Review of bg-2010-358-discussions (Christaki et al. 2011, The impact of anticyclonic mesoscale structures on microbial food webs in the Mediterranean Sea)

General comments
This manuscript describes several microbial related variables (mainly heterotrophic) along a longitudinal transect in the Mediterranean. As such it is an interesting study since a series of parameters that are not so often analyzed in oceanographic cruises and are crucial to understanding the microbial food web are provided under the same methodological conditions and within a relatively short time frame. The title promises that the study focuses on getting an understanding of the impact of anticyclonic eddies on microbial food webs. However, as one reads the introduction and the rest of the manuscript, this issue is secondary while the first objective is clearly stated to give *a general description of the vertical and spatial distribution* of the parameters studied. The second objective is to characterize the functioning of the microbial food web inside 3 anticyclonic eddies.
As far as the eddies go, they are not properly characterized, at least with the data shown in this paper (Fig. 3, which by the way misses the T profile that the legend promises). Stations are too far apart to properly characterize the eddies and their boundaries. Also, with my limited knowledge on the subject, it would seem to me (from salinity of Fig. 3) that a clear signal is only observed in A. It is possible that the BOUM cruise had more stations if the station numbering is correlative, but even doubling the stations results in a sort of poor spatial resolution, to make sure one is measuring the biogeochemical parameters well inside an eddy. In any case, if studying the impact of the eddies is an objective, these eddies should be better defined.
The results show some clear longitudinal trends, albeit with quite some noise. I would certainly discard from the general analysis stations 25 and 27; they hardly add to the longitudinal component (25) and they seem to be clearly highly influenced by land proximity (27). The authors do not need them for the longitudinal analyses and only add noise. I did the exercise of plotting the DCM versus longitude (without st 25 and 27) and a nice line results (left plot below). It is true that A and B are above the line, while C is right on the line. If we take A, B, and C out (right plot below), the change in the line is not large but variability is reduced quite a bit. The slope also increases slightly mainly owing to the removal of A. So, the authors may have a point about the eddies, if they can show that A and B were in the middle of anticyclonic eddies. C is a different story. When we take a look at biological and biogeochemical flux data (the 3 "eddies" behave differently), there is quite a bit of variability between eddies. So, overall there is no general trend, no single direction for a possible effect of the "eddies" that one can invoke to explain the variability in microbial food web dynamics. I am not saying there may not be one, just that the data is too sketchy and partial or maybe time-dependent to ascertain that there is.
Regarding the flux assessments and the ecosystem balance it is a pity that such data is not available "outside" the "eddies", and thus not much can be said about the effect of eddies other than it seems to be different for all 3.
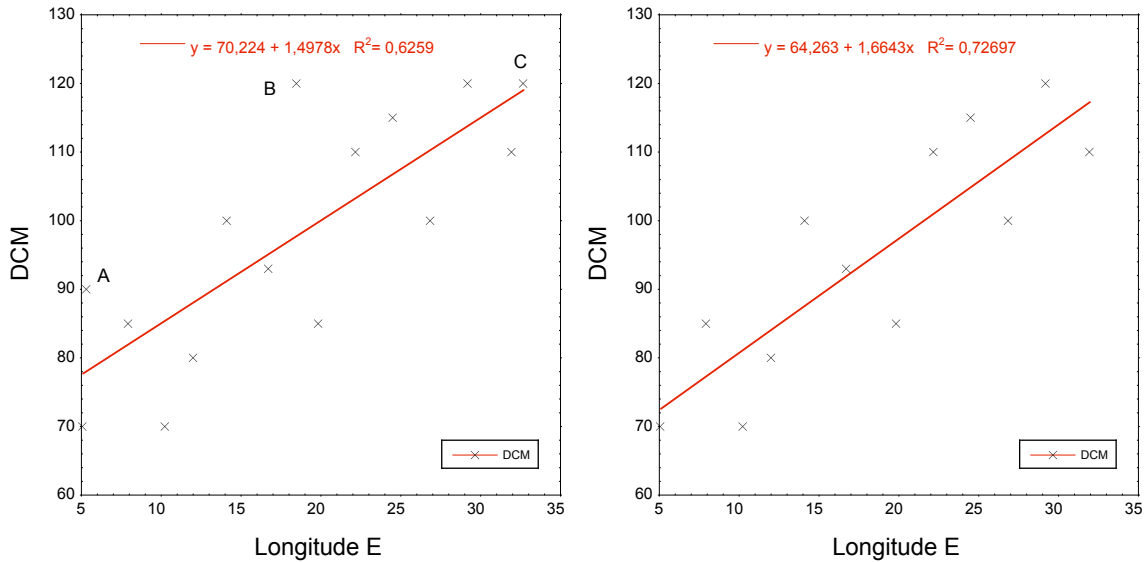
Specific comments

Page 189, 2nd paragraph. The importance of the objectives is not in agreement with the previous paragraph and the title of the paper.

Page 198, line 5. Again the first objective is to document the vertical and spatial distribution of the heterotrophic components of the microbial food web... not the effect of eddies.

Page 190, what was the detection limit of the autoanalyzer? for nitrate? phosphate? 0.02 μmol L^{-1}. How many samples were this low?

Page 190, line 20. A fixed C cell^{-1} conversion factor is crude, especially since bacterial volume information can be obtained from the FC and then a C vol^{-1} conversion factor could be used. Since the two subpopulations (HNA and LNA) can be hypothesized to change in importance based on the hypothesis of activity differences, not using a fixed C/cell conversion factor could become critical. The authors could report an annexed table with mean SSC and FL1 values both for the different bacterial subpopulation and the corresponding beads used as internal standard, so that readers can make their own bacterial volume estimations.

Page 191, line 17, duplicate samples are hardly enough for leucine incubations. Need at least 3 or 4 replicates, and 2 killed controls.

Page 191, line 22, what is the validity of using a fixed conversion factor of 1.5 kg C mol^{-1} leucine in the open sea?

Page 192, line 7. Give some details of the drifting rig. How was it drifting? Did it have a submerged structure to integrate the current in say the upper 10 m?

Page 195, line 10. What is ddl? degrees of freedom (df)? Why is it of 101 instead of the total 111?

Page 198, line 12, Here 3 basins are invoked while the authors group their station in two basins and even discard some stations that would probably fall in the "central basin"

Page 199, line 5. Of what "relationship"? One should not have to read Gasol (1994) to guess what relationship the authors refer to.

Technical corrections

Page 188, line 12. The sentence does not make sense; something is incorrect or missing. It probably is "..Mediterranean, where the..."

Page 189, lines 21-23. The sentence needs to be properly written.

Page 192, lines 15 and 24, uniformize the subscript pf PP_p.

Page 194, line 5. "The fluorescence maximum depth **increased** from 30 m...". But attention, there is a 120 m DCM at B!!!

Page 194, line 25, Bacterial production cannot be found on Fig 2.

Page 197, line 16-18. The sentence of the comparison between dates at a station and between stations should be clarified. Right now it is stated incorrectly and the reader cannot make sense of it.

Page 197, line 19-21, which one is x and which one y?

Page 202, line 26, DYFAMED in capital letters

Page 210, Longitude and Latitude headings have to be interchanged.

Page 210. I cannot make out Lat and Long data: 4° **93,**050' does not exist as there are only 60 minutes in a degree. I guess it is 4.93050° and so on.

Page 212. Remove colon. "...(PP_{total}) during the first (A1, B1 and C1) and third (A3, B3 and C3) **day** of site occupation."

Page 214. I cannot read the axis values and color scales of the different plots at 100%. If the plots have to be printed in grayscale, some colors overlap in grays. Also, a linear scale for some of the variables which need to be multiplied by a power of 10 and or otherwise when the scale does not reach 0, makes it almost impossible to get a clear picture in areas of low concentration. Log scales may be better.

Page 215. The legend reads "temperature and salinity" but the plots only show salinity.

Page 219. The legend of the figure reads A3, B3, C3 but the figure axis shows A2, B2, C2.