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| Book Name: | [**Geography, Earth Science and Environment: Research Highlights**](https://www.bookpi.org/bookstore/product/geography-earth-science-and-environment-research-highlights-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_4656** |
| Title of the Manuscript: | **Output Temperature Predictions of the Geothermal Heat Pump System Using an Improved Grey Prediction Model** |
| Type of the Article | **Book Chapter** |

**Special note:**

**A research paper already published in a journal can be published as a Book Chapter in an expanded form with proper copyright approval.**

**Source Article:**

**This chapter is an extended version of the article published by the same author(s) in the following journal.**

**Energies, 14(16): 5075., 2021.**

**Available:** [**https://doi.org/10.3390/en14165075**](https://doi.org/10.3390/en14165075)

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **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 manuscript is of significant importance to the scientific community, particularly in the fields of geothermal energy systems and predictive modeling. The proposed Improved Grey Prediction Model (IGM (1,1)) enhances the accuracy of geothermal heat pump system (GHPS) output temperature predictions, which is critical for optimizing energy efficiency and system performance. By addressing the limitations of the traditional Grey Prediction Model (GM (1,1)), this research provides a more precise forecasting method that can benefit engineers, researchers, and policymakers working with renewable energy technologies. The study's empirical validation across multiple universities further reinforces its practical applicability, making it a valuable contribution to the advancement of geothermal system modeling and sustainability efforts.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **The current title, "Output Temperature Predictions of the Geothermal Heat Pump System Using an Improved Grey Prediction Model," effectively conveys the core subject of the research.** |  |
| 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 provides a clear and structured summary of the study, outlining the problem, methodology, key findings, and conclusions. The abstract could briefly highlight the broader impact of the findings, such as their potential application in optimizing energy usage, reducing costs, or integrating with smart energy management systems. The final sentence should emphasize the significance of the findings, such as the potential for industry adoption or future research directions, rather than simply restating that the model is more accurate.** |  |
| **Is the manuscript scientifically, correct? Please write here.** | **Based on my review of the manuscript, the study appears to be scientifically correct, with a well-defined methodology, clear mathematical formulations, and thorough validation using real-world datasets.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.**  **-** | **The manuscript includes a substantial number of references that cover relevant topics, including Grey Prediction Models, geothermal heat pump systems, and forecasting techniques and mostreferences are from the last five years, including machine learning and forecasting approaches applied to energy systems.** |  |
| Is the language/English quality of the article suitable for scholarly communications? | **The manuscript is generally well-written and maintains an academic tone suitable for scholarly communication. However, there are areas where the clarity, readability, and grammatical accuracy could be improved.** |  |
| Optional/General comments |  |  |

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| **PART 2:** | | |
|  | Reviewer’s comment | Author’s comment *(if agreed with the 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 detail)* |  |

**Reviewer details:**

**Poornesh M, St Joseph Engineering College, India**