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The non-uniform global spread of emergent infectious diseases of humans is closely interrelated with the large-scale structure of the human population, and the human mobility process in the population structure. The mobile population becomes the vector for the disease. We present an SIRS stochastic dynamic epidemic process in a two scale structured population. The variability caused by the fluctuating environment is assumed to manifest mainly in the transmission process. We investigate the stochastic stability of scale structured mobile population, under environmental fluctuations and its impact on the emergence, propagation and resurgence of the disease. The presented results are demonstrated by numerical simulation results. (Received September 17, 2010)