

Table 4.2 Three approaches for constructing regional climate change scenarios

Approach	Emphasis	Mathematical foundation	Main tools	Resolution of annual cycle	Resolved processes	Examples
Empirical	Empirical (observation-based)	Statistics (differences of distributions, trend analyses, classifications, etc.)	Statistical and time series models, eigen techniques	Year to seasons	Century time scale to inter-annual variability	Paleoclimatic analogues, extrapolation of trends
Semi-empirical				Seasons to 1-5 days	Decadal-scale variability to planetary scale waves	Application of weather types to global climate model output
Modeling	Theoretical (process-based)	Coupled nonlinear differential equations	Deterministic dynamic simulation models	Hours to minutes	cyclones, fronts, regional-scale circulations and interactions with topography	Nesting of high-resolution in low-resolution climate models