

*Article title: From ENC data to sea-bottom models: Kriging approaches for the Bay of Pozzuoli*

*Special Issue of Acta IMEKO*

April 26, 2021

Dear Editor,

I would like to submit the revised version of the manuscript entitled "*From ENC data to sea-bottom models: Kriging approaches for the Bay of Pozzuoli*" by Emanuele Alcaras, Claudio Parente and Andrea Vallario.

In a separate file, namely IMEKO - Alcaras Parente Vallario - Final Changes, all the differences between the first uploaded version of the paper and the final version are shown, particularly the yellow highlighted lines are the new ones.

The article has been revised according to the indications provided by the reviewers.

**Reviewer A:**

**1- The authors are advised to proof carefully the manuscript in its entirety, by seeking the assistance of a native English speaker or of professional English editing services. They are also advised to check for inconsistent spelling, as both North American and British/Australian English are mixed in their text.**

Done.

**2 - I recommend that when describing the dataset they should mention the bathymetric accuracy of the points picked from ENCs, because not all readers may be familiar. Additionally, I would advise mentioning the final accuracy of the sea-bottom model generated by 'ordinary kriging'-calculated taking into account the accuracy of the points picked from the ENCs.**

Done.

We mentioned the bathymetric accuracy of the points picked from ENCs in section 2.

We mentioned the final accuracy of the sea-bottom model generated by 'ordinary kriging'-calculated taking into account the accuracy of the points picked from the ENCs in section 4.

**Proposed additional bibliography:**

**Dupuy, R., & Makar, A. (2011). Analysis of Digital Sea Bottom Models Generated using ENC Data. Annual of Navigation, 18, 27–36.**  
[https://annualofnavigation.pl/wp-content/uploads/2019/03/3\\_Dupuy-Makar\\_1208062129502009.pdf](https://annualofnavigation.pl/wp-content/uploads/2019/03/3_Dupuy-Makar_1208062129502009.pdf)

**Sassais, R., & Makar, A. (2011). Methods to Generate Numerical Models of Terrain for Spatial ENC Presentation. Annual of Navigation, 18, 69–81.**  
[https://annualofnavigation.pl/wp-content/uploads/2019/03/7\\_Sassais-Makar\\_120806215023507.pdf](https://annualofnavigation.pl/wp-content/uploads/2019/03/7_Sassais-Makar_120806215023507.pdf)

EL-Hattab, A. I. (2014). Single beam bathymetric data modelling techniques for accurate maintenance dredging. *The Egyptian Journal of Remote Sensing and Space Science*, 17(2), 189–195.  
<https://doi.org/10.1016/j.ejrs.2014.05.003>

Parente, C., & Vallario, A. (2019). Interpolation of Single Beam Echo Sounder Data for 3D Bathymetric Model. *International Journal of Advanced Computer Science and Applications*, 10(10).  
<https://doi.org/10.14569/IJACSA.2019.0101002>

Specht, M., Specht, C., Mindykowski, J., Dabrowski, P., Masnicki, R., & Makar, A. (2020). Geospatial Modeling of the Tombolo Phenomenon in Sopot using Integrated Geodetic and Hydrographic Measurement Methods. *Remote Sensing*, 12(4), 737. <https://doi.org/10.3390/rs12040737>

All the proposed additional bibliography has been added.

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Reviewer C:

**1- When you say: "consisting of X, Y, Z coordinates stored in digital form [16]" I would say more N,E, H coordinates or Fi, Lambda, H or even simply three-dimensional cartographic coordinates. But this is just a suggestion.**

Done. The sentence has been changed in: "a 3-dimensional representation of a terrain surface consisting of three-dimensional coordinates (i.e. E, N, h or  $\lambda$ ,  $\varphi$ , H) stored in digital form".

**2- when describing the IIM map I would, in addition to the planimetric datum (of which I would specify the EPSG code for greater precision), add the altimetric datum which I believe is Genova 1942. For international readers this could be very useful.**

Done. We added the EPSG code and the altimetric datum in section 2.

**3- in the introduction I would mention the emerging techniques for extracting bathymetric information from satellite images that could be used in synergy with the methodologies you have studied, in this regard you could for example see:**

**Alicandro, M. et al. Automatic Shoreline Detection from Eight-Band VHR Satellite Imagery. *J. Mar. Sci. Eng.* 2019, 7, 459.  
<https://doi.org/10.3390/jmse7120459>.**

Done.

We want to thank the editor and the reviewers for their useful suggestions and constructive comments for improving the quality of this article.

As a corresponding author, I confirm that the manuscript has been read and approved for submission by all the named authors.

Best Regards,

Emanuele Alcaras