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2D PIV Measurements of flow between a pair of model buildings with varying geometries BHAGIRATH ADDEPALLI, ERIC PARDYJAK, University of Utah — The study of flow within a pair of three dimensional model buildings assumes paramount importance in developing an understanding of the mechanisms involved in the transport of pollutants within urban areas. For this work, 2D PIV measurements have been performed to add insight into urban flow physics. The experiments were performed in a 7.9 m long boundary layer wind tunnel facility with a cross section of 0.61 m x 0.91 m and at a free stream velocity of ∼7 m s-1. Two sets of experiments have been considered. In the first set of experiments, the spacing between two cubes was varied. For these highly idealized experiments, the results correspond well with the results in the literature for the wake interference and skimming flow regimes, but discrepancies have been found corresponding to the isolated roughness flow regime. The second set of experiments considers flow between two buildings with variable upwind and downwind building heights and separation distances. These experiments indicate that the mean and turbulence flow characteristics associated with even these very simple types of building configurations can vary considerably and thus significantly modify pollutant transport.

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