

Interactive comment on “Phytoplankton distribution in unusually low sea ice cover over the Pacific Arctic” by P. Coupel et al.

Anonymous Referee #1

Received and published: 9 April 2012

The manuscript reports on a 2008 cruise to the Western Arctic and compares pigment data from HPLC with microscopy. The HPLC is used to estimate concentrations of pigments that are identified using the Chemtax program and the microscopy data is based on epi-fluorescence microscopy, which provides some taxonomic and biomass information. There seems to be little or no agreement between the two methods. Another theme of the report is the difference between surface and subsurface chlorophyll maximum layers in different Arctic oceanographic regions. The regions include Chuckchi Shelf, Chuckchi borderland, Medeleev Abyssal plain, Canada Abyssal plain. The whole area then is binned as Shelf, Ice free basins, marginal ice zone and heavy ice basins. These are then compared. Overall 8 of the 9 figures seem to present the same data but summed and graphed for the multiple comparisons. The phytoplankton pigment record is interesting, but I think over interpreted.

C611

The written manuscript should have been read and edited by a native English speaker with knowledge of the techniques. The abstract does not represent the content of the paper. The comparison with earlier work using similar techniques is over emphasized given the limitations of the techniques. The introduction has missed several important papers eg. Comeau et al 2011 PloS One, where 8 or 9 years in one region were compared. The methods section on introducing the complex hydrography of the region should have been in the discussion and would be a good way to integrate some of the data into a larger story. Key methods such as how physical oceanographic data were collected and how the photic zone and stratification depths were arrived at are not included. I did find some of this information in the legends of the figures, I do not know if this is a question of journal style. Results No statistics or correlative analyses are given for any of the comparisons. The reader should not have to go to a supplemental file to find out what the acronyms for pigments indicate. On p2071 integrated results are compared but there is no indication of how these were arrived at. Was it to the bottom of the water column, mixed layer, or photic zone? How many depths were considered. Discussion. The attribution of every result to the ice melting is bothersome. In section 4.3 the suggestion that there is a causal effect cannot be supported without before and after data with appropriate statistical analysis or some experimental evidence. This is a serious shortcoming of the entire manuscript, none of the conclusions are supported. Specific comments: The language is poor and confusing throughout, I do not have the time to list these errors. Starting with the abstract, which suggests that ice has been melting for 2,008 years and the puzzle of the word hinospitable.

Interactive comment on Biogeosciences Discuss., 9, 2055, 2012.