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**Chayu Yang\*** (rgb855@mocs.utc.edu), **Lolika, Mushayabasa** and **Wang**. *Modeling the spatiotemporal variations in brucellosis transmission.*

We propose a nonlinear modeling framework to investigate the transmission dynamics of brucellosis, incorporating both the spatial and seasonal variations. The spatial modeling is based on a patch structure, and the seasonal impact is represented by utilizing time-periodic model parameters. We demonstrate this framework through a two-patch model and conduct detailed analysis, for the cases with and without seasonal oscillations, respectively. In particular, we establish the threshold dynamics results using the reproduction numbers defined under different scenarios. Our findings underscore the importance of including spatial and seasonal heterogeneities in the design of control strategies for brucellosis. (Received March 02, 2020)