

Artificial Intelligence (AI) to Build Climate Models to Improve Weather Forecasting as Torrential Rains, Floods and Droughts Proliferate Across the Vast Country

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Abstract: Global warming has triggered more intense clashes of weather systems in India in recent years, increasing extreme weather events, which the independent Centre for Science and Environment estimates have killed nearly 3,000 people this year. Weather agencies around the world are focussing on AI, which can bring down cost and improve speed, and with a recent Google-funded model found to have outperformed conventional methods. Accurate weather forecasting is particularly crucial in India, a country of 1.4 billion people, many impoverished, and the world's second-largest producer of rice, wheat and sugar. Using AI with an expanded observation network could help generate higher-quality forecast data at lower cost. The increasing frequency and intensity of torrential rains, floods, and droughts due to climate change present significant challenges to weather forecasting and disaster preparedness. Artificial Intelligence (AI) offers transformative potential in building advanced climate models to address these challenges. By integrating vast datasets, including satellite imagery, historical weather records, and real-time sensor data, AI enhances the accuracy and resolution of climate predictions. Machine learning algorithms can identify complex patterns, simulate localized weather phenomena, and predict extreme weather events with greater precision. This paper explores the role of AI-driven climate models in improving weather forecasting, enabling proactive responses to mitigate the impacts of climate-induced disasters across diverse regions. Enhanced forecasting through AI not only safeguards lives and livelihoods but also supports sustainable resource management in the face of escalating climate uncertainties.

Keywords: AI, ML, Flood, climate change, disaster relief, weather forecasting