

Interactive comment on “Ecology of aerobic anoxygenic phototrophic bacteria along an oligotrophic gradient in the Mediterranean Sea” by D. Lamy et al.

Anonymous Referee #1

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General comments:

The authors reported the biogeographical patterns of AAP bacteria in the Mediterranean Sea by using three parallel methods: IR fluorometry, epifluorescence microscopy and HPLC pigment analysis. This work is original and the description is clear. The large data set gives a comprehensive picture of the longitudinal and vertical distribution of AAP bacteria in the Mediterranean Sea. Nutrient and glucose additions experiments provide the important information that AAP bacteria were nitrogen- and carbon-limited in the ultra-oligotrophic ocean. The detailed statistical analyses indicate the most significant environmental variables explaining variation in the AAP distribu-

C155

tion. In summary I think the data set is valuable and can be published after minor revision.

Specific comments:

Page 329, Line 18: The absolute detection limit of 2 ng BChl-a L⁻¹ for the IR kinetic fluorometer was inconsistent with the BChl-a concentrations determined by HPLC. Fig. 3 showed that almost all BChl-a concentrations were < 2 ng L⁻¹ in this study area, while the authors still gave BChl-a fluorescence signals. Page 337, Line 26: “strongly followed the depth distribution of cyanobacteria” is not supported by Fig. 4A. Page 339, Line 1-3: Why the BChl-a quotas in the Mediterranean Sea are much higher than the values observed in the previous studies? The authors suggested that reliance on phototrophy varied along the oligotrophic gradient and that nutrient and/or carbon limitation favors BChl-a synthesis in natural communities. So the authors should explain whether the Mediterranean Sea is more oligotrophic than the South Pacific Ocean, the Sargasso Sea, and the Mid-Atlantic Bight in the previous studies? Page 339, Line 21-25: This part is not easy to be understood. The authors should give a clearer discussion on the link between the hypothesis and the observation by this study. Technical corrections: Page 326, Line 24: Should be “A few”. Page 334, Line 24: Should be “6.90 × 10⁵ cells ml⁻¹”.

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C156