Sharp photos from Landsat are now available

The first photographs of Australia received from NASA's Landsat satellites were a disappointment. Definition was poor, and it seemed that views from an altitude of 900 km, despite their breath-taking perspective, would not find many practical uses.

Fortunately, it turned out that the poor definition was due to the method of producing pictures from the data sent back by the satellites rather than inadequacies in the data. Working from tapes containing the original Landsat data, Dr Andy Green and colleagues at the CSIRO Division of Mineral Physics have devised a technique for producing extremely sharp photographs that bring out maximum detail.

Many possible uses for Landsat pictures are now being investigated around Australia. Monitoring the health of forests and crops, assessing the extent of damage caused by bushfires, and keeping track of the rate of spread of cities are a few examples that interest environmental scientists.

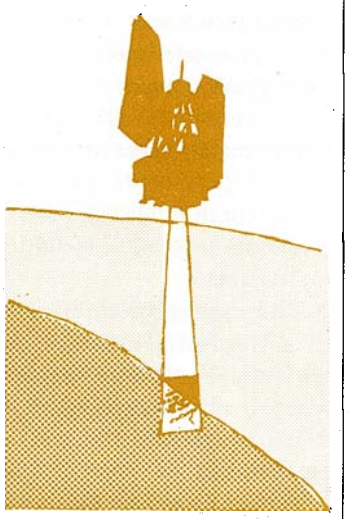
The first Landsat was launched in 1972 and the second in 1975. The third was launched in March.

Their orbits take them over virtually the entire earth, and each returns to any one spot every 18 days. This means that changing situations on the ground can be monitored at regular and quite short intervals.

Each picture covers a 185-km-square area, and comprises 7·5 million picture elements. Every element represents an 80-m-square area, the limit of definition of the picture. The satellite's sensors assign a brightness value to each element, which determines the shade of grey it will be given in the picture.

The information can be transmitted directly to a receiving station if one is in range, or be stored on tape in the satellite. As Australia is out of range of existing stations, all Landsat images of this country have been stored and then transmitted to an American station. Most were recorded by Landsat-1 between 1972 and 1974.

Since then, both the tape recorders on that satellite and one of the two on Landsat-2 have stopped functioning, so opportunities to store images are now severely restricted.



The situation is likely to improve when Landsat-3 joins the others and, particularly, when the Australian receiving station planned for Alice Springs begins operation. This is expected to happen some time next year.

Meanwhile, using their technique that involves examining the contrast range of each image and adjusting it to give maximum clarity, the Division of Mineral Physics scientists have produced high-definition Landsat pictures covering the area shown in the map. To ensure that these will be readily available to potential users, the Division has licensed three companies to reproduce and market them.

The companies are:

Air Photographs Pty Ltd, 620 Burwood Road, Auburn, Vic. 3123. Tel. (03) 82 1966

Layton and Associates Pty Ltd, 196 Adelaide Terrace, Perth, W.A. 6000. Tel. (09) 325 8844

Technical and Field Surveys Pty Ltd, 250 Pacific Highway, Crows Nest, N.S.W. 2065. Tel. (02) 437 6756.

The Division plans to extend the coverage to the whole of Australia as soon as possible.