

Typhoon control research aiming for a safe and prosperous society.

Project manager

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leader's institution

Yokohama National University

R&D institutions

Nagoya University,
 The University of Tokyo,
 Yokohama National University,
 Hokkaido University,
 Kyoto University,
 The Tokio Marine Research Institute,
 JAMSTEC

Summary of the project

Toward the realization of a safe and prosperous society free from the threat of typhoons, this project will use computer simulations to demonstrate the feasibility of damage mitigation by artificially controlling typhoons. We will also conduct outdoor experiments leading to typhoon control to evaluate the effectiveness and safety of artificial control interventions against typhoons while maintaining dialogues and cooperation with a wide range of stakeholders in society at the same time. Through these efforts, we aim to realize a safe and prosperous society where typhoon control technology will make typhoons no longer a threat to humankind.

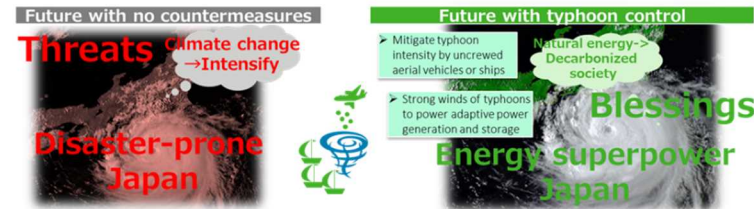


Figure: Project Vision

R&D theme structure of the project

Bringing together experts representing various fields across Japan, we will promote the project and achieve the 2050 goal by focusing on 16 research topics under four R&D agenda: namely, meteorological approach, engineering approach, impact assessment, and ELSI (ethical, legal, and social issues.) To identify possible methods enabling typhoon control at an early stage of the project, in the initial year, we will work on research and development topics by focusing on the meteorological approach, impact assessment, and ELSI.

In FY2023, we will focus on the following two points and promote related activities following the system established in FY2022, and aim to achieve the milestone for 2024, the project's third year.

Focus point 1: We will start taking an engineering approach under the research and development agenda to estimate associated costs by the feasibility study for analysis and the costs to design and measure the change of typhoon intensity against the level of artificial intervention.

Focus point 2: Towards the third-year milestone of identifying various

possible intervention methods to mitigate typhoon damage to a level acceptable to society, we will not wait for the results of serial studies from the meteorological approach, impact assessment, and engineering approach but work on studies concurrently. For example, we can create a common evaluation graph for each topic that shows the amount of change (in typhoon intensity) by level of artificial intervention, as well as the benefits and costs associated with such amount of change.

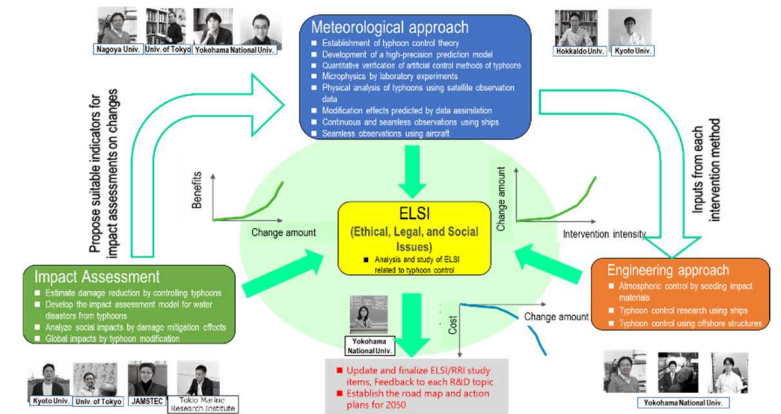


Figure: Concurrent research promotion on each topic and target outputs

Milestone by year 2027

By conducting numerical model simulations, we will identify feasible intervention methods to mitigate typhoon damage to a level acceptable to society. We will start manufacturing the control device based on the specified intervention methods.

Milestone by year 2032

After building a consensus and making adjustments on ELSI, we will start outdoor demonstration experiments leading to typhoon control and evaluate the effectiveness of intervention methods against typhoons. We will also investigate whether the intervention effects are within the expected range and assess the safety of intervention methods.