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## ***Interactive comment on “Net primary productivity, upwelling and coastal currents in the Gulf of Ulloa, Baja California, Mexico” by E. González-Rodríguez et al.***

### **Anonymous Referee #2**

Received and published: 26 December 2011

The paper “Net Primary Productivity, upwelling and coastal currents in the Gulf of Ulloa, Baja California, Mexico” addresses the important question of the effect of physical upwelling forcing on phytoplankton productivity. By using satellite data from five successive years (2003–2007) seasonal trends in Net Primary Production (NPP) are described in terms of the influence of upwelling modulated by an equatorward coastal current (during winter and spring) enhancing NPP and a warm poleward summer current of tropical characteristics that suppresses productivity in the Gulf of Ulloa, Baja California, Mexico.

One of the main shortcomings of the paper is that it offers virtually no explanations on why the combination of upwelling with equatorward or upwelling with warm poleward

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current either enhances or suppresses NPP. For instance, in (Perú-Chile) Humboldt Current system (HCS) modulation of the quality of upwelled water; by physical events such as the passage of coastally trapped waves, the deepening of nutrient rich subsurface waters during ENSO events or the presence of areas of permanent high wind turbulence has been put forward as possible mechanisms influencing the resulting primary production (PP) following upwelling. By lacking a serious interpretative effort the work becomes too descriptive.

The data ought to be presented in the context of similar work: i.e. in terms of upwelling as a physical forcing of NPP. Although I am not too familiar with California current oceanography I understand that the research area is well sampled thanks to the Mexican IMECOCAL research program that conducts quarterly oceanographic surveys in the southern region of California since October 1977. My guess is that this program should provide the right framework and background information that can enrich the conclusions of the paper.

The English needs to be improved throughout the text. At times it becomes too colloquial and lacks scientific rigour.

## Specific comments

Abstract: will need to be changed to accommodate the suggestions of the referees.

## Introduction

More up to date references are needed. Far too much effort has been dedicated to a rather simplistic description of upwelling (by now a fairly well described phenomenon). As stated in the general comments a better effort to describe and to contextualize the main findings of the work presented is needed.

page 1980, line 24 please define what is meant by "... coastal hydrographic properties..."

page 1981 line 5 in agreement with anonymous referee 1 please define what is meant

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by properties

line 18 delete “been”

page 1982 line 1 is report the right word ??? should it not be “..In this paper ??..”

## Methods

In general terms the Methods section is appropriate however a small reference to the limitations of the methodology employed and a better definition of NPP would enrich the paper. For instance several more recent works modelling Net Community Production (NCP) are currently being employed.

## Results and Discussion

page 1985 line 14 a comma after January is needed line 15 use were instead of are (in general use past tense to describe results) line 24 delete there

page 1986

The section climatological maps of SST and currents (what currents ???) needs to be re-written to make it more clear.

page 1987 line 6 avoid colloquial english (“...is lightly present.....”)

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Interactive comment on Ocean Sci. Discuss., 8, 1979, 2011.

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