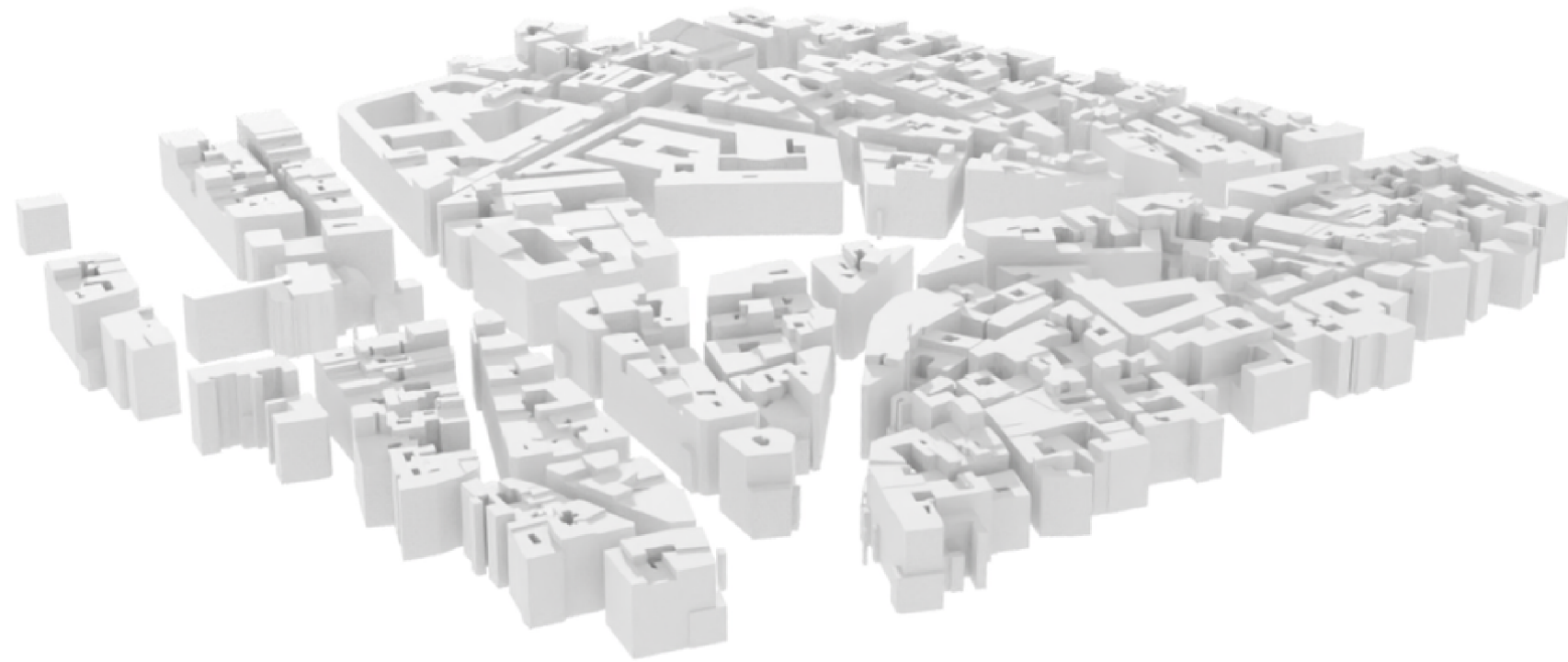


terrain.

The **Terrain** patch in wind simulations is critical for capturing the effects of **geographical variations on airflow**. The complexity of topography introduces significant variations in wind patterns.

Our **state-of-the-art**, mesh refinement strategy captures topographical features, from hills and valleys to slopes and plateaus. This detailed representation allows for the examination of how these features alter and direct wind flow.

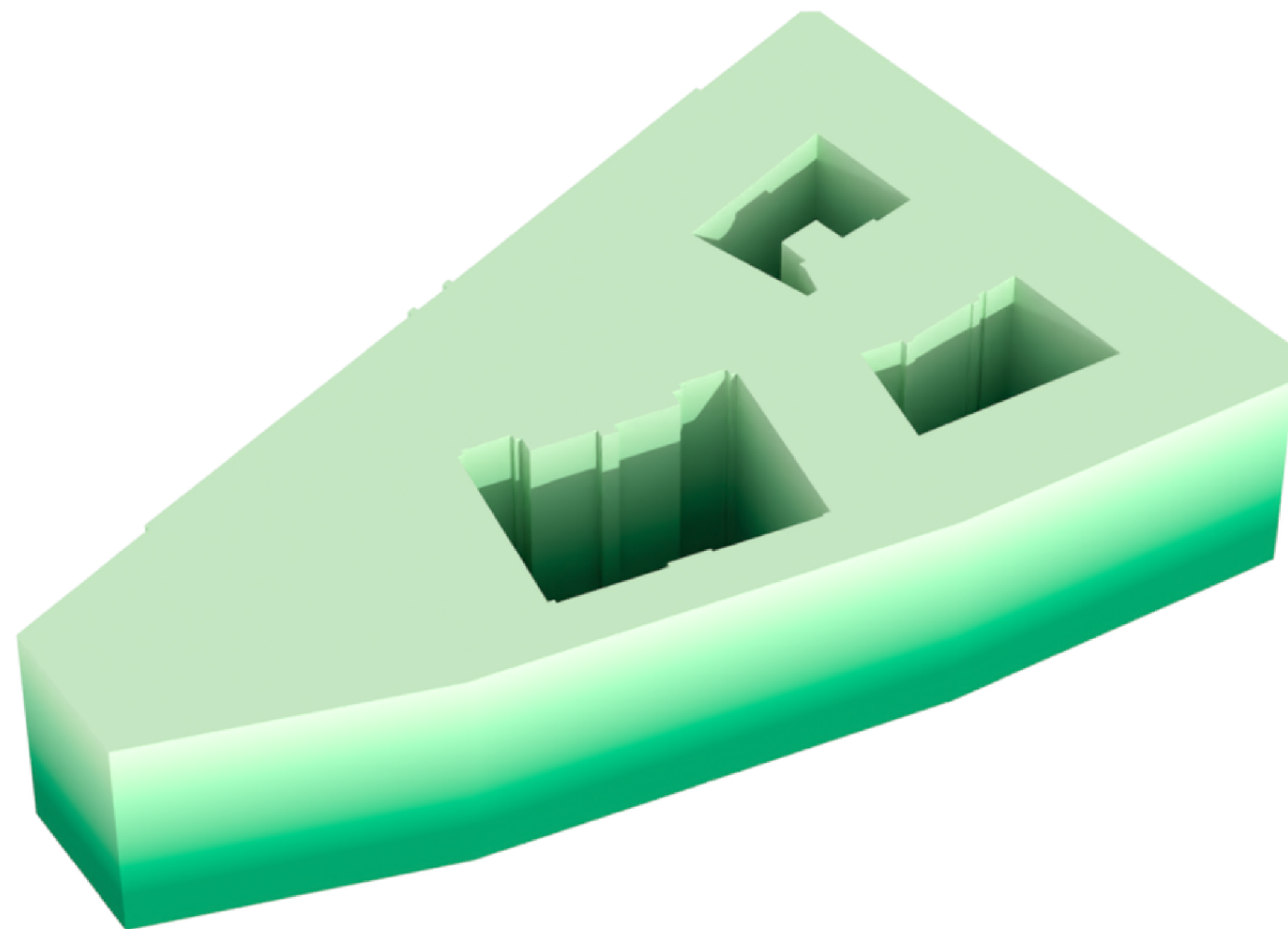
If **no specific terrain data** is provided, the model defaults to a flat plane representation.



surroundings.

The **Surroundings** are a critical component in urban wind simulations, encapsulating all human-made structures laying in the vicinity of a focus building or site. These structures significantly influence wind dynamics, creating complex interaction patterns that are essential for accurately understanding and modeling wind behavior in urban environments.

Through a **high-resolution mesh**, we can precisely model these interactions, allowing you to monitor the effects of various structures on wind trajectories and distribution. This serves to provide a profound insight into how urban design influences local **microclimates** and **local** wind conditions.



building.

The **Building** patch plays a crucial role in our urban wind simulations, focusing on the principal structure or site under investigation. A **higher-resolution** mesh allows for capturing accurately the building's features like balconies, arches, and openings. This focus on the primary structure ensures a detailed and nuanced representation of its interaction with the surrounding wind dynamics.

The **level of detail** for the Building depends on the user-provided data. If no building geometry is supplied, only the surroundings and terrain will be incorporated into the simulation.

The Building of Interest offers a fine understanding of local urban wind behavior, crucial for optimizing **the design and placement** of structures in urban environments.
