URBAN AIRFLOW AND SNOWDRIFTING IN MACOMB, ILLINOIS, A CASE STUDY

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by

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ABSTRACT

An emperical snowdrifting study was conducted at two aerial locations to develop a methodology for identifying unfavorable airflow patterns in urban areas. The two aerial locations, both influenced by similar meteorological elements, were in the central business district and a subdivision in Macomb, Illinois. Both aerial locations were selected for detailed study of a possible statistical and graphical relationship among meteorological elements and among variations in building aerodynamics as demonstrated by snowdrifting.

The statistical analysis clearly related the snow variations to wind direction. Graphical analysis illustrated the direction and extent of snow migration through the aerial locations. Apparently snowdrift measurements can be used to approximate surface airflow patterns because there is a direct relationship between the snow depth and air current characteristics. This relationship can be used to indicate relative building aerodynamics; however, the relationship should be used with caution when applied to existing local point data records.

Snowdrifting has not significantly affected the city during low snowfall years, but appears to have city wide significance. Studies of building aerodynamics from selected data collection points indicate that some airflow modifications can be utilized.