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Perceptions of Youth on Ai Integration in Climate Modeling and Disaster Resilience

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Abstract

In a world that is at the dawn of a triple planetary crisis, where climate disasters that plague ordinary lives have become frequent visitors, we are at a standstill. With lives being lost as every second passes, humanity requires comprehensive solutions. As climate change intensifies the frequency and severity of natural disasters, the integration of Artificial Intelligence into climate modeling and disaster resilience has emerged as a promising approach.

Through this paper, I aim to explore the perceptions, opinions and concerns of today's youth, surrounding the role of Artificial Intelligence in enhancing climate modeling and strengthening global disaster response efforts. The study adopts an online survey with snowball sampling in order to collect responses from a wide range of youth. Having collected 100 responses from young people studying in different fields, the study provides an analysis of how the young generation perceives this AI driven shift. The study tells us that today's youth are quick to accept and adopt this changing technology. They are aware of the benefits and risks it brings, and are willing to participate and contribute towards solving the climate crisis. AI development in the field of climate modeling and disaster resilience need not be confined to the experts alone, for now we have an eager and curious young generation, filled with passion and innovative ideas, ready to make a difference.

Keywords: Artificial Intelligence, Climate Modeling, Disaster Resilience, Youth, Climate change, Disaster Management, Youth Perceptions, AI integrations

I.INTRODUCTION

Earth's climate is changing at an unprecedented pace. Earlier, climate change was driven by tectonic processes and the variability of Earth's orbital parameters (Mugabo Kalisa, 2025). No species, not even the ginormous dinosaurs,

were able to affect our planet's climate until human beings came into the picture. Human beings, having lived only a meek 300,000 years on this 4.5 million year old planet, mere seconds in the earth's geological clock, have managed to wreck such chaos. Carbon dioxide emissions, global warming, ocean acidification, habitat destruction, extinction and wide scale natural resource extraction are all consequences of human actions, consequences that have made our planet more vulnerable to natural disasters (Natural History Museum, 2019).

The United Nations Office for Disaster Risk Reduction (UNDRR) states that the number of disasters is projected to reach 560 a year, which is 1.5 each day, by 2030. This alarming trend highlights the urgent need for advanced tools to predict, prepare and mitigate climate impacts.

One major tool that allows humanity to foresee how the earth's climate will change in the upcoming years is Climate Modeling. It provides the stakeholders with the necessary data to make informed decisions; allowing the policymakers and governments to introduce necessary policies, scientists to identify key problems and develop solutions and businesses to provide services that would fill the gaps in the system.

On the other hand, we have disaster resilience. While climate modeling allows us to foresee and predict climate issues in the long run, disaster resilience is the ability of individuals, communities, organisations and states to prevent, withstand and recover from the harmful impacts of natural hazards (GSDRC, 2016).

While plenty of research has been done on both the fields, very little research has been done on Climate modeling and disaster resilience in the light of Artificial Intelligence. Moreover, studies in this field have often been confined amongst the experts - scientists, policymakers and the government. There is a need for empirical studies that gathers the views of the general public, especially the youth. Today's youth are growing up in a world where climate change is increasingly visible and technology is rapidly advancing. As the role of Artificial Intelligence in climate modeling and disaster resilience increases, it becomes essential to understand how the youth, who will face the long-term impacts of climate change, perceive the use of AI in this domain. Today's youth are tomorrow's policy makers, businessmen and changemakers who will have to harness this AI driven approach while also understanding and tackling the disadvantages it brings along.

My paper aims to explore the views, opinions and concerns of today's youth on integrating Artificial Intelligence with climate modeling and disaster resilience.

Key Objectives of the Study

- To evaluate youth awareness of AI's current use in climate modeling and disaster resilience.

- To assess youth perceptions about the integration of Artificial Intelligence into climate modeling and disaster resilience.
- To explore youth support or opposition toward AI in climate related applications.

Review of Literature

An introduction to Climate Modeling

In 1969, the world's first computer model of the Earth's climate came into being. This model, created by Syukuro Manabe laid the foundation for the development of a whole new field of science. Through his climate model he made a huge discovery, he found out that increased levels of carbon dioxide in the atmosphere lead to rising temperatures at the surface of the Earth., a discovery that led him to win the Nobel Prize in Physics at 2021 (Nobel Prize Outreach, 2025).

Climate Modeling is the process of simulating the earth's climate system. A climate model can be used to recreate the past or predict the future of our planet's climate (NCAS, n.d). These models digitize the various processes and interactions that occur between the ocean, atmosphere, cryosphere and biosphere, giving us a digital analogue of our planet's climate (WCRP, 2025).

Artificial Intelligence in Climate Modeling

Initially climate modeling began with just the underlying physics of the atmosphere and ocean, but in the past 50 years we've noticed massive growth in this field. Today we have Earth System Models that provide us with a complete and comprehensive view of our planet's climate (Bordoni *et al.*, 2025). Furthermore, the advent of artificial intelligence has revolutionized Climate modeling, leading to increased predictive accuracy, faster run time, improved cost-effectiveness and better handling of data gaps (Kadow *et al.*, 2020). AI driven climate models have the ability to learn patterns from large datasets - combining satellite data, reanalysis products, ground observations, and even social-environmental inputs, thus facilitating nowcasting and short-term forecasting, extreme event prediction and agricultural resource management (Naik *et al.*, 2025)

Disaster Resilience and AI

Disasters leave a catastrophic impact on human beings, but this impact is caused not only because of the magnitude and severity of the disaster but also because of the type of organisation, the management and performance of communities during a disaster (Dehghani *et al.*, 2022). Effective communication, accurate information, analysis of potential risks and prompt decision-making are all essential to mitigate a disaster (2022).

Managing a disaster is a complex activity which requires fast analysis, regional considerations, and network complexities (Thekdi *et al.*, 2022). While traditional methods are often time-consuming, integrating Artificial Intelligence can change the whole trajectory of this field. AI technologies have enhanced disaster preparedness, response, and recovery efforts through predictive analytics, decision support systems, damage assessment and recovery planning, and enhanced communication and coordination. (Singh and Agnihotri, 2024). For instance, AI and ML algorithms can analyze vast datasets, including not just satellite imagery and sensor readings but also social media feeds, to identify patterns and trends that signal potential disasters (Diehr *et al.*, 2025). Furthermore, the speed associated with the application of AI and ML allows for early warnings and targeted interventions to mitigate disasters (2025).

Methodology

Sources of Data Collection

The study relies on primary data, collected from 100 young individuals studying in different fields.

Research Design

The study is descriptive and quantitative in nature.

Research Instrument

The empirical study was conducted as an online survey, using Google forms as a tool.

Sample Design

Population

The target population consisted of youth studying in different fields under the age group of 15-25. The respondents included students studying in the field of artificial intelligence, business, design, mathematics, science and various other fields. A total of 100 responses were collected.

Sampling Procedure

Snowball sampling technique was used in order to gain responses from a variety of young people studying in different fields.

Result And Discussion

The data collected through the survey was used to create a percentage analysis. The analysis has then been visually represented with the help of pie charts, tables and bar graphs created with the help of Google sheets.

Table I

Gender	Percentage
Female	62%
Male	37%
Other	1%
Grand Total	**100.00%**

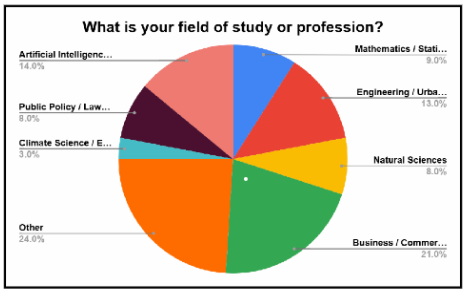

Chart 1

At the end of the data collection, the survey consisted of 100 respondents out of which 37% were male, 62% female and 1% other (Table I). The survey was conducted with the aim to reach out to students studying in different fields in order to obtain a wide range of views. We had 14% of respondents studying Artificial Intelligence/Computer Science/Information Technology, 21% studying Business/Commerce/Economics, 13% in Engineering/Urban Planning/Design, 8% studying Natural Sciences, 8% in Public Policy/Law/Governance, 3% in Climate Science/Environmental Science/Sustainability and 24% that belonged to others fields (Chart 1).

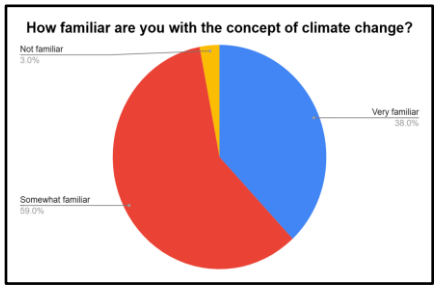

Chart 2

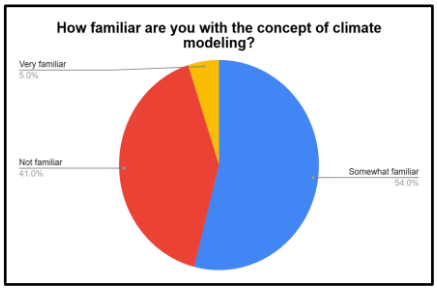

Chart 3

The first few questions analyzed the respondent's familiarity with the concepts of climate change, disaster management and climate modeling. The survey reveals that while 97% are familiar with the concept of climate change, only 59% are familiar with climate modeling (Chart 2 & 3). The data shows that a majority of youth possess at least a moderate awareness of climate change and its impacts, whereas climate modeling remains a relatively niche area, with a stark 41% of respondents unfamiliar with this topic.

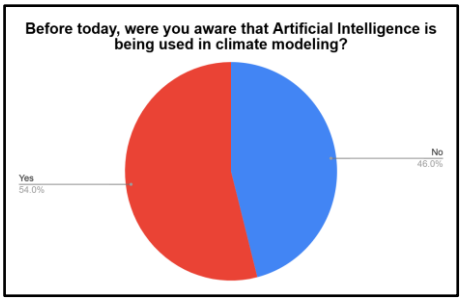

Chart 4

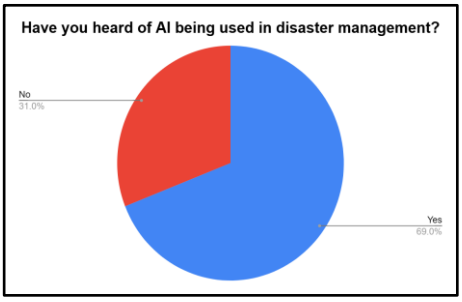

Chart 5

The survey further dived into exploring whether today's youth were aware of AI integrations in this field. 54% of the respondents were aware of AI being used in climate modeling and 69% of respondents were aware of AI being used in disaster management (Chart 4 & 5). A larger portion of respondents recognize AI integrations in disaster management because its impacts are often felt directly by the people. AI in climate modeling shares comparatively lesser awareness among youth.

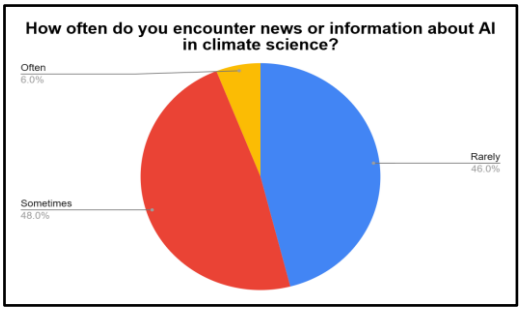

Chart 6

Further, 6% of respondents encounter news of AI in climate science often, while 48% encounter it occasionally and 46% see such news rarely (Chart 6). This tells us that information about AI in climate science has a limited reach, indicating that there is a need for more awareness initiatives and wider media coverage.

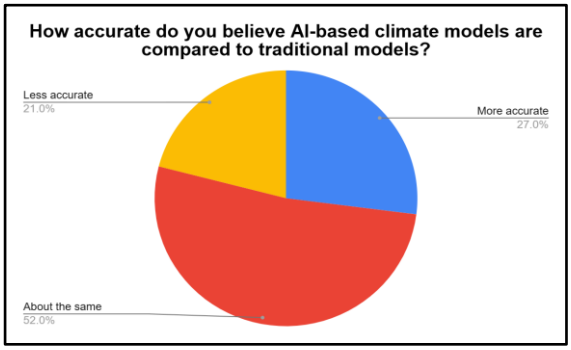

Chart 7

The survey then proceeded to gather their perceptions on the topic. Firstly the respondents were asked about how accurate they believed AI-based climate models were, compared to traditional models. 27 % believed that AI- based models were more accurate, 52% believed that traditional models and AI based ones shared similar accuracy, while 21% believed that these models were less accurate compared to traditional ones (Chart 7).

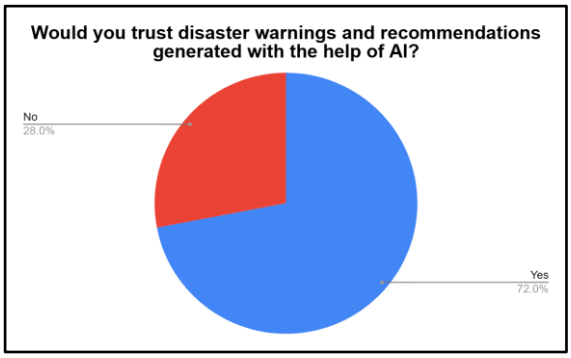

Chart 8

Further 72% of respondents stated that they would trust disaster warnings and recommendations generated with the help of AI (Chart 8).

Table II

Should AI play a greater role in predicting climate-related disasters?	**Percentage**
Yes	79%
No	21%
Grand Total	**100.00%**

This shows us that a considerable portion of the young generation have faith in the use of AI driven technologies in the field of climate modeling and disaster resilience. There is only little sign of reluctance among the youth respondents, indicating that today's youth show greater acceptance to new solutions and technologies. In fact, 79% of respondents believe that AI should play a greater role in predicting climate-related disasters (Table II).

Table III

Do you think AI can improve the speed of disaster response?	%
Yes	93%
No	7%
Grand Total	**100.00%**

93% understand that Artificial Intelligence can increase the speed of disaster responses, which is crucial because during disasters, time is everything – early warning signals, quicker evacuation, prompt decision making, AI can save time in critical situations (Table III).

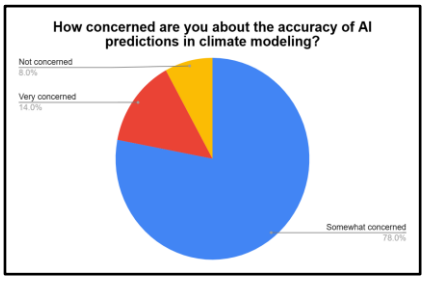

Chart 9

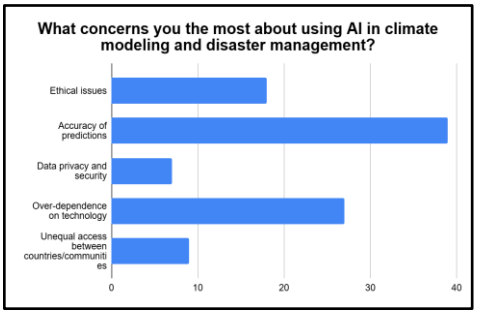

Chart 10

However, the youth have not blindly trusted AI, they do express concerns, with 92% of the survey participants expressing moderate to extreme concerns (Chart 9). Today's youth support the integration of AI into climate modeling and disaster management but they do have various concerns, with accuracy being the most predominant with 39%, 27% are concerned about over-dependence on technology, 18% on ethical issues, 9% on unequal access between countries and communities and 7% on data privacy and security (Chart 10).

Table IV

Do you think AI has the potential to act as a global equalizer in disaster response?	**%**
Yes	69%
No	31%
Grand Total	**100.00%**

Table V

Do you think AI will increase the gap between developed and developing countries in climate resilience?	**%**
Yes	76%
No	24%
Grand Total	**100.00%**

Not all nations have access to advanced AI and the latest technology. Though AI has progressed incredibly, the impact of its growth is not felt uniformly across the planet. 76% of respondents believe that AI is increasing the gap between developed and developing nations in climate resilience (Table IV). While 69% believe that AI can become a global equalizer (Table V), they recognize that there may be disparities in its implementation among developed and developing countries. Today's youth realize the potential of AI and wish that its benefits can be availed by everyone.

Table VI

Do you think youth voices should play a role in shaping how AI is used for climate modeling and disaster resilience?	**%**
Yes	92%
No	8%
Grand Total	**100.00%**

A huge portion of the respondents, 92%, want youth voices to play a role in shaping how AI is used for climate modeling and disaster resilience (Table VI) showing us how eager the young generation is, to contribute in this field.

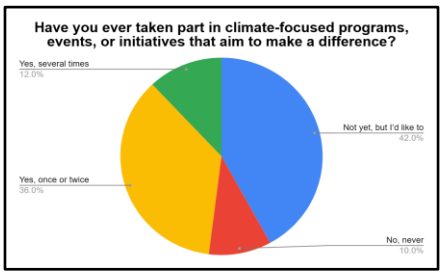

Chart 11

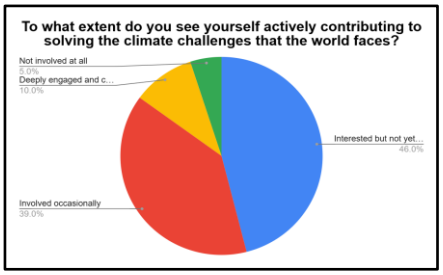

Chart 12

90 % of youth are eager to participate in climate-focused programs, events and initiatives that aim to make a difference, with 48% of respondents who have already done so (Chart 11). When it comes to actively contributing to solving the climate challenges the world faces, 10% are deeply engaged and committed, 39% are involved occasionally and 46% are eagerly interested to participate (Chart 12). This shows us that today's youth see themselves as active participants in the fight against climate change. They show keen interest in protecting their planet and believe that their voices should matter.

II.CONCLUSION

Today's youth are well aware of the changes taking place in the environment around them. They envision a world where technology and human beings work hand in hand. This study, which highlights youth perceptions on the integration of AI into climate modeling and disaster resilience has shown us that a majority of the young people are willing to accept and adapt to this changing technology. While a small fraction remains hesitant, a majority of the youth population support the integration of Artificial Intelligence in this field.

They understand the potential benefits and possible risks of integrating Artificial Intelligence with climate modeling and disaster resilience. This research has shown us that the youth are not just passive observers, they are informed, engaged and ready to advocate for responsible, inclusive and effective use of Artificial Intelligence to tackle the climate crisis.

III.REFERENCES

1. Bordoni, S., Kang, S. M., Shaw, T. A., Simpson, I. R., & Zanna, L. (2025). The futures of climate modeling. *Npj Climate and Atmospheric Science*, *8*(1). https://doi.org/10.1038/s41612-025-00955-8
2. Diehr, J., Ogunyiola, A., & Dada, O. (2025). Artificial intelligence and machine learning-powered GIS for proactive disaster resilience in a

changing climate. Annals of GIS, 31(2), 287–300. https://doi.org/10.1080/19475683.2025.2473596

3. Dehghani, A., Ghomian, Z., Rakhshanderou, S., Khankeh, H., & Kavousi, A. (2022, December 8). *Process and components of disaster risk communication in health systems: A thematic analysis*. Dehghani | Jàmbá: Journal of Disaster Risk Studies. https://jamba.org.za/index.php/jamba/article/view/1367/2505
4. GSDRC. (2016, March 22). *What is disaster resilience? - GSDRC*. GSDRC - Governance, Social Development, Conflict and Humanitarian Knowledge Services. https://gsdrc.org/topic-guides/disaster-resilience/concepts/what-is-disaster-resilience/
5. Kadow, C., Hall, D. M., & Ulbrich, U. (2020). Artificial intelligence reconstructs missing climate information. *Nature Geoscience*, *13*(6), 408–413. https://doi.org/10.1038/s41561-020-0582-5
6. Mugabo Kalisa, G. (2025). The Role of Artificial Intelligence in Climate Modeling. interactions, 1,2. https://smartie.kiu.ac.ug/public/assets/publications/1747656150_9deaa121c51c5babd071.pdf
7. Naik, M., Bharani, J. S. S. L., Roy, A., Prakash, V., Yadav, H., & Chetia, B. (2025). AI-driven climate modelling and forecasting: Enhancing environmental resilience through predictive analytics. *International Journal of Environmental Sciences, 11,* 2025
8. Nobel Prize Outreach. (2025, August 23). *Syukuro Manabe – Facts – 2021*. NobelPrize.org.
9. Singh, V., & Agnihotri, A. (2024). Addressing environmental challenges through artificial intelligence (AI)-powered natural disaster management. Int J Appl Sci Res, 2(5), 485-96. https://journal.multitechpublisher.com/index.php/ijasr/article/view/1413/2008
10. Thekdi, S., Tatar, U., Santos, J., & Chatterjee, S. (2022). Disaster risk and artificial intelligence: A framework to characterize conceptual synergies and future opportunities. *Risk Analysis*, *43*(8), 1641–1656. https://doi.org/10.1111/risa.14038
11. *What is a climate model? - NCAS*. (n.d.). NCAS. https://ncas.ac.uk/learn/what-is-a-climate-model/
12. *What is the Anthropocene and why does it matter? | Natural History Museum*. (2019, November 26). https://www.nhm.ac.uk/discover/what-is-the-anthropocene.html

13. World Climate Research Program. (2025, July 8). *CMIP Overview - Coupled Model Intercomparison Project*. Coupled Model Intercomparison Project. https://wcrp-cmip.org/cmip-overview/