

NO. 1, 120

TIMS DATA APPLICATIONS IN NEBRASKA

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A total of 172 flight-line miles of TIMS data have been acquired in the state of Nebraska; and an additional mission is planned for August of this year. Data collected by the scanner have generally been applied to investigations in four general areas: hydrology, geology, soils, and vegetation analysis.

Relatively simple manipulations of these thermal-emittance data have led to excellent classifications of vegetation communities established along topographic gradients in the Nebraska Sandhills. Similar procedures were used to study variations in soil parameters along those same gradients.

Virtually all of the spatial variation exhibited in vegetation and in soils is believed to be caused by proximity to subsurface (soil) moisture. Work is currently being conducted in order to examine more closely the relationship between subsurface moisture, vegetation, soil, and surface thermal properties. This work includes the use of diurnal TIMS overflights and consideration of thermal inertia.

Selected hydrologic applications of TIMS data relate to the flow regimes of several Sandhills lakes. Specifically, a "flow-through" model of a natural lake in the Sandhills has been supported through the use of thermal-infrared imager. Also, location and mapping of springs with the use of this thermal scanner is ongoing.

Proposed geologic applications include mapping of the surficial geology along a portion of the Platte River and the delineation of a segment of the Cambridge Arch, a structural geologic feature in central Nebraska.

Remote sensing research being conducted with TIMS is but one component of a larger remote-sensing based investigation of the State of Nebraska. Other systems being utilized include Landsat MSS, Airborne Thematic Mapper (ATM), Airborne Imaging Spectrometer (AIS), and the Daedalus AADS1260. This large collection of multispectral data over a single area provides unique opportunities for natural resources investigations.