Computational modeling of dense gas flushing from urban canyons RASNA SHARMIN, NIGEL KAYE, Clemson University — Results are presented from a series of CFD simulations of the flushing of a dense pollutant from a model urban canyon. The simulations are run using both RANS and LES simulations for the flushing from a square canyon formed between two square prismatic buildings. Results are presented for the flushing rate for a range of Richardson numbers with higher Richardson number flows exhibiting lower flushing rates. The influence of the upstream flow conditions on the flushing rate are also explored. A series of simulations for different upstream surface roughness, formed by imposing a saw-tooth geometry of various aspect ratios on the flow floor, elucidate the role of the boundary layer structure on the flow over the canyon and resulting flushing rate. The computational results are compared to prior experimental results for the same geometry with the goal of further elucidating the flow structure under more controlled conditions.

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