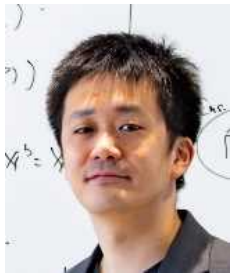


Artificial generation of upstream maritime heavy rains to govern intense-rain-induced disasters over land

Project manager

Shunji Kotsuki

Professor, Institute for Advanced Academic Research/Center for Environmental Remote Sensing, Chiba University



leader's institution

Chiba University

R&D institutions

Kyoto University, Osaka University, JAMSTEC, Chiba University, Juntendo University, University of Toyama, Nagoya University, Osaka Metropolitan University, The University of Kitakyushu, Okayama University, Sampo Risk Management Inc., Nara Institute of Science and Technology

Summary of the project

This project aims to develop a weather control technology that mitigates heavy-rainfall-induced economic damages by artificially generating heavy rain over the upstream ocean. Given the limitations of directly altering the atmosphere, we explore a weather control method for intentional generation of heavy rains with optimization of manipulations. We will also promote social science research on legal issues and environmental risk assessments in order to accelerate the practical application of our results. By 2050, we aim to establish a weather control technology that society can accept.

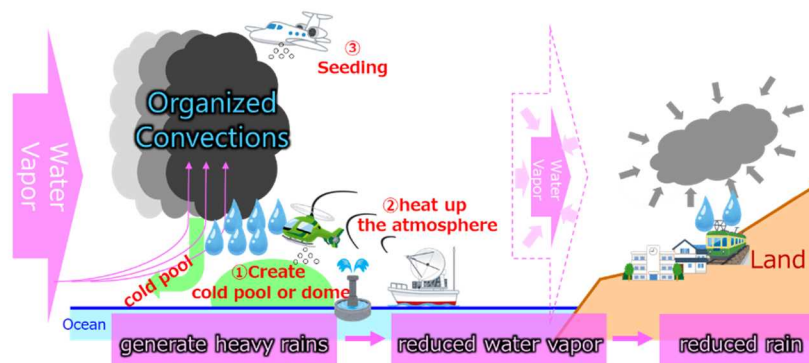


Figure. A conceptual image of the strategy to mitigate heavy-rain-induced disasters. This project aims at generating heavy rains over upstream ocean artificially with optimally combining manipulations, leading to weakened rains over land.

Milestone by year 2032

- We establish a framework to identify cost-effectiveness of weather control implementations.
- We conduct legislative and institutionalization proposals for getting national-international social consensus.
- We develop weather control equipments, verifying their effectiveness by small-scale experiments.

Milestone by year 2027

- We develop a method to optimize manipulations for weather control, and evaluate the method for mitigating rainfall over land with computational simulations.
- We identify feasible weather control candidate(s) and show their prospects for solving ELSI issues.
- We complete to develop a flood damage estimation model for entire Japan

R&D theme structure of the project

Challenges	Our R & D Teams
Mathematics <i>how to optimize manipulations?</i>	Control Theory
Meteorology <i>how to generate heavy rains?</i>	DNN for Weather
Manipulations <i>how to change atmosphere?</i>	Dims. Reduction
Legal Problems <i>how to design society?</i>	Data Assimilation
RRI <i>how to realize in society?</i>	Weather Prediction
	Engineering
	Legislative Plans
	Damage Estimates
	Environ. Monitoring