Title:	E ect of the Global Warming Constant and Delay in Coupling in a Coupled Oscillator Model of the El Nino Event
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Abstract:	In this project we will study the El Nino event through different dynamical models. El Nino is a band of anomalously warm ocean water temperatures that occasionally develops off the western coast of South America and can cause climatic changes across the Pacific Ocean. El Nino is Spanish for \the child", and the capitalized term El Nino refers to the Christ child, Jesus, because periodic warming in the Pacific near South America is usually noticed around Christmas. It can produce significant economic and atmospheric consequences worldwide occur every 3-7 years, lasting about one year. During a normal year, there is a large pool of warm water in the western Pacific. Low pressure dominates in the western Pacific over the warm water, high pressure dominates in the eastern Pacific over the colder water and the easterly trade winds push and pile the water in the equatorial Pacific into the western part of the Pacific basin. The sea level is actually higher in the western Pacific. There is precipitation associated with the warm water and lower pressure in the western Pacific and in the eastern Pacific there is cooler water and high pressure. During an El Nino year, the sea surface temperature in the eastern Pacific becomes warmer than normal as the trade winds weaken, allowing the water in the western Pacific to move to the eastern Pacific. There are high surface pressure shifts from the eastern Pacific to the western Pacific, and low pressure shifts from the western Pacific to the eastern Pacific. This shift in surface pressure is called the El Nino Southern Oscillation (ENSO). ENSO has a large impact on the precipitation distribution around the Pacific basin. El Nino have a strong impact on the continents around the tropical Pacific, and some climatic inuence on half of the planet. The developed phase of El Nino is characterized by a temperature elevation of a few degrees Celsius at the ocean surface , from the coasts of Peru and Ecuador to the center of the equatorial Pacific Ocean. A consequence of such warming is the long-term perturbation of the weather systems over the lands around, notably heavy rains in usually dry areas, drought in normally wet regions. In the sections below we will first discuss a model of this climatic effect introduced in Ref. [1]. We will then go on to introduce variants of the existing model, and investigate the temporal implications of the different features in our models.
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