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## **An overview of Japan's Moonshot Goal 8 R&D program for controlling and modifying the weather by 2050**

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Forecast and control are the two sides of a coin. Recent improvements in numerical weather prediction have led to the point where we can start discussing the control of complex, chaotic weather systems. The Japan's Moonshot Goal 8 research and development (R&D) program or simply MS8 was launched in 2022 to control extreme weather events such as typhoons and torrential rains and to reduce damage from extreme winds and rains, so that we can realize a society safe from such disasters by 2050. As the important first step toward the next 3-decade R&D, MS8 prioritizes numerical simulation experiments to investigate the feasibility of weather control under the constraints of energy and technology within human's capability in a foreseeable future. Thus far, MS8 achieved promising results to reduce a peak rainfall of heavy downpours, and more results are expected by ongoing efforts. MS8 also accelerates developing basic science and technologies for realizing weather control, such as advanced weather models, computational models of flood damage, and mathematical approaches to intervention optimization techniques for large dimensional systems. In addition, addressing ethical, legal, and social issues (ELSI) is essential and a priority in MS8. This presentation will provide an overview of MS8 with highlighting scientific results.