

## ***Interactive comment on “Coastal vulnerability assessment of Puducherry coast, India using analytical hierarchical process” by R. Mani Murali et al.***

**R. Mani Murali et al.**

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Received and published: 29 July 2013

Response to Referee 2

Referee's Comment:

The MS: Coastal vulnerability assessment of Puducherry coast, India using Analytical Hierarchical Process (nhess-2013-54, presents the results of the vulnerability assessment of the coastline of Puducherry along the east coast of India. The title properly reflects the content of the paper. The topic is suitable for the journal, of broad international interest and novel. The paper is properly organized and is to the point/concise.

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The clarity of objectives is perfect along with the quality of methods and data. Validity of assumptions and analyses too are correct. Interpretations/conclusions are supported by the data.

Author's Reply: We thank the reviewer for giving positive and encouraging reviews to our MS.

Referee's Comment:

When was the bathymetry data collected for deriving the coastal slope?

Author's Reply: The modified Etopo5 datasets were obtained from the National Institute of Oceanography data repository. These datasets were provided based on the work done in the publication mentioned below.

Sindhu, B., Suresh, I., Unnikrishnan, A.S., Bhatkar, N.V., Neetu, S., Michael, G.S., J. Earth Syst. Sci., 116(3), 2007, 261-274.

An improved shelf bathymetry for the Indian Ocean region (20°E to 112° E and 38°S to 32°N) is derived by digitizing the depth contours and sounding depths less than 200 m from the hydrographic charts published by the National Hydrographic Office(NHO), India. NHO charts were published from the year 1974 for this study region and updated up to 2002.

Referee's Comment:

There are several socio-economic variables, but authors have chosen only 4 parameters. What are the other possible variables and why these were not included in the analysis?

Author's Reply: As rightly pointed out by the reviewer, there are several socio-economic factors which should be ideally included in this study for e.g. more elaborate census data ( female, male, adult, children population), data related to housing and infrastructural distributions, public amenities) and we agree that addition of these factors will

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significantly improve the social vulnerability study, but, it is a very difficult task to consolidate all those data and include in this study as most of these data are not digitally available and hence, adding detailed socio-economic data, is slightly out of the scope of the current research objective. Our main objective here is to involve the more important factors and check the response of AHP to social vulnerability studies. Hence, variables supported by freely available data are considered and used for the study.

Referee's Comment:

Elevation data used was taken 11 years ago. Why the recent data was not included?

Author's Reply: We agree with the reviewer that the elevation data is 11 years old. Indeed, we first tried to use the most recent Cartosat data available in the Bhuvan website. But, the data was inconsistent and gave erroneous values. The other option was ASTER elevation data which also had technical difficulties. So, we are left out with no option other than using the proven SRTM data which is freely available in the global land use land cover facility site (GLCF).

Referee's Comment:

Finally, how this CVI analysis will be useful to policy makers?

Author's Reply: We thank the referee for this comment. We would like to address this relevant question by adding the following paragraph in the manuscript: Please refer to the included paragraph in the manuscript (added just before the conclusion section) :

"This paper attempts to develop a robust methodology to aid policy makers in coastal management projects. This kind of study can be used for both short and long term coastal planning. The inclusion of both physical and socio-economic gives an idea of multiple scenarios that can be used to devise better adaptive strategies. The assessment of vulnerability allows to critically evaluate if the proposed adaptation strategies are actually effective or rather detrimental. For instance, the shoreline change analysis done in this study showing the accretion and erosion patterns along Puducherry

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throws light on how the placement of artificial hard structures has negatively affected the coastline. The results of these assessments are also very valuable for the regional stakeholders mainly involved in developmental activities along the coastal belts. Like in the case of Puducherry, a major tourist destination, it is essential that the maps obtained from this analysis are considered before setting up new establishments. Finally, the maps obtained from vulnerability studies prove to be very beneficial from the risk prevention point of view as they estimate the degree to which the coastline is vulnerable during natural disasters."

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/1/C684/2013/nhessd-1-C684-2013-supplement.pdf>

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 509, 2013.

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