

Table S1. Comparison of key climate and air-quality indicators between Nanning and Liuzhou.

Indicator	Period	Nanning	Liuzhou	Notes
Mean annual temperature (°C)	Climate normals 1981–2010	21.8	20.5	Both cities: humid subtropical (Köppen Cfa)
Annual precipitation (mm)	Climate normals 1981–2010	1290	1431.1	Normals from city climate tables
PM _{2.5} annual mean (µg/m ³)	Latest available (Nanning 2023; Liuzhou 2022)	25.0	29.0	City-level annual averages