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Geographic Applications of ERTS-1 Imagery
to Rural Landscape Change
162-III

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As of June, 1972, only a few minor problems have arisen to affect the project. We are as yet, still awaiting the first ERTS-1 satellite imagery for our test area. Perhaps our most significant delay has been the inability to complete our low altitude (10,000') coverage of two test sites. Because of cloud cover, cross winds, and technical problems with the Hasselblad camera system, we have had to abort the missions over the Cumberland Plateau test site and concentrate on the Knoxville site. To illustrate the difficulty in acquiring low altitude imagery in the summer months, the Knoxville test site which has now just been completely flown has required three separate overflights: June 23, July 6, and August 14, just to cover a 21 x 11 mile area. With problems of this kind it is a welcome sight that we anticipate other scales of imagery particularly from ERTS-1.

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As these problems have arisen, our primary concentration presently is on the acquisition of high altitude (RB-57) imagery of the test area from the archives at MSC-Houston. This imagery in 9 x 9 color infrared and color ektachrome flown April, 1972, covers the East Tennessee test site almost perfectly. Recently we viewed some of the imagery at East Tennessee State University at Johnson City, courtesy of Dr. Robert Peplies - a P.I. on an EROS - TVA project. As a result, we were able to re-photograph some of the imagery on a 35 mm format and in this way simulate the scale of ERTS-I imagery. In fact, the scales are remarkably similar at 1:1 million. Although interpretations of these simulated data images have been nominal, we have found several selected sites of potential landscape change. Interstate highway construction, suburban growth areas, and second home recreational developments are examples of such dynamic landscape elements. From this, we anticipate that ERTS-I however will provide not only the resolving capability of some of our simulated data but will additionally give us the much needed temporal data as well.

Because of the extensive coverage, the scale characteristics and its value as a map control base, we have requested a copy of the April RB-57 aircraft imagery via a letter request through Goddard and MSC. With the receipt of this imagery our control data base will be nearer completion and ground truth will be substantially improved.

Activities presently underway include the development of a landuse classification, a gridded matrix for plotting landscape data, and an experiment in the feasibility in the detection of macro and micro landscape features on the 35 mm ERTS simulation imagery (scale 1:1 million).

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Although these are short-term student manned activities under my direction, they will be of direct consequence in the initial Data Analysis Plan. Copies of these papers will be submitted as in-house reports at a later date.

The major equipping and preparation phase has reached near completion with the arrival of the direct reflecting projector (Map-O-Graph). Other equipment which we plan to obtain once the ERTS-I imagery arrives is a Bausch & Lomb zoom stereoscope. Our reluctance in acquiring this device at present stems from the degree to which we think ERTS-I imagery can be magnified without losing too much resolution. Consequently, we will await the ERTS data then test it on a zoom stereoscope elsewhere and if acceptable, we plan to acquire the equipment.

In conclusion, may I congratulate all who have had a part in the successful launching and operation of ERTS-I. We are very proud of this accomplishment.

Sincerely,

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