

## **Dynamics of Reduced El Niño Models**

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The El Niño-Southern Oscillation (ENSO) is a climatic phenomenon that fluctuates between El Niño, La Niña, and neutral states. El Niño events, associated with higher sea surface temperatures in the Eastern Equatorial Pacific, are caused by atmospheric and oceanic interactions. While these events occur roughly every four years, larger and more intense El Niño events occur on decadal scales and are associated with extreme weather worldwide. The decadal occurrences of strong El Niño events are denoted as bursting behavior. A paper by Timmermann, Jin, and Abshagen in 2003 establishes a nonlinear mechanism of El Niño bursting by using a reduced El Niño model, namely the recharge discharge oscillator model. We propose a dimensionless model by using substitutions to the Timmermann model. We also explore the dynamics of the low-order, dimensionless dynamical system and focus on its bifurcation structure.