

Multi-zone simulation results on ASE and sDA daylight metrics for parametric high-rise model with quad grid and diagrid facade in a highly dense hypothetical urban district using dry summer climate weather data

The research focuses on optimizing different zones of high-rise buildings in dense urban districts to improve the overall performance. For this reason, a hypothetical dense urban district is generated in Grasshopper 3d Algorithmic Modeling Environment in Rhino 3D. The models include various design variables depending on the facades type (quad grid and diagrid) and zones. Annual Sunlight Exposure (ASE) and Spatial Daylight Autonomy (sDA) are used as performance metrics. Simulation results are collected with the Latin Hypercube Sampling method from Diva4Rhino, a plug-in for environmental analysis for buildings. 10 zones, having 6 floors each, are considered from ground level to the top level of the high-rise building model for each facade types. In each zone, 2 floors are used for the simulation. Results of each floor, as well as their average results, are given for both metrics. Detailed explanations regarding dependent and independent variables of each zone are given in different “ReadMe” files. The resulting data can be used in future metropolitan studies, for sensitivity analysis, surrogate modeling, and statistical analysis for high-rise buildings in highly dense urban plots located in dry summer climate regions.

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Acknowledgements

We would like to thank Hans Hoogenboom and Aytac Balci for their support during the collection of simulation results in the Faculty of Architecture and the Built Environment at Delft University of Technology.