

Review Form 3

Journal Name:	International Journal of Environment and Climate Change
Manuscript Number:	Ms_IJECC_124978
Title of the Manuscript:	Statistical Evaluation of the Performance of SVM Kernels for Air Quality Classification: case study on India
Type of the Article	

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PART 1: Review Comments

Compulsory REVISION comments	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<p>Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.</p>	<p>A SVM kernel is essential for the classification of air quality because it can well deal with non-linear bends among pollutants and is good at managing complex, high-dimensional data associated with multiple environmental factors. These can then be trained with various kernels to offer researchers the flexibility in choosing model and dataset-specific options which further improve classification accuracies. It provides them with high prognostic value in the prediction of ambient levels for diverse regions and pollutants. I felt that this research area "Statistical Evaluation of the Performance of SVM Kernels for Air Quality Classification: Case Study on India" is very interesting, as it involved the use of machine learning algorithms for real-world environmental problems. A scientific analysis: statistical evaluation of SVM kernel performance, to make the article more rigorous. Moreover, the research is highly pertinent in the context of India—a nation where air quality issues are at an all-time high and therefore brings invaluable insights into pollution management for immediate public health benefits.</p>	
<p>Is the title of the article suitable? (If not please suggest an alternative title)</p>	<p>This title is well-structured and has a clear academic title.</p> <p>I extracted the main components of the research, which are the Methods (statistical evaluation), Focus (SVM kernels), problem (air quality classification) and dataset + national details/ Context (case study in India).</p>	
<p>Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.</p>	<p>It adequately encapsulates this issue making it clear that air pollution is immediately one of the most serious problems being faced in India, aggravating lung diseases and able to present economic damages. It groups agricultural practices, most importantly stubble burning, as major causes of pollution and thus stresses the need for air quality classification in further research. This study intends to classify an imbalanced air quality dataset using Support Vector Machines (SVM) that is based on a comprehensive collection of real-time and factual information considering primary machine learning problems. Although informative and appropriately structured the abstract could be made more concise, define results in numerical terms and it needs a higher level of formality. Overall, the authors should better link these findings with specific policy implications and research directions for a broader impact. In conclusion, it is a sound abstract, but with opportunities for further improvements for clarity and impact.</p>	
<p>Are subsections and structure of the manuscript appropriate?</p>	<p>a) Restructure the subsections by including the Problem Statement / Objective of the study. Also, Literature review Should be included. A part of the Literature review is included in the Introduction. But it is better to separate them under different subtopics and number them. Develop your literature review with strong justifications. Include the aim and Objective of the study separately. The "introduction of the study" is for the total study and the "literature" provides you with a strong background to identify the gaps and and justification for your objectives.</p> <p>b) Use the numbering system of the topics. Some are numbered by using Roman numbers and simple English letters Ex- I. Methods and Materials and a) Data.</p> <p>c) Don't leave space when begging a para.</p>	
<p>Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.</p>	<p>It was scientifically strong and technically sound because it tackled a wide range of classification techniques using solid statistics. A confusion matrix is employed together with precise performance evaluation via accuracy measures, for example, precision, recall, and [F1 score] along with others to compare the efficacy of diverse SVM kernels. Additionally, it is relevant because the study employs many different techniques to classify air quality with a</p>	

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	large dataset. Incorporating more kernels and used statistical parameters in assessing classification performance translates into a systematic and thorough analysis which can be a valuable lesson for others on the superiority of different models.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. :	Use another subheading "Literature Review" and add more references. It's good to use recent references like 2019 and 2020. Try to include more and very recent literature. It will provide more updated knowledge. Adhere to the one reference style. The author used a different reference style. Ex- (Zheng et al., 2021), L. C. Wu (2018). Recommend using EndNote referencing software to generate an appropriate referencing style. Recommend using Q1, and Q2 high-ranking journals to bring value to your justifications. The researcher can use the following link to check the rank of the referred journal. Link- https://www.bing.com/search?pglt=43&q=q1+q2+journals+means&cvid=14d97b51aa2f4864a5e32a3a0e49c199&gs_lcrp=EgZjaHJvbWUyBggAEEUYOdIBCDYyMTFqMGoxqAIsAIB&FORM=ANN TA1&PC=HCTS	
Minor REVISION comments Is the language/English quality of the article suitable for scholarly communications?	The language style is at a Good acceptable level. Consider the punctuation marks, especially commas.	
Optional/General comments	This contribution utilizes the power of Support Vector Machines (SVMs) to classify air quality data, as part of tackling the air pollution dilemma in India. It tackles the class imbalance issue in environmental data and performs a full statistical comparison of several SVM kernels. This is a well-researched article but more on the analysis based on ground reality (Socio-economic perspective) like stubble burning etc needs to be given. Conclusively, it is useful research that has an application in the improvement of air pollution management strategies.	

PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	(If yes, Kindly please write down the ethical issues here in details)	

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