

Interactive comment on “Short-term temporal variations of heterotrophic bacterial” by G. Mével et al.

Anonymous Referee #3

Received and published: 3 July 2008

General comments

This work provides a considerable amount of measurements on heterotrophic bacterial abundance and production at different time scales (weekly, daily and hourly) at a central station in the Ligurian Sea, near the DYFAMED site. The vertical and temporal dynamics of total vs particle-attached bacterial abundance and activity were studied within the 0-1000m depth, during 5 weeks under summer autumn transition. The paper is valuable for publication, as it is true that there is a lack of such large datasets in the Mediterranean Sea, thus it can contribute to the study of bacterioplankton variations and their biogeochemical role in the Mediterranean.

I give below some remarks that need to be addressed:

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



An important part of this work is dedicated to the dynamics and temporal trends of bacterial abundance and production in the mesopelagic layer (150-1000m). The authors should present also this effort in the abstract.

In the results section the obtained data are compared to those obtained from 2 previous cruises not at the same site as mentioned, but at the nearby DYFAMED station. All these previous and recent data (TBB, TBA and TSA) are given in Table 1 and only in the discussion section it is better explained that measurements in March and June 2003 are described in the paper of Ghiglione et al. 2007 This is rather confusing. I think it would be better to summarize the findings of Ghiglione et al in the introduction section and write how these two papers are related. Moreover, are these results included as well in Lemee et al. 2002 (page 1913 line 15)?

Bacterial Production (TBP) was measured with the centrifugation method (1,5ml samples) in all profiles (0-150m and 0-1000m) where as the filtration method (10-30ml samples) was used to estimate bacterial production of particle-attached bacteria (ABP). When the authors find that free-living bacterial production is equal or even higher than TBP, due probably to differences in the two methods, do they suggest that ABP is negligible? Have the authors checked, especially for the deep samples, that TBP results are similar with the two methods? Ghiglione et al (2007) used however the same method (filtration method) for all samples, that seems more reasonable to compare TBP, free-living and particle-attached bacterial activity.

The authors should include in the material and methods more information about the P index (proxy of salinity anomalies) not only the reference. I could not find the index of low salinity water in www.obs-vlfr.fr/proof/vt/op/ec/peche/pec.htm.

Specific comments:

Page 1900, lines 22-25: there is a long confusing sentence that is better to rewrite it.

Page 1901, line 10: please add a reference about the network of Microbial

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

Observatories”.

Page 1903, line 5 “at a site near the DYFAMED station” is imprecise. It is better to give the latitude and longitude of the station.

Page 1908, lines 18-19: “over the entire five week period? TBA increased from surface to the DCM and decreased below” However as it is shown in Fig 1, after JD269 TBA showed increased values near the surface. Moreover this statement is contradictious with what the authors say in page 1911 line 9.

Page 1914, line 2: please specify what are phytoplankton nutrients

Page 1914 lines 4-8: carbon conversion factors are better to be written in the material and methods. As far as it concerns bacterial biomass it is already included (page 1905, line 15) so there is no need to repeat it, however nothing is mentioned about autotrophic biomass.

Page 1914 line 16: please precise what are the six upper layers

Page 1914 lines 11-20: The authors try to support their results reporting what other authors have suggested. For instance, in line 12 “such situation occurs when Chl-a is low $< 1\text{mg m}^{-3}$ ”. What are chl-a values at this site? Please show as well the results of the BB-BP linear regression analysis and correct the reference Christaki et al. 2003.

Page 1915 line 12: The authors describe a negative relationship between the 0-150m integrated TBA and TBP and the desalted water mass intrusion. This statement is the opposite with the results in the E. Mediterranean where high values were recorded in the Northern Aegean surface waters influenced by the intrusion of low salinity Black Sea waters (Christaki et al. 2003). Could they give an hypothesis and possibly explain the controlling factors?

Page 1918 line 27: such discrepancy could be also due to different protocols used to measure total bacterial production (TBP).

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Interactive comment on Biogeosciences Discuss., 5, 1899, 2008.

BGD

5, S1005–S1008, 2008

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

S1008

