Geophysical Research Abstracts, Vol. 7, 01286, 2005 SRef-ID: 1607-7962/gra/EGU05-A-01286 © European Geosciences Union 2005



Biogeochimical modelling study of Tropical Instability Waves in Pacific ocean.

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Tropical Instability Waves (TIW) are prominent features of the equatorial Atlantic and Pacific Oceans. They have been suggested to induce profound modifications of the marine ecosystem with implications for production and carbon fluxes. Here, we use a coupled dynamical-biogeochemical model of the tropical Pacific to document and understand how TIWs affect the ecosystem over the 1992-1998 time period. The model is forced with scatterometer winds and produces realistic TIW variability. The Ecosystem model includes, PO4, NO3, SI and Iron colimitations, 2 classes of phyto and zooplankton and micronekton. The patterns of nutrients, phyto, zooplankton, and micronekton resembles those observed during PICOLO. First, we dicuss the mecanisms at work to produce such patterns and their implication on the production at these scales. Second, we force the ecosystem model off line without the TIW dynamical variability to infer the seasonal ecosystem budgets induced by the TIW over the 1992-1998 period.