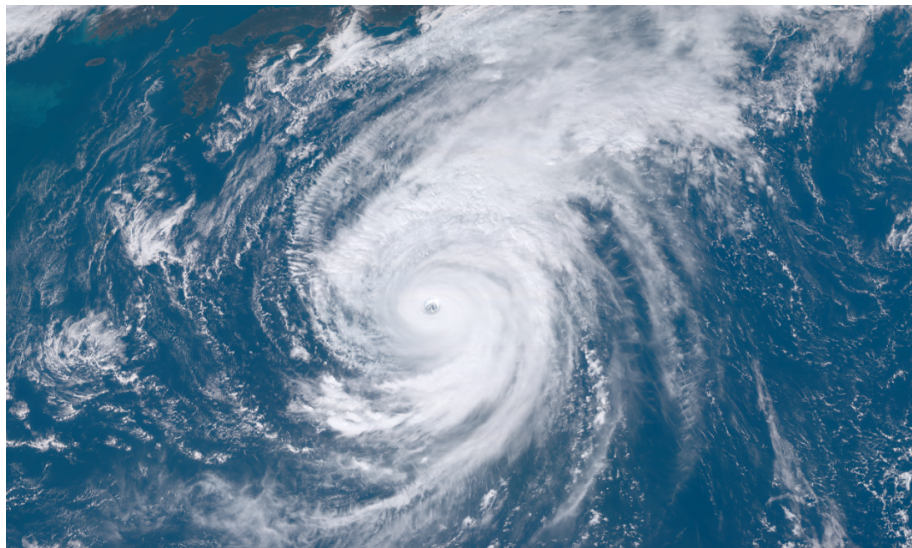


Japan Aims to Control Typhoons

VOCABULARY WORDS

1. Pump up /ˌpʌmp ˈʌp/ (Verb) - to fill with enthusiasm or excitement.
Example: The coach tried to pump up the team before the game.
2. Generate /ˈdʒenəˌreɪt/ (Verb) - to produce or create something.
Example: The wind turbines generate electricity for the town.
3. Unmanned /ʌnˈmænd/ (Adjective) - not having or needing a crew or staff.
Example: The drone was unmanned and flew autonomously.
4. Propeller /prəˈpələ/ (Noun) - a mechanical device for propelling a boat or aircraft, consisting of a revolving shaft with two or more broad, angled blades attached to it.
Example: The airplane's propeller spun rapidly as it took off.
5. Unpredictable /ˌʌnpɪrɪˈdɪktəb(ə)l/ (Adjective) - not able to be predicted.
Example: The weather in this region is unpredictable and can change quickly.
6. Consequence /ˈkɒnsəkwəns/ (Noun) - a result or effect of an action or condition.
Example: The consequence of not studying for the exam was a failing grade.
7. Optimistic /ˌɒptɪˈmɪstɪk/ (Adjective) - hopeful and confident about the future.
Example: Despite the challenges, she remained optimistic about her chances of success.
8. Intensity /ɪnˈtensɪti/ (Noun) - the quality of being intense.
Example: The intensity of the storm caused widespread damage.



Typhoons, also known as hurricanes in the Atlantic and Pacific, are becoming stronger and more frequent due to climate change. However, researchers in Japan are exploring ways to control or weaken these storms. Led by Hironori Fudeyasu of Yokohama National University, a research project called TyphoonShot aims to find ways to control or weaken typhoons — and even use them to generate energy — by the year 2050.

In 1947, a US experiment called Project Cirrus tried to weaken a typhoon using a method called cloud seeding. Cloud seeding is a way of changing weather by introducing various substances into clouds. But Project Cirrus tried to weaken a hurricane by introducing dry ice — solid carbon dioxide — into the clouds. Unfortunately, the typhoon then changed direction

and did \$2 million of damage in Georgia. For TyphoonShot researchers, cloud seeding is just one possible way to control typhoons.

Typhoons form when the sea is warm, so researchers think **pumping up** cold water from deep in the ocean could reduce a typhoon's power. The researchers also hope to **generate** energy by sailing **unmanned** boats into the weaker part of a typhoon, using undersea **propellers** to capture the power. However, other experts have doubts.

Speaking to The Japan Times, atmospheric scientist Moshe Alamaro recently said that the problem with trying to change the weather is that "controlled experiments are difficult if not impossible." He pointed out that scientists can't prove whether any change in a typhoon is caused by their experiment or is just a natural result of the **unpredictable** weather. He also warned of dangerous political **consequences**, asking what would happen if a hurricane were unintentionally diverted to another country.

Despite the challenges, researchers in Japan remain **optimistic** about the potential of TyphoonShot. If successful, the project could help reduce the damage caused by typhoons and even provide a new source of renewable energy. As climate change continues to affect the frequency and **intensity** of typhoons, it will be interesting to see how research in this area progresses.

DISCUSSION

1. Do you think it's possible to control the weather? Why or why not?
2. What is your favorite type of weather?
3. Have you ever experienced a typhoon or hurricane? What was it like?
4. Do you think it's ethical to try to control or weaken typhoons? Why or why not?
5. What is your favorite renewable energy source?
6. Do you think renewable energy is important? Why or why not?
7. What is your favorite scientific experiment?
8. Do you think humans can reverse the effects of climate change? Why or why not?
9. What is your favorite weather-related disaster movie?
10. What is your favorite weather-related song?