

Interactive comment on “Detecting marine hazardous substances and organisms: sensors for pollutants, toxins, and pathogens” by O. Zielinski et al.

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Following referee #1.

I share the view that the paper is well written, very informative and comprehensive. The reference list is a treasure trove of information. I expect this to be of great interest to wide range of readers from various disciplines stemming from industry, academia and government.

A nested ocean sensing approach is obviously required to address the problems posed in this review. The authors aptly captured a sense of the challenges and current limitations associated with that long-held vision.

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Consider adding a few sentences or paragraph in section 4 or 5 on autonomous, adaptive response. For example, modeling can be applied to help cast projections of biological, chemical and physical properties. By directing small fleets of mobile platforms or altering the operation of a fixed array of sensors and samplers within that domain, a distributed network could be variably “tuned” to detect specific phenomena remotely. Such ideas are not new, but they are becoming easier to approach with the observatory infrastructure now available. It’s worth pointing out that growing opportunity, and highlighting the need for interdisciplinary collaborations to move the field forward.

Couple updates re: ESP. The work of Doucette et al. on domoic acid detection is now in press:

Doucette, G.J., C.M. Mikulski, K.L. Jones, K.L. King, D.I. Greenfield, R. Marin III, S. Jensen, B. Roman, C.T. Elliott, C.A. Scholin. Remote, subsurface detection of the algal toxin domoic acid onboard the Environmental Sample Processor: assay development and initial field trials. *Harmful Algae*

A new overview paper on the ESP is available that is more current than the work cited:

Scholin, C, G. Doucette, S. Jensen, B. Roman, D. Pargett, R. Marin III, C. Preston, W. Jones, J. Feldman, C. Everlove, A. Harris, N. Alvarado, E. Massion, J. Birch, D. Greenfield, R. Vrijenhoek, C. Mikulski, K. Jones. Remote detection of marine microbes, small invertebrates, harmful algae and biotoxins using the Environmental Sample Processor (ESP). *Oceanography* 22:158-167

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