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Delineating Relative Temperature Zones in Forest Ecosystems: An Adaptation and Evaluation of Current Methodologies

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SUMMARY

The effectiveness of using: (1) thermal infrared data; (2) potential solar radiation; and. (3) predicted temperature for mapping relative temperature zones in forest ecosystems were evaluated as tools for forest ecology studies.

The computer simulation models SOLAR and MTCLIM were found to be ineffective for mapping relative forest ecosystem temperature zones. SOLAR-calculated potential solar radiation and MTCLIM-predicted temperature were found to be statistically uncorrelated with coincident mean maximum daily forest ecosystem ambient air temperature recorded within the University of Idaho Experimental Forest during June and July, 1993. Landsat Thematic Mapper thermal infrared data were shown to be effective for mapping relative forest ecosystem temperature zones. Linear correlation coefficients between Landsat Thematic Mapper thermal infrared data acquired on July 8, 1990 and maximum daily forest ecosystem ambient air temperature recorded within Gap Analysis forested polygons in north Idaho during July and August, 1992 were significant at the one percent level for all six dates tested and ranged from 0.96 to 0.99.

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