

1up
E7.4-10253

CR-136567

"Made available under NASA sponsorship
in the interest of early and wide dis-
semination of Earth Resources Survey
Program information and without liability
for any use made thereof."

INVESTIGATION OF SKYLAB DATA

EREP No. 472-2

December 1973

NASA 9-13332

(E74-10253) INVESTIGATION OF SKYLAB DATA
Monthly Plans and Progress Report, Dec.
1973 (Michigan State Univ.) 3 p HC
\$3.00

N74-16014

CSCCL 05B

G3/13

Unclas
00253

Principal Investigations Management Office

Lyndon B. Johnson Space Center

Ryborn R. Kirby

Lester V. Manderscheid

Michigan State University

Monthly Plans and Progress Report

Contract NAS 9-13332

Monthly Plans and Progress Report

December 1973

Eight sections in Leroy Township, Ingham Co., were used as a sample for testing the accuracy of photointerpretation and acreage estimation from the June 12, 1973 SL-2 imagery. The interpretation for these tests was performed by a technician. This technician has had experience in photointerpretation approximately equivalent to that which a user agency might achieve after a year of training their own technicians. The interpretations were done under approx. 20X magnification with a B&L Zoom 240 stereoscope mounted on a Richards light table. The technician was given essentially complete freedom in developing his own tonal signatures for the categories. Tests were conducted using both the color and color IR imagery. Since first-look interpretive efforts substantiated the separability to be expected from the general phenology, only three categories were used: bare soil; forest; grass, forage crops, and small grains.

The results of these tests are shown in table 1 and table 2.

Table 1. Results of photointerpretive tests on eight sections in Leroy Twp., Ingham Co., Mich. -- Acreage.

<u>Category</u>	<u>Color IR</u>	<u>Color</u>	<u>Ground truth</u>
bare soil	1,112	1,039	1,422
forest	1,265	654	858
grass, forage, grain	<u>1,539</u>	<u>1,529</u>	<u>2,002</u>
Totals	3,916	3,222	4,282

Table 2. Results of photointerpretive tests on eight sections in Leroy Twp., Ingham Co., Mich. -- % Error.

<u>Category</u>	<u>Color IR</u>	<u>Color</u>
bare soil	-22%	-27%
forest	+47%	-24%
grass, forage, grain	-23%	-24%
Totals	-9%	-25%

In all cases except the forest category interpreted from CIR, there was a consistent underestimation of approximately 25%. Upon further investigation of the anomaly involving forests as interpreted from color IR, it was discovered that the technician was actually using a wetland signature for forests. The confusion arose because many of the forests in the area are lowland hardwoods. On the whole, the color film was judged to be more easily interpretable for most categories than the color IR.

Given the tendency toward underestimation, a ratio correction factor seems to be in order. If the ratio correction of 1.25 is applied to the interpretations from the color film, the results are shown in table 3.

Table 3. Results of photointerpretive tests on eight sections in Leroy Twp., Ingham Co., Mich. using color film and a ratio correction factor of 1.25.

<u>Category</u>	<u>Estimated acres</u>	<u>Actual acres</u>	<u>% accuracy</u>
bare soil	1,299	1,422	91%
forest	816	858	95%
grass, forage, grain	1,911	2,002	95%

Therefore, these tests on three categories as interpreted from the SL-2 color film indicate approximate accuracies of 75% before ratio correction and over 90% after ratio correction.

S-190B imagery was not collected over the test site on June 12, 1973, and there has not yet been an opportunity to examine S-190B imagery from later passes. Given the facts that resolution is better for the S-190B than the S-190A and that later season phenology is more favorable for recognizing agricultural crop types, the prognosis for crop acreage assessment from S-190B imagery appears to be good.