

Review Form 3

Journal Name:	International Journal of Environment and Climate Change
Manuscript Number:	Ms_IJECC_129511
Title of the Manuscript:	Heat Index Analysis and Simulations of Select areas in Iowa, United States
Type of the Article	

PART 1: 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>
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	This paper offers significant contributions to understanding the Heat Index and its implications in public health and environmental sciences. By employing innovative methods such as real-time sensor data and Python-based simulations, the study provides actionable insights into temperature and humidity dynamics in Iowa, a region prone to extreme heat events. The integration of low-cost sensors and real-world data sources like the Iowa Environmental Mesonet demonstrates a practical approach for monitoring and mitigating heat-related risks. This research is valuable for policymakers, health professionals, and researchers by advancing tools to predict and manage heat exposure, especially in vulnerable populations.	
Is the title of the article suitable? (If not please suggest an alternative title)	The current title of the research, <i>"Heat Index Analysis and Simulations of Select Areas in Iowa,"</i> effectively conveys the core focus of the study. It provides a clear indication that the research addresses the analysis and simulation of heat indices in Iowa, incorporating both the study's geographic scope and its primary subject.	
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.	The abstract of the article is comprehensive and effectively introduces the topic of heat indices, their significance, and the research's focus on selected areas in Iowa. It highlights the tools used, such as the DHT11 sensor, Arduino Uno, and data from the Iowa Environmental Mesonet (IEM), and provides key findings, including the average heat index in Iowa City. However, the abstract could benefit from refinement. Briefly mentioning the motivation for the study and its practical implications, such as public health relevance, would enhance its impact. Simplifying the methods section and shifting technical details to the main article could improve clarity and conciseness. Additionally, a forward-looking statement about future applications or research directions would strengthen the conclusion. These adjustments would align the abstract more closely with the goals of the research and increase its academic effectiveness.	
Is the manuscript scientifically, correct? Please write here.	The manuscript <i>"Heat Index Analysis and Simulations of Select Areas in Iowa"</i> presents a detailed and methodical study of heat indices, integrating theoretical insights, experimental techniques, and practical applications. While its objectives and scope are clearly defined, ensuring scientific validity requires a critical assessment of its methodology and interpretations. Notable strengths include the use of reliable tools like DHT11 sensors, Arduino Uno, and Iowa Environmental Mesonet (IEM) data, and a robust methodology combining hardware measurements and Python simulations. However, addressing sensor limitations, clarifying simulation methods, and enhancing discussions on statistical robustness and broader implications will improve the manuscript's depth, clarity, and impact.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The manuscript <i>"Heat Index Analysis and Simulations of Select Areas in Iowa"</i> includes a robust selection of references that effectively support its methodology and context. The citations encompass key sources on heat indices, climate change, and environmental monitoring, along with technical documentation for the DHT11 sensor, TMP36 sensor, and Arduino Uno. These references are relevant, credible, and provide a strong foundation for the study. However, integrating more recent literature, particularly from the past five years, would improve the manuscript's relevance and rigor. Suggested additions include studies on advanced heat index modeling using machine learning, contemporary public health strategies for heat adaptation, and the latest developments in sensor technology.	

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	<p>Examples include:</p> <ul style="list-style-type: none"> • Huber, V., & Gullede, J. (2019). <i>Extreme Heat Events in the Context of Global Climate Change</i>. • Mathew, A., et al. (2022). <i>Heat Stress Monitoring Using IoT-Based Sensors: A Comprehensive Review</i>. • United Nations Environment Programme (UNEP) Climate Adaptation Reports, 2023. <p>Incorporating such references would enhance the study's alignment with current research and technological advancements.</p>	
<p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>The language quality of the manuscript "<i>Heat Index Analysis and Simulations of Select Areas in Iowa</i>" is generally suitable for scholarly communication. The article effectively uses technical terminology and clear sentence structures to present the research process, results, and implications. The abstract, introduction, methods, results, and discussion are well-organized and appropriately formatted for an academic audience. However, there are opportunities to enhance readability and professionalism. Some sentences are overly complex, which may obscure clarity, while occasional grammatical inconsistencies and informal phrasing could be refined. Additionally, smoother transitions between sections would improve the manuscript's flow and coherence, ultimately strengthening its scholarly impact.</p>	
<p><u>Optional/General</u> comments</p>	<p>This study offers a comprehensive analysis of heat index measurements in Iowa, using both experimental and real-time data simulations to evaluate heat-related risks. The integration of the TMP36 and DHT11 sensors with an Arduino Uno for measuring temperature and humidity provides a practical method for environmental monitoring, particularly relevant due to the rising occurrence of extreme heat events. The manuscript would benefit from a clearer explanation of the sensor selection and calibration process. A more detailed discussion of sensor limitations and potential sources of error would strengthen the validity of the findings. Streamlining the materials and methods section would improve the manuscript's clarity, enhancing accessibility for a wider academic audience.</p>	

PART 2:

	<p>Reviewer's comment</p>	<p>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)</p>
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

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