Abstract View

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Midwestern Cloud, Sunshine and Temperature Trends since 1901: Possible Evidence of Jet Contrail Effects

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ABSTRACT

Records of monthly sky cover, sunshine and temperature for 1901–77 in a 10-state midwestern area were analyzed on a temporal and spatial basis to discern long-term trends and indications of shifts potentially due to added cirrus generated by jet aircraft since about 1960. The skycover data show generally long-term increasing frequencies of cloudy days and decreases in clear days since 1901. Percent of possible sunshine also shows a decrease but to a lesser extent than clear day frequencies. Changes have been greatest since the 1930's. The greatest shifts to cloudier, less sunny conditions occurred since 1960 in an east-west zone across southern Iowa-northern Missouri, northern two-thirds of Illinois and Indiana, and extreme southern sections of Wisconsin and lower Michigan, the area where commercial jet traffic has been greatest. The long-term trends give evidence of natural climate changes, whereas the localized shifts to more cloudiness in the central area since 1960 suggest anomalous changes related to jet-induced cirrus. Months with moderated temperatures (below average maximum and above average minimum) have increased since 1960 in the central east-west zone and largely in summer and fall, the seasons with the major shifts to cloudiness.