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Impact of Disturbances in the Overlying Atmospheric Boundary Layer on the Mechanisms of Urban Canyon Ventilation TADEU FAGUNDES, JUAN ORDONEZ, NEDA YAGHOOBIAN, Florida State University — Increasing pollution levels and the resulting human health issues in urban areas are important problems that are linked to the capacity of ventilation and pollutant dispersion in urban streets. The transfer process and ventilation characteristics in urban streets are intrinsically related to the disturbances in the overlying atmospheric boundary layer. In this study, computational modelling was used to examine the dynamics between the flow within three-dimensional urban areas and the turbulent characteristics in the overlying flow. The features of the incoming boundary layer are controlled by altering the condition of the upstream landscape. The characteristics of turbulent flow in urban canyons are examined under different conditions, revealing distinct ventilation patterns and dispersion mechanisms that are deeply connected to the upstream conditions. In consequence, the air exchange capacity at the interface of the canyons is significantly altered.

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