

Interactive comment on “Phytoplankton blooms on the western shelf of Tasmania: evidence of a highly productive ecosystem” by J. Kämpf

Anonymous Referee #2

Received and published: 15 October 2014

General comments

This study focuses on the analyses of over 10 years of satellite-derived chlorophyll products to reveal the existence of a productive ecosystem on the west Tasmanian shelf. To understand the physical processes, other satellite data such as SST and wind data were used along with some collateral data. Though I find this work interesting, there are some issues that should be addressed. The paper lacks a detailed description of the data used for this investigation. It is known that the use of standard chlorophyll products to understand algal bloom dynamics especially around the coast is limited due to some key issues (elaborated below). Further discussion of the results with more recent references is needed.

Specific comments

C899

Methods should be presented with more details on how each of the variables is derived or calculated. It should also include and highlight the region selected for all time series plots and any artifacts and errors on the derived products in the upwelling regions, for instance atmospheric correction problems and appropriateness of in-water algorithms in case of ocean colour data and limitations of low resolution data from scatterometers and altimeters.

The author should provide more details on the bio-optical algorithm used to estimate the chlorophyll concentration. In general, chlorophyll concentrations estimated using OC4 or other similar band ratio algorithms are often biased in river-plume and algal bloom waters, mainly because of the known atmospheric correction issues or bio-optical algorithm itself. The standard band ratio bio-optical algorithms are sensitive to the contents of dissolved organics and suspended sediments, thereby producing high pigment patches attached to the coast as shown in Figs. 7, 9 and 15. This often leads to misinterpretation of features observed around coastal waters.

Furthermore, chlorophyll patterns associated with the river-plume and coastal upwelling are not distinct as the chlorophyll concentration is generally biased high along the coast, which makes the interpretation very difficult. Thus, a plot showing the validation of the chlorophyll products should be included before interpreting the time series plots.

SSH plots along with geotrophic currents and wind stick plots should be presented along with the SST and Chl-a plots so as to make the analyses more comprehensive.

“Colour” should be consistent throughout manuscript.

In Figure 2, legends are not clear. A reference is needed.

In Figure 3, current vectors should be better plotted for the study region (southern western parts).