

## Climate Adaptability of Vernacular Courtyards in Jiangnan Area, Southeast China

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**Abstract :** Courtyards with suitable scale can effectively modify the microclimate and improve thermal comfort. To comprehend the thermal environment of courtyards with different scales in various areas of Jiangnan, this study conducts field research in three traditional villages: (1) Chunman-ting House in Guanlu Village, Huangshan City, Anhui Province, (2) Heqintang House in Lizhai Village, Xianju County, Taizhou City, Zhejiang Province, and (3) Langai-Qirui House in Baima-zhai Village, Fengcheng City, Jiangxi Province. First, based on the collected data, the article analyzes the relationship between the thermal environment and the depth-to-height ratio of the courtyard. Second, it employs the Envi-met software to perform numerical simulations, analyzing thermal comfort in various courtyards with different depth-to-height ratios. Finally, it uses the simulation results to deduce the courtyard models suitable for hot summers and cold winters in the Jiangnan area. The result of this study can improve the thermal comfort of vernacular courtyards in the Jiangnan area by adopting a suitable scale for future protection and regeneration. The transformation and utilization of the climate-responsive courtyard model can also become a reference for modern architectural design.

**Keywords :** vernacular courtyards, thermal environment, depth-to-height ratio, climate adaptability, Southeast China

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