

Heavy Rainfall Control for Living Together with Isolated-Convective Rainstorms and Line-Shaped Rainbands

Project manager

(Selected in 2021)

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Leader's institution

Kyoto University

R&D institutions

Kyoto Univ. Kyushu Univ. Hosei Univ. NIED, Ehime Univ.

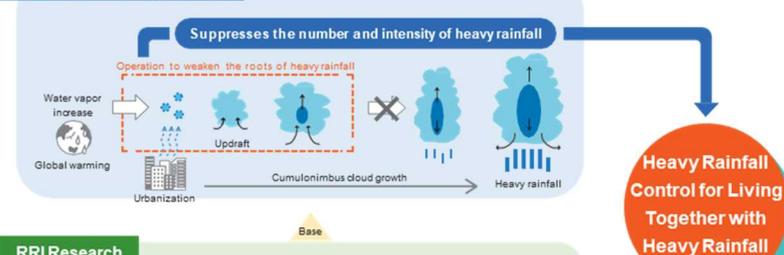


Heavy Rainfall Control

Summary of the project

This project aims to control the intensity and frequency of “guerrilla heavy rainfall” and “line-shaped convective heavy rainfall”. Based on numerical meteorological models, field observations, and laboratory experiments, we will develop multiple control devices. We will construct a control system that considers the impact assessment and social accountability of heavy rainfall control, by using those devices at multiple points in time and in multiple phases. By 2050, we will contribute to the formation of a future society in which heavy rainfall control technologies integrate with nature and human society.

Control Technology Research



RRI Research



Milestone by year 2032

Show that heavy rains can be reduced effectively by combining multiple engineering methods, and start a small-scale outdoor experiment to demonstrate the engineering methods.

Milestone by year 2027

Quantitatively evaluate the effect of attenuating heavy rains by multiple engineering methods using a numerical weather model, and specify effective interventions to reduce heavy rains.

Project structure

Research and development theme 1 (development of engineering methods based on numerical computations)

1-1. Modification of sudden heavy rain

Takemi Tetsuya (DPRI, Kyoto Univ.)

Develop heat manipulation techniques

Yamaguchi Kosei (DPRI, Kyoto Univ.)

Develop air vortex and water vapor manipulation methods

Nishijima Kazuyoshi (DPRI, Kyoto Univ.)

Identify performance assessment criteria for engineering methods through laboratory experiments

1-2. Modification to line-shaped convective heavy rainfall

Uchida Takanori (RIAM, Kyushu Univ.)

Development of methods to manipulate the convergence of airflow (wind farm)

Suzuki Yoshiharu (Faculty of Design Engineering, Hosei Univ.)

Development of methods to manipulate the formation of cloud particles (seeding)

Research and development theme 2 (Construction of a control system)

Nishijima Kazuyoshi (DPRI, Kyoto Univ.)

Development of multi-point/multi-step manipulation techniques to support decision-making

Ohigashi Tadayasu (Water and Sediment Prevention Research Division, NIED)

Formulate a method to monitor the regulatory effect

Naka Yukari (DPRI, Kyoto Univ.)

Apply concepts of chance and inevitability to control systems

Research and development theme 3 (Research on impact assessments of heavy rain control and social acceptance)

Yorozu Kazuaki (DPRI, Kyoto Univ.)

Short-term and long-term impact assessments of runoff and water resources

Takana Tomohiro (DPRI, Kyoto Univ.)

Hydrological and socioeconomic analysis of changes in flood risk by controlling heavy rain

Hatori Tsuyoshi (Faculty of Collaborative Regional Innovation, Ehime Univ.)

Comprehensive research on regional collaboration for the social implementation of the control of heavy rain

