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DISCUSSION



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Discussion of: Sertel, E., Cigizoglu, H.K., and Sanli, D.U., 2008. Estimating Daily Mean Sea Level Heights Using Artificial Neural Networks. *Journal of Coastal Research*, 24(3), 727–734**Orhan Akyilmaz**

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This short note reports that the results and the methods used for the prediction given by Sertel *et al.* (2008) are useless and unnecessary. The authors intended to predict the one-day-in-future sea level heights at a tide gauge station.

In the *Introduction*, the authors indicate that, “It is important to estimate sea level and its variations to study the impact of temporal variation of sea level on coastline and consequently on the engineering works conducted near the coast.” This indication is true; however, the following comments should be emphasized.

First, the correct word is “to predict,” not “to estimate,” in that these two words have extremely different meanings. What has been carried out in this study is the prediction of the next day’s sea level height at a tide gauge station based on the previous records. Therefore, it is important to clarify this issue in the title of the article as well.

Second, even though the above indication is true, one-day-in-future predictions have no contribution to the coastal research, as well as to the engineering works, conducted near the coast. The challenge would be to extend the predictions at least over a month because, usually, tide gauge records have longer data gaps in time because of instrumental shortcomings, power outages, and so on. On the other hand, longer term variations

give more information about seasonal changes, which provides useful input for coastal research sciences.

Third, the authors indicate that the artificial neural network and multiple linear regression methods yielded comparatively better results. This inference should not be made by simply looking at numerical values, such as root mean square error, for example. A comparison that uses some statistical tests would be more reliable. Furthermore, the quality of the predictions obtained from different methods, as reported in Sertel *et al.* (2008), do not appear statistically significant from one another.

Fourth, in fact, the reported methods in Sertel *et al.* (2008) for making predictions of one-day-in-future mean sea level heights are not necessary. We have used the same data, as well as the method to fill the gaps, as in the original article. Without making a prediction, just setting the present day’s value as tomorrow’s value and computing the standard deviation over those two series yields an standard deviation and a coefficient of determination (R^2) of 0.074 m and 0.71, respectively. The best corresponding values given in Sertel *et al.* (2008) are 0.071 m and 0.71, respectively. With the use of an *F* test, one can easily see that these two sets of results are not significantly different.

Finally, the article appears to be a good review of literature rather than a useful scientific contribution to sea level studies.