



Uchimizu is the traditional practice of cooling off summer streets and garden walkways by sprinkling them with water.

Looking to the Past to Stay Cool

As climate change and urbanization leads to higher temperatures, some people are looking back to a traditional activity for hints on chilling out in Tokyo.

by Martin Foster

There are a number of things that signify summer to Japan's residents: the scent of burning mosquito coils, the gentle ringing of wind chimes, the scene of *yukata*-clad children setting off fireworks in the streets and the whine of cicadas.

Then there is *uchimizu*, the ages-old practice of sprinkling water in gardens and on the streets. It helps in several ways, both to keep down dust and to cool off, as it works physically on a hot surface, and aesthetically and psychologically on the visual level. And it has always been an attractive scene, with shrine or temple garden attendants and residents using ladles to scatter the water from hand-held containers onto the parched earth's surface.

The custom of *uchimizu* in urban areas had almost died out as the rising population concentration led to the replacement of the low-rise, traditional wooden structures with towering steel-reinforced concrete buildings that separate residents from the benefits of the practice. A decrease in green space and an increase in the air conditioning devices needed to cool the buildings have contributed to the heat island effect, the spike on temperature maps that show urban areas as "islands" of heat

compared to the surrounding rural areas.

"From the time Japan commenced full-scale weather monitoring in the 1880s until the present, the temperature of Tokyo has risen by about 3°C," says Ryozo Ooka, professor in the Department of Human and Social Sciences, Institute of Industrial Science at the University of Tokyo. "Of that about 0.5°C to 1.0°C can be accounted for by global warming, meaning approximately 2.5°C is due purely to the heat island phenomena."

The pressure to come up with solutions to cool off the city's surfaces has increased after Tokyo won the bid for the Olympic and Paralympic Games Tokyo 2020. They are scheduled to be held at the peak of the summer season, from July to September. It's no surprise, then, that one major issue in the run up to the Games is how to protect the athletes from the heat and humidity, since according to one estimate the average August temperature is 27.4°C, with humidity of 69 percent.

A number of projects have tested various methods to combat the soaring temperature problem. In one of them, begun in 2005 and since completed, the Tokyo Metropolitan Government and the then Ministry of Land, Infrastructure and Transport installed water-retaining pavement and sprinklers on a road adjacent to the National Diet Building. The system uses water-retaining materials to retain rainwater and pumps ground water up for use in sprinklers which use solar power. The water in the pavement evaporates, lowering the road surface temperature.

In 2008, Tokyo began an ambitious program in addition to the previous water-retaining pavement: installing solar heat-blocking pavement as a part of road maintenance and con-

struction within areas of central Tokyo. Solar heat blocking is a method of applying a heat-insulating material to paved road surfaces that reflects the solar rays that cause road surface temperatures to rise. It can reduce the surface temperature by up to 8°C.

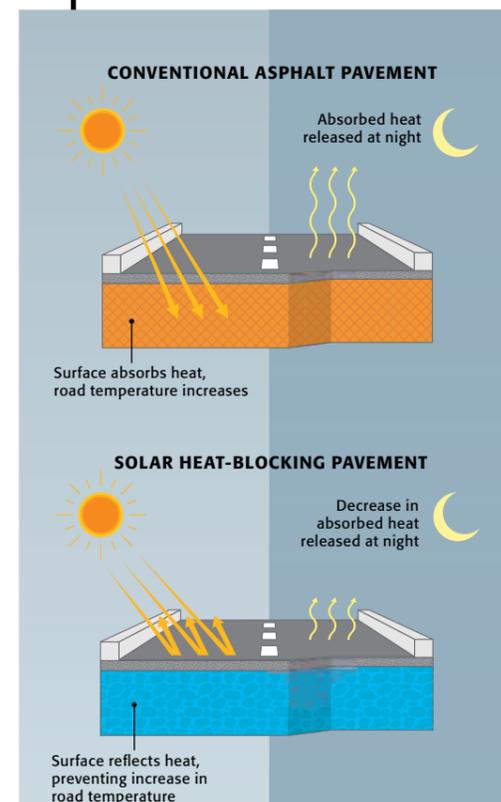
The TMG is providing subsidies for the installation of the solar heat-blocking pavement. By March 2017, 86 kilometers of road surface had been completed. Maintenance on roads that will be used for the Tokyo 2020 Games events is being given priority, and the plan calls for some 136 kilometers of water-retaining pavement or solar heat-blocking pavement to be finished by the opening.

Professor Ooka believes strongly in the efficacy of *uchimizu*, and claims that, even on a localized basis, the practice may lower temperatures by 2°C or 3°C. Others seem to agree. Communities throughout the Tokyo area now regularly engage in events in summer, with some estimates of up to four million people attending. In many recent *uchimizu* events, participants use rainwater or recycled water from their homes to respect the Japanese tradition of a no-waste society. Now there are even signs that *uchimizu* could become another word that is used and recognized internationally, like *sushi* or *manga*.

On April 24, 2017, Anna Solcerova, a researcher with Delft University of Technology in the Netherlands, made a presentation on *uchimizu* to the general assembly of the European Geosciences Union in Vienna, in which she claimed that extensive experiments she conducted at the university proved that "the simple old Japanese tradition of water sprinkling—*uchimizu*—is an effective way of reducing extreme heat in cities."

The traditional water sprinkling custom got a further boost when Tokyo Governor Yuriko Koike participated in an *uchimizu* event outside the Tokyo government buildings on July 20, 2017. If more local communities begin to engage people in the practice of *uchimizu*, then "cool" Japan just might get cooler.

Effects of installing solar heat-blocking pavement



Events promoting *uchimizu* are held throughout the metropolitan area to entertain and educate Tokyo residents.

