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Raging wildfires spark mad dash for forest protection tech

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TOKYO -- Scaffolds equipped with 360-degree cameras dot a 250,000-hectare of land in Southeastern Brazil, monitoring the pristine forest 24/7. Swift action is the goal. When the AI-guided system detects any signs of smoke of fire, an employee immediately alerts the local fire authorities.

The surveillance system in a Minas Gerais forest owned by pulp maker Cenibra is part of growing corporate efforts to curb wildfires, which have burned up millions of hectares and caused billions of damages from Australia to California every year. With climate change only expected to make the world hotter and drier, companies are tapping technologies to nip fires in the bud or to prevent them from happening at all.

Cenibra, a unit of Japan's Oji Holdings, used to have human employees manning its scaffolds. But they would only be able to give an approximate location of any fires over the course of 10 to 20 minutes, and it took even longer for the fire department to pinpoint where they were. The current setup can provide an exact location in just a minute or two.

"It's difficult to put out a forest fire after it spreads past a certain point," said Oji director Kazuhiko Kamada. "We can't manage our forests without the technology to accurately detect fires."

Meanwhile in Indonesia, roughly half of which is covered in forests, Sumitomo Forestry is working to prevent wildfires by focusing on the country's peatlands.

Sumitomo Forestry developed a unique system to keep peatlands from drying out and burning. (Image courtesy of Sumitomo Forestry)

The Tokyo-based company conducted a large-scale topographical survey of its roughly 140,000-hectare holding in the western state of Kalimantan. Based on its findings, the company developed a system to remotely stabilize water levels in the underground reservoir.

Once dried peat starts to burn, the fire is almost impossible to put out. But Sumitomo Forestry's system, which the company says is the first of its kind, keeps the ground damp to prevent such fires from starting in the first place.

Sumitomo Forestry first began surveying the land when it started planting trees there. But it had a difficult time measuring the exact topography of the area and developing its reservoir management system, and ultimately took five years to put the current system in place.

Peatlands usually sink around 5 to 10 cm a year as they dry. With Sumitomo Forestry's system, the figure has fallen to under 3 cm, in line with natural forests. No major fires have occurred there since, and Sumitomo Forestry is considering installing the system in other locations abroad like the Republic of the Congo.

Flames burn through the bush of Lake Tabourie, Australia, on Jan. 4. Millions of hectares were burned across the country over the particularly devastating fire season. © Getty Images/Kyodo

California is experiencing its worst stretch of wildfires in 18 years. Last year, bushfires engulfed parts of Australia for nearly eight months straight. The natural disaster was enough to depress Australia's gross national product by an estimated 0.4 point during the fiscal year through June 2020.

Last year, wildfires caused $7 billion worth of economic losses across the globe, according to an estimate from U.S. insurance brokerage Aon. The damage exceeded the $5 billion in losses attributed to cold weather and the $3 billion from earthquakes.

Hisashi Nakamura, professor at the University of Tokyo's Research Center for Advanced Science and Technology, blames the Australian bushfires in part on the Indian Ocean's dipole phenomenon. Because of climate change, temperatures in parts of the Indian Ocean rise, causing dry, hot winds to blow across Australia.

"Going forward, damage from wildfires will likely mount across the world due to climate change," warned Nakamura.

Japan's Tottori University and an educational business called Iluka College have developed a powder that can be added to water, creating a gel-like fire-extinguishing agent that can be dropped on target areas.
Shielding wooded areas from fires requires monitoring and civil engineering technology. Some researchers are developing materials that simplify the job of fighting wildfires.

With large fires, helicopters are usually deployed to drop hundreds of liters of water per flyover. But it takes time to beat back the flames since the water scatters in midair and gets absorbed immediately into the ground.

Japan's Tottori University and an educational business called Iluka College, along with other partners, have developed a powder that can be added to water, creating a gel-like fire-extinguishing agent that can be dropped on target areas. Because the agent sticks to trees and the surface, the substance is highly effective in containing the spread of flames.

In a report issued in August, the Boston Consulting Group blamed human activity for 70% of wildfires. Humans are now facing a crucial test of confronting both climate change and resulting wildfires.

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