

ENVIRONMENTAL
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P.O. BOX 8618 • ANN ARBOR • MICHIGAN • 48107

PHONE (313) 994-1200

Pecora file

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12 July 1983

Mr. Allen H. Watkins
EROS Data Center
Sioux Falls, SD 57198

SUBJECT: Abstract for Pecora VIII Symposium

Dear Mr. Watkins:

Thank you for the invitation to present a paper at the forthcoming Pecora VIII Symposium. Attached you will find three copies of our abstract, entitled Radiometric Analyses of Landsat - 4 Digital Image Data, by William A. Malila, Daniel P. Rice, and Michael D. Metzler.

Yours truly,

William A. Malila

William A. Malila
Research Engineer

WAM:jkm

Attachments

Copies: H. Oseroff, NASA/GSFC
R. Horvath
M. Metzler
D. Rice

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Radiometric Analyses of Landsat - 4 Digital Image Data
William A. Malila, Daniel P. Rice, and Michael D. Metzler
Environmental Research Institute of Michigan
Ann Arbor, MI 48107

ABSTRACT

This paper reviews results of our analyses of the radiometric characteristics of digital image data produced by Landsat - 4 sensors, both the Multispectral Scanner (MSS) and the new Thematic Mapper (TM). The MSS analysis found high quality data comparable to the products of previous Landsats, except for a low-level coherent noise effect having a magnitude of about 0.5 counts in each band and a spatial period of about 3.6 pixels. Radiometric relationships between Landsat 4 and Landsats 3 and 2 were determined through analysis of frame pairs having simultaneous coverage. The TM analysis found generally high quality data, but with low-level banding artifacts associated with the direction of scan (TM employs bidirectional scanning) and expected scan-angle effects for which correction procedures should be addressed by affected applications programs. Procedures for equalizing detector responses appear to be working as intended. However, a very low frequency, coherent noise effect was found which produces banding that is most pronounced in Band 1 and could be a serious problem for water-related applications or others where average signal levels are low; correction procedures are under investigation. The spatial resolution of TM data is excellent and provides much increased detail over MSS images.

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