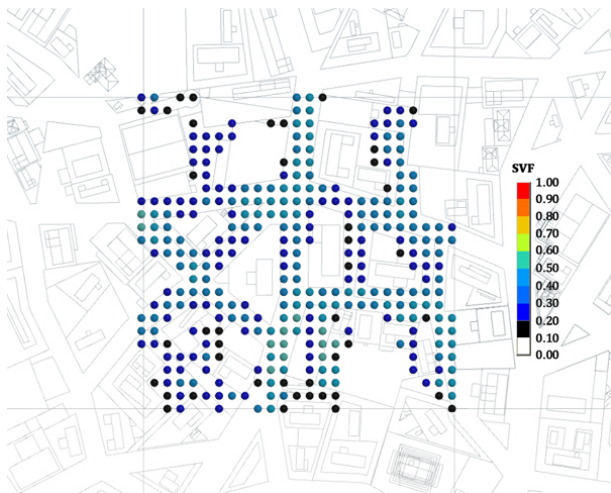


# A technique for massive sky view factor calculations in large cities

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In many applications, such as urban physics simulations or the study of the solar impact effects at different scales, complex 3D city models are required to evaluate physical values. In this article, we propose an efficient system for quickly computing the Sky View Factor (SVF) for a massive number of points inside a large city. To do that, we embed the city into a regular grid, and for each cell we select a subset of the geometry consisting of a square area centred in the cell and including it. Then, we remove the selected geometry from the city model and we project the rest onto a panoramic image, called environment map. Later, when

several SVF evaluations are required, we only need to determine the cell that each evaluation point belongs to, and compute the SVF with the cell's geometry plus its corresponding environment map. To test our system, we perform several evaluations inside a cell's area, and compare the results with an accurate ray-tracing-based SVF evaluation. Our results show the feasibility of the method and its advantages when used for a large set of computations. We show that our tool provides a way to handle the complexity of urban scale models, and specifically allows working with geometry details if they are required.