particularly want to use sub-scenes for mosaicing, they should mention this when placing their order, and every attempt will be made to balance colour; no guarantee of perfect colour balance from print to print can be given by ALS.

Full Scenes

Adjacent scenes in the same path on the same day may be held to similar colour balance by adopting statistics from one scene. Due to sun angle and albedo, etc, variation, the result may be less than optimum for all scenes. Users may request such an approach — once again, ALS cannot guarantee the outcome, and prior discussion is preferred.

General

Standard mosaicing practices will assist those using Landsat imagery in this way. Consider tone match and image detail before cutting, selecting areas of identical tone without specific detail if possible. Avoid excessive scalloping or straight line cuts except along linear features. If the cut parallels a linear feature, the feature should be left in its entirety on the print being laid.

The degree of fit (particularly between adjacent paths) indicates the amount of stretching required. A print may be stretched by wetting, causing it to expand in proportion to saturation.

HIGH-GAIN MODE

In our April "Newsletter" we published notes on MSS High Gain Mode. Some additional details are given here for users contemplating using it.

The ALS system was not designed to process high gain data. However it is available given the following restrictions:

(a) There will be no absolute radiometric calibration. This is because we do not have pre-launch high gain radiance data.

(b) Destriping can be done using simple mean and standard deviation matching only. With high gain data, sensors are more likely to go into saturation, thus upsetting the destriping statistics.

(c) Data will be decompressed as if it were in normal operating mode.

SWATH SLIP

This was reported in the last Newsletter as occurring on Landsat 3. It will however, be present to a lesser extent on Landsat 2 as well. New software was progressively installed during June and July to overcome the problem. Master imagery and CCT's generated after July 29 should be completely free of swath slip.

The problems occurred because of a rapidly varying line length on the Landsat 3 satellite. On Landsat 3 the error can be as high as 2 pixels and on Landsat 2 as high as ½ a pixel.

Users are warned that CCT's made prior to June 11 will contain a corrupted line length field in the ancillary data.

THE ALS NEWSLETTER

Published to present information of interest to the user community regarding ALS products, systems, and related remote sensing developments.

There is no subscription charge; individuals and organisations wishing to receive the "Newsletter" should contact the Promotion Officer at our ACT address, to whom comments, corrections, brief contributions and other enquiries should be directed.

AUSTRALIAN LANDSAT STATION

"NEWSLETTER"

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