

Interactive comment on “M3A system (2000–2005) – operation and maintenance” by G. Petihakis et al.

Anonymous Referee #1

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The paper “M3A system (2000–2005) - operation and maintenance” by Petihakis et al. presents a description of the operations to maintain a real time autonomous observing system deployed in the Mediterranean Sea. The paper’s main focuses are: 1. the bio-fouling problem, which affects the optical sensors equipping part of the system, 2. the calibration of the sensors, with an accurate control of the fluorimeters response; 3. the maintenance programme, with an accurate listing of the main accidents and problems encountered during two different temporal operating phases of the system (false cable connections, communication breakdowns, lost and recuperation of the surface buoy etc.). The paper shows the results of a series of specific tests to solve the bio-fouling influence on the biomass measurements and the improved results following an “ad hoc” calibration of the fluorescence sensors. Finally, concerning the observations of

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the physical (temperature) and biological (chlorophyll - a) parameters, very few results are commented. The paper is well written, though I'm not a native English speakers. However, commas are often missing, making unclear some passages.

Initially, I was very in doubt about the paper. The authors show very few scientific advancements. In the present form the paper is not more than a technical report. I'm sure this was a deliberate choice of the authors, in order to dedicate to the exploitation of the results other papers. However, this is not a good enough reason. On the other hand, I know very well the costs, in terms of man-time and duty, than a similar system requires. In addition, I recognize that the "dirty work" to produce, to control and to make available the data is too few granted, often limited to some words in the acknowledgements. Several "important" papers result from the utilisation of real-time continuous systems, such the one presented here. In fact, others subjects exploit "scientifically" the effort of the personnel involved in the observational programmes.

So, I think that the paper should be accepted, but I suggest changing some sections of the draft, which could result in an increased scientific relevance of the paper. Some suggestions are in the follow (opened to discussions in the Ocean Science Discussion web-site): 1. The section 2 (M3A design and configuration) could be shortened, mainly referring to other publications for the detailed description of the system. I would indicate here only the changes occurred in the second phase. 2. The description of the periodic maintenance and of the problems encountered (section 4.1 and 4.3) could be shortened too. An idea could be a more extensive use of tables. 3. The discussion on the bio-fouling problems could be extended, considering the unquestionable experience of the authors on the subject. If, the "hardware" methods are impracticable, is it possible to recuperate the data affected by bio-fouling using some post-processing procedures, as, for example, a re-scaling of the wrong measurements using sample analysis? Did you try it? It is possibly to identify some "external" parameters, which could permit to recognise when an observation is disturbed by bio-fouling (i.e. period of the year, levels of incident light, etc). What's your feeling about that? Although I

agree that authors could don't have the "final" solution, I would appreciate a discussion about that, and, in particular, their opinions on the subject. 4. In my opinion, the conclusions section (#6) ignores a crucial aspect, which is potentially the most relevant for the readers: a final budget of the data acquired, of the personnel involved, of the boat-time, of the effects of the problems/accidents on the temporal series. Just an example: the authors spent several lines in the text to describe the communication problems affecting the system. I found that's correct. However, not a word is pronounced on the effect of these accidents on the temporal series. These kind of analysis could give an idea of the attention dedicated by the personnel to preserve the data, and also justify the whole supporting and maintenance system. 5. The previous point could introduce some comments on the importance of the continuous monitoring of the ocean allowed by the presented system. The authors correctly highlight this aspect in the introduction and in the conclusions, but I would appreciate some real examples, even very roughly, based on the acquired M3A data. I think about, for instance, the identification of occasional marine or atmospheric events, which could locally modify the oceanic upper layer fields. Such events are very difficult to monitor with "classical" platforms, although they have a strong effect on the oceanic dynamic. I suppose that the M3A system is able to detect and to quantify such kind of events.

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