# Predicting summer rainfall in coastal northeast Australia for improved farming practices

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Reliable summer rainfall forecasts in coastal northeast Australia can empower sugar cane growers to better manage nitrogen applications reducing damage to the Great Barrier Reef. We explore the dynamical systems that affect rainfall in the sugar cane growing region, where nitrogen losses pose the greatest ecological threat. We then evaluate seasonal climate forecasting model's (ACCESS-S) ability to simulate these dynamical features. El-Nino Southern Oscillation (ENSO) is the dominant feature of climate variability for northeast Australia; however, the moisture availability arises from the ENSO teleconnection to the north-south movements of the South Pacific Convergence Zone (SPCZ). While ACCESS-S can simulate the Nino3.4 variability and movement of the SPCZ, spatial biases in the SPCZ latitude and slope alter the moisture availability to coastal northeast Australia inhibiting the skill of regional rainfall forecasts. Therefore, we explore a hybrid forecasting approach to capitalise on existing statistical forecasts with the additional information from dynamical models.