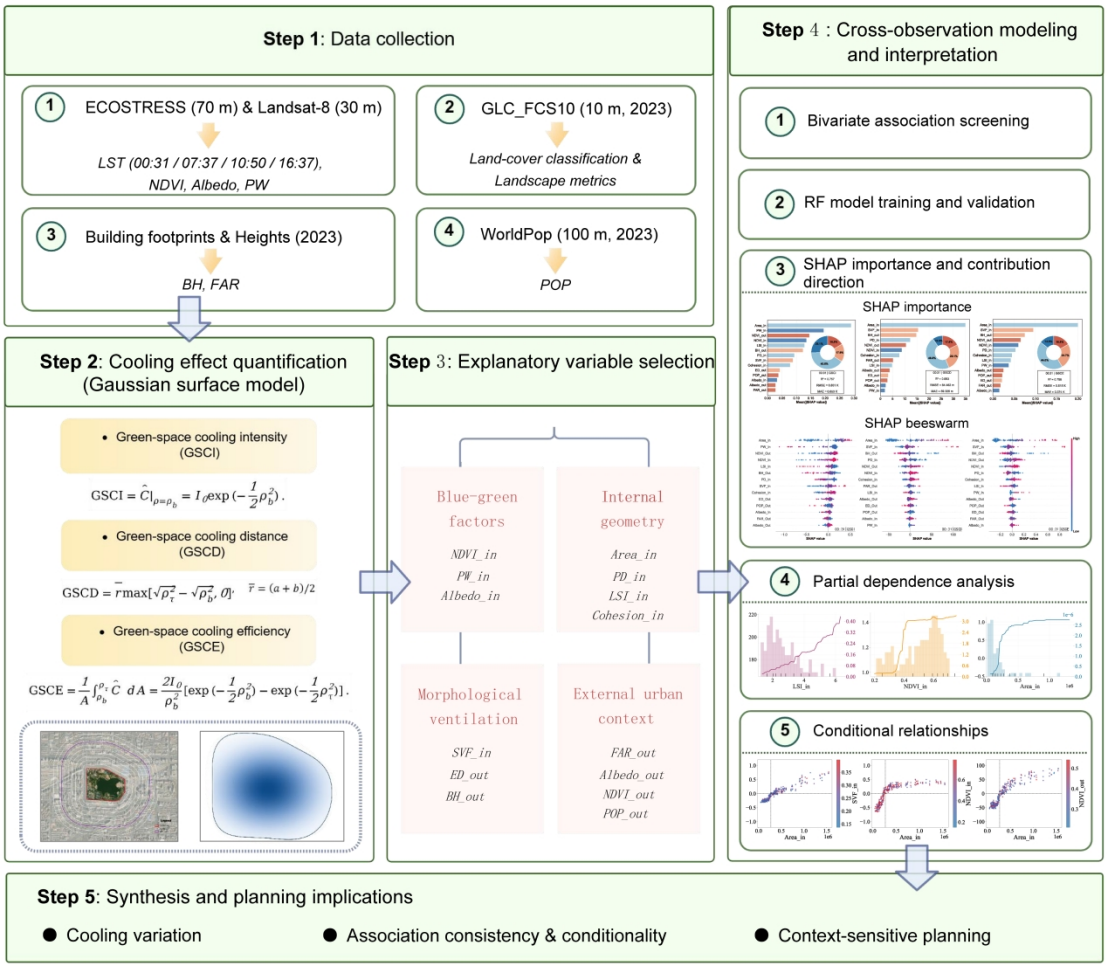
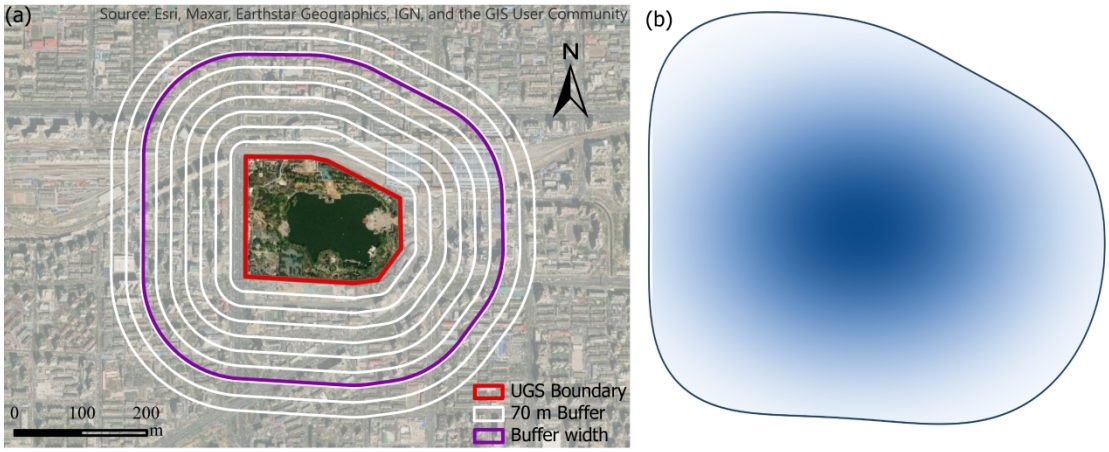
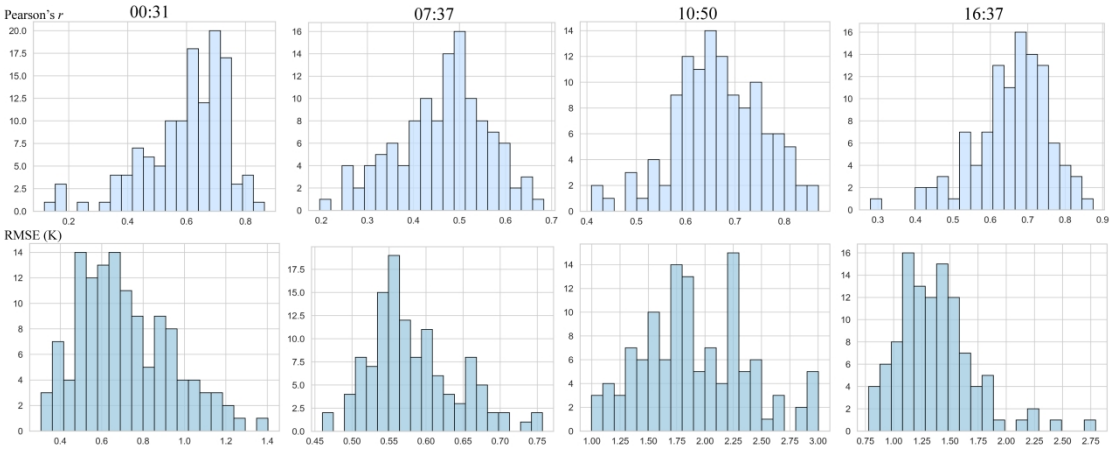
Supplementary Information



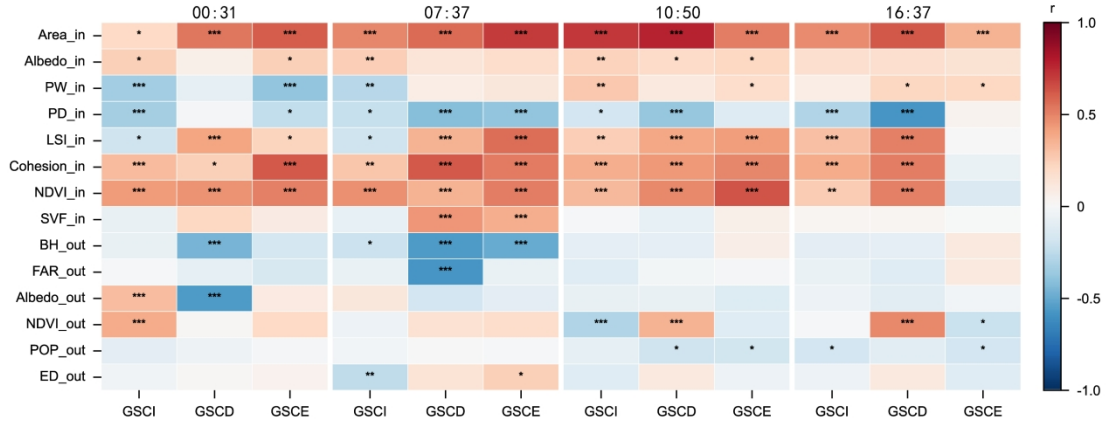
Supplementary Fig. S1. Research framework for analyzing multidimensional UGS cooling and cross-observation landscape–cooling relationships.



Supplementary Fig. S2. Representative fitted spatial patterns derived from the Gaussian surface model.



Supplementary Fig. S3. Model fitting performance of the anisotropic Gaussian surface model across ECOSTRESS observations.



Supplementary Fig. S4. Pearson correlation analysis between explanatory variables and multidimensional UGS cooling metrics across ECOSTRESS observations.