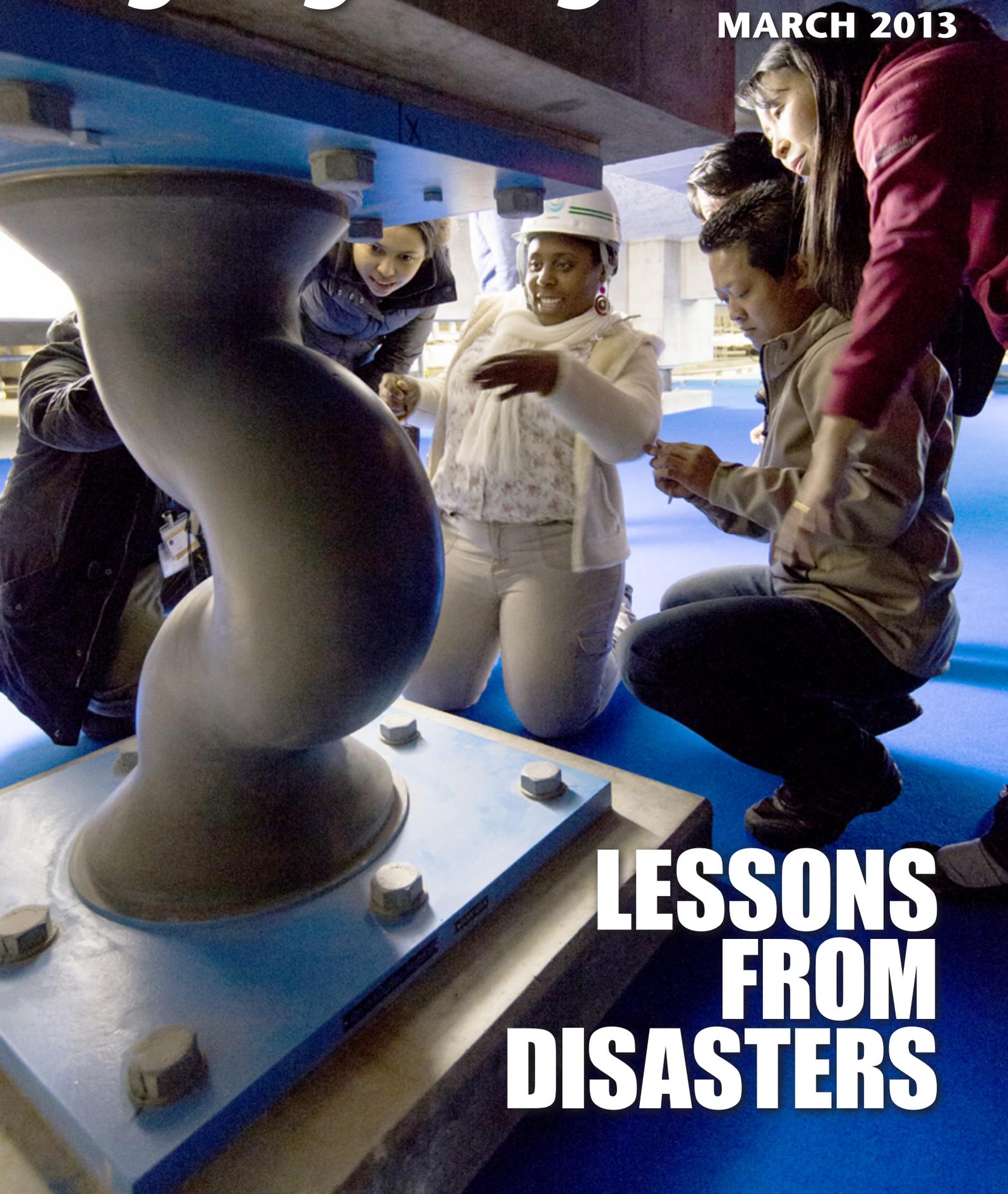


Highlighting JAPAN

MARCH 2013



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FROM
DISASTERS**

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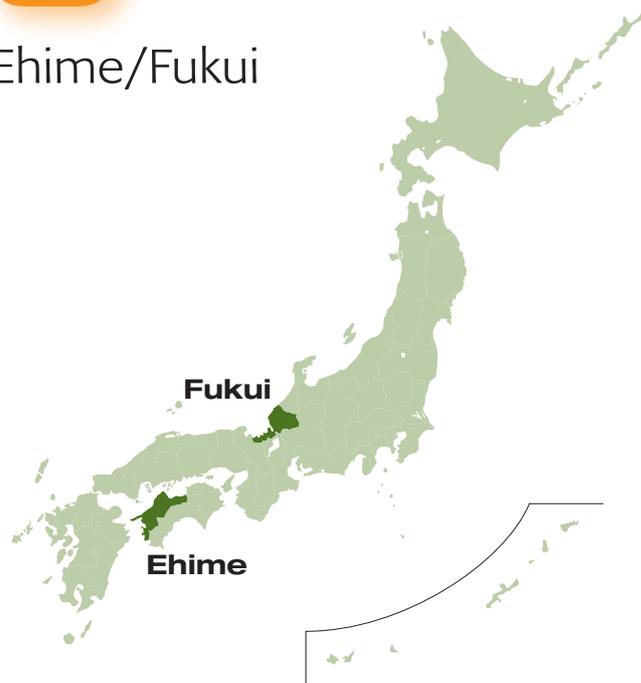


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ROB GILHOOLY



COURTESY OF SUGIHARA WASHI PAPER, INC.

Prime Minister's Visit to the United States

From February 21 to 24, Prime Minister Shinzo Abe visited Washington D.C., the United States, and held talks with U.S. President Barack Obama at the White House on February 22. Later, the Prime Minister held a press conference at a hotel in the city. At the press conference, he talked about the major outcomes of the summit meeting as follows:

“First of all, with regard to security, given the increasingly severe security environment surrounding Japan, Japan is determined to fulfill its responsibilities together with the United States, and President Obama fully shares this recognition. In concrete terms, I explained to President Obama Japan’s own efforts towards reinforcing the alliance, including such matters as the right to collective self-defense, increased defense spending, and the review of our National Defense Program Guidelines. In addition, President Obama and I concurred on advancing Japan-U.S. defense cooperation across a broad range of fields.

“Second, regarding regional issues, President Obama and I concurred that, taking the Japan-U.S. alliance as our foundation, our two countries will cooperate so that the Asia-Pacific region becomes a region governed not by coercion or intimidation but



Prime Minister Abe and U.S. President Obama shake hands at the Japan-U.S. Summit Meeting, February 22 (local time).

rather by the rule of law. With regard to the nuclear test conducted by North Korea, we confirmed that we will continue to work in close cooperation in order for us to take such resolute measures as the swift adoption of a new UN Security Council resolution that includes additional sanctions. I also conveyed my strong will towards the resolution of the abduction issue and once again received President Obama’s understanding and support.

“Our third topic was economic matters. I explained that the Abe Cabinet’s priority is achieving Japan’s economic revival and overviewed my ‘three prongs’ of economic revival. President Obama welcomed these points and said that he looked forward to my strong leadership. We shared our recognition that the revival of the Japanese economy is significant for both Japan and the U.S. and also for the world.

“We discussed the TPP agreement thoroughly, including its significance and the domestic situation in each of our countries.”

HJ



Prime Minister Abe lays flowers at the Arlington National Cemetery, Washington, D.C., February 22.



LESSONS



FROM



DISASTERS

Almost two years have passed since the Great East Japan Earthquake on March 11, 2011. Japan has experienced numerous disasters in its long history, and following a disaster Japan has improved its *bosai* measures for prevention and mitigation of disasters in areas such as flood control, forest conservation, weather observation and evacuation systems. In the 1940s and 1950s, more than 1,000 lives were lost annually due to natural disasters, but in recent years casualties have fallen to fewer than 100. Even so, the damage brought by the Great East Japan Earthquake was far greater than Japanese could have imagined. Based on the lessons learned from the experience, Japan is now working on new measures for preventing and mitigating disasters in an effort to facilitate reconstruction. This month's Cover Story introduces some of the lessons learned from the country's various disasters.



School students and local residents participate in an evacuation drill in Kamaishi, Iwate Prefecture, in 2009.

At a magnitude of 9.0, the Great East Japan Earthquake triggered a massive tsunami and dealt unprecedented damage to a wide area spanning from the Tohoku to Kanto regions. Kamaishi, a city in Iwate Prefecture with a population of approximately 40,000, was hit by a tsunami that topped over 15 meters. More than 1,000 people were killed or went missing. Nearly 30% of the houses were completely or partially destroyed. Despite the suffering from this level of damage, almost all of the nearly 3,000 elementary and junior high school students successfully evacuated and stayed safe. This amazing fact was acclaimed as the “Miracle of Kamaishi” and drew wide-scale response.

“The children attribute it to ‘Achievements of Kamaishi.’ Their survival is not a miracle considering that they made consistent efforts, did the right things at the right time and obtained the outcome they deserved,” says Toshitaka Katada, a professor at Gunma University. “However, Kamaishi lost five children, so I was somewhat reluctant to use the word ‘miracle.’ I’m now leaning toward placing greater importance on this phrase, the ‘Miracle of Kamaishi,’ to ensure that the children’s actions are

remembered down through the generations.”

Since 2004, Professor Katada has cooperated with local elementary and junior high school teachers in providing disaster prevention education in Kamaishi. Notably, he strongly advised local children to follow three principles of evacuation: do not get fixated on assumptions, do whatever you can do in the given situation, and take the initiative in evacuating.

In Japan, each of the regions that could be hit by a tsunami has a hazard map indicating the areas that would be inundated. Yet the tsunami of the Great East Japan Earthquake inundated a far wider range of areas than those anticipated in the maps. Many people who lived in areas that had not been specified as susceptible to inundation attempted to evacuate too late, because they believed tsunamis would not affect them, and in fact many of the casualties were from such areas. In Kamaishi, children sought refuge all the way to higher ground, and did not stay in the evacuation center that the hazard map said would be safe. And through this action they barely escaped the tsunami. The children did exactly what they could do without fixating on assumptions.

Many survivors in Kamaishi began evacuating after seeing local junior high school students who



Professor Toshitaka Katada teaches disaster prevention through a game at primary schools on the Caribbean island of Saint Vincent (right) and on the Turks and Caicos islands in the Bahamas in 2007.

were running while loudly and vocally informing others before the tsunami reached the land, advising them to evacuate immediately. One older survivor was at first reluctant to evacuate believing that the breakwater would protect him, before the cries of his grandchild impelled them to flee. Many parents averted the tsunami by evacuating without attempting to find their children, believing their children would evacuate by themselves. The children did exactly that, and took the initiative.

Kamaishi's junior high school students were typically encouraged to develop from the saved into the saver. For instance, they received evacuation drills together with elementary schoolchildren and were trained to use two-wheeled carts to carry the elderly. When the Great East Japan Earthquake hit, the junior high school students took the elementary

schoolchildren's hands or carried the elderly on their back to successfully evacuate, as they had been trained to do.

"The children saved the lives of many adults, as well as their own lives," Professor Katada says. "Merely scaring children about tsunamis and teaching evacuation knowledge doesn't get you anywhere. Disaster prevention education must enable children to voluntarily decide to evacuate and to act accordingly when needed."

Professor Katada is also involved in activities to spread disaster prevention education in Latin America. One such activity is the Project on Capacity Development for Disaster Risk Management in Central America, BOSAI, organized by the Japan International Cooperation Agency (JICA). ("Bosai" is a Japanese word meaning disaster prevention and mitigation.) Through workshops with local people, Professor Katada communicates advice for evacuating from tsunamis, erupting volcanoes, heavy rain, landslides and other types of disaster, as well as the importance of handing down experiences of coming through from a disaster.

"People try to forget bitter memories, but these memories must be utilized as lessons," Professor Katada says. "With a vivid memory of the Great East Japan Earthquake, we have the responsibility to ensure, for future generations, that evacuating is a certainty whenever a tsunami occurs. In other words, evacuation must be made a part of our culture." 



Professor Toshitaka Katada explains the tsunami evacuation map to junior high school students in Kamaishi.

THE APPLIANCE OF SCIENCE

COURTESY OF JR EAST JAPAN

A Hayabusa Shinkansen train running on the Tohoku Shinkansen line. Hayabusa trains will run at a top speed of 320 km/h from March 16.

Each time Japan is hit by a serious natural disaster, it has sought to improve its scientific and technological capabilities in preventing and mitigating damage of disasters. Taking into account the lessons learned from the Great East Japan Earthquake, advances are currently being made in research and development into more accurate science and technology to prepare for earthquakes and tsunamis. *The Japan Journal's* Osamu Sawaji, and Takashi Sasaki and Toshio Matsubara report.

Shinkansen Trains Brought Safely to a Halt

The Tohoku Shinkansen Line connects Fukushima, Sendai, Morioka and other major cities of the Tohoku region, traveling a distance of 713 km. The Great East Japan Earthquake devastated many train lines in the Tohoku and Kanto regions, and destruction of stations, snapping of overhead wires and other damage resulted. Nineteen Tohoku Shinkansen trains with passengers on board were in operation when the earthquake struck, but all of them stopped without derailing, and no human injury was incurred.

The East Japan Railway Company (JR East Japan) operating the Tohoku Shinkansen has implemented antiseismic measures focusing on the three points of

quickly bringing trains in operation to a halt, preventing destruction of structures, and minimizing damage after derailing. For quickly stopping trains in operation, the Earthquake Early Warning System for Shinkansen (“Earthquake Warning System”) has been adopted. The system has been put into place on other Shinkansen lines in Japan as well.

“The Earthquake Warning System aims at having the brakes work securely and as fast as possible to safely bring the train to a halt,” says Reiko Seki of the Facilities Department of JR East Japan.

The Earthquake Warning System detects earthquakes (seismic waves), automatically terminates power transmission from transformer substations to

trains, and automatically activates the train's emergency brake. Seismographs for detecting seismic waves are installed at a total of 127 locations within the area managed by JR East Japan, along the Pacific coast and Japan Sea coast, in inland areas and along Shinkansen lines.

Normally, earthquakes are characterized by the primary wave (P-wave) in a small, vertical motion (initial tremors) that is transmitted quickly and the secondary wave (S-wave) in a large, horizontal motion (primary tremors) that is transmitted slowly. Although influenced also by the earthquake magnitude and the distance from the epicenter, the S-wave normally arrives after a few to several dozen seconds from the arrival of the P-wave. The Earthquake Warning System detects the P-wave with a seismograph close to the epicenter, and the seismograph estimates the distance from the epicenter, direction and magnitude based on past records of earthquake. A warning is then issued to transformer substations in areas where damage to structures are anticipated, referring also to observation data on previous earthquakes, and the transformer substations that received the warning terminate power transmission to the trains.

The Earthquake Warning System also ensures that

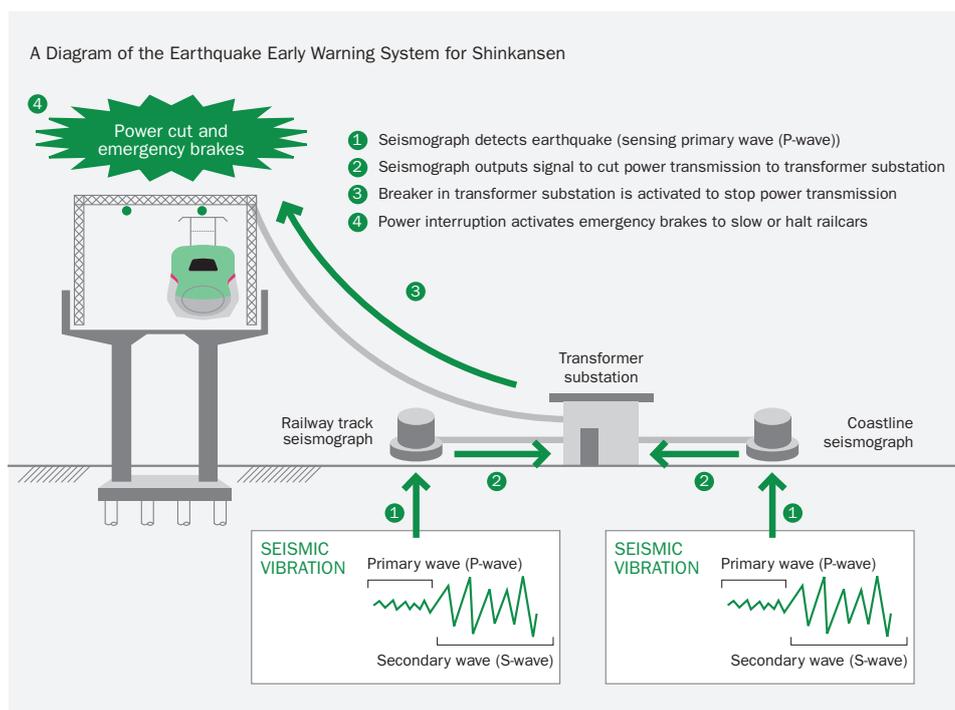
a warning is issued and Shinkansen trains are brought to a halt when seismographs have detected seismic waves (S-wave) larger than the set level, even when a P-wave was not detected or when a warning was not issued despite detection of P-waves.

“In the past, the warning system only detected S-waves, but since 1998, after the Great Hanshin-Awaji Earthquake, systems that detect P-waves were also put into place,” Seki says. “The system that detects both P- and S-waves helped a great deal in safely halting trains during the Great East Japan Earthquake.”

When the quake struck, the seismograph located along the Pacific coast in Miyagi Prefecture that was closest to the epicenter detected the S-wave at a scale that exceeds the set level. This led to issuance of a warning, and power transmission was halted over about 170 km along the Tohoku Shinkansen Line. It only took about three seconds to activate the emergency brake after halting power transmission. Two trains were in operation in the section, running at about 270 km/hr. The emergency brake was activated about 10 seconds before the arrival of the tremors that supposed to halt the train. By about 70 seconds before arrival of the strongest tremors, the Shinkansen trains that had been traveling at about 270 km/hr had decelerated to about 100 km/hr. Power

transmission was from that point halted sequentially at other sections as well, bringing all Shinkansen trains safely to a halt.

To further enhance anti-seismic measures after the earthquake, JR East Japan incorporated emergency earthquake notices issued by the Meteorological Agency, which has installed seismographs for detecting P-waves in larger areas, in the Earthquake Warning System, enabling even more detailed detection of earthquakes. 



More Accurate Forecasting of Tsunamis

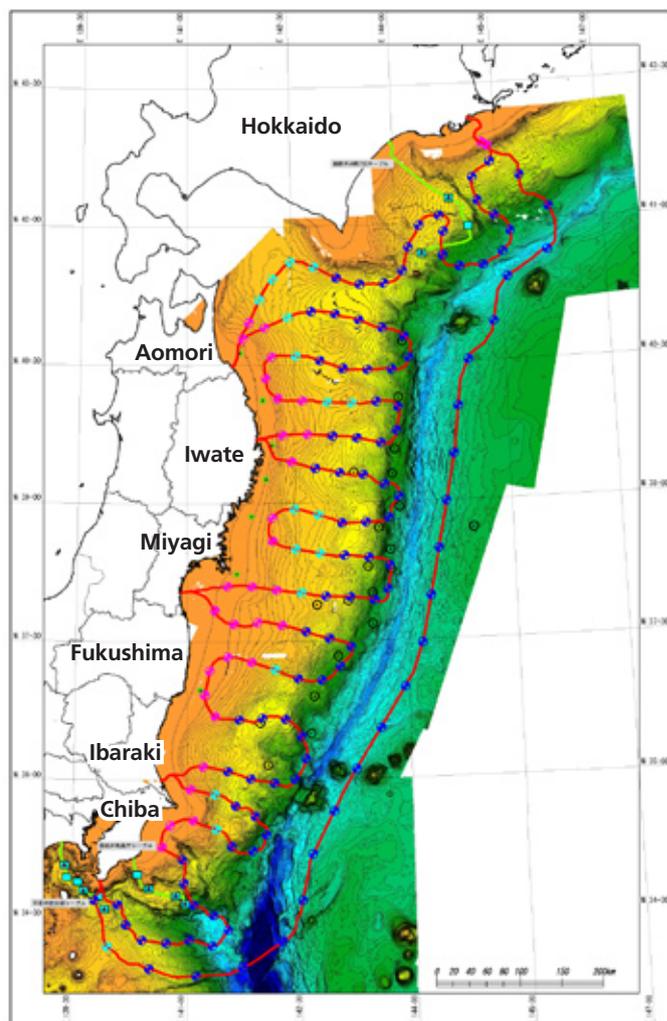
The Pacific plate is sinking westward beneath the North American plate, on which Tohoku and Hokkaido sit, beginning its descent at the Japan Trench that extends from south to north for around 800 km from just off the coast of the Boso Peninsula in Chiba Prefecture on Honshu to just off the coast of southeast Hokkaido. At its deepest, this trench is 8,020 m.

Massive colliding plates in this area have made it the epicenter of not only the Great East Japan Earthquake on March 11, 2011, but of many other large earthquakes that have occurred in the past too. However, the majority of the more than 1,500 seismic observation stations in Japan are on land, with only 55 observation stations in the ocean (both these figures are as of the time of the Great East Japan Earthquake). To compensate for the gap in this network of observation stations in the ocean, in 2011 an improvement project for the “Ocean Bottom Seismic and Tsunami Network along the Japan Trench” was launched.

Toshihiko Kanazawa, professor emeritus at the University of Tokyo and head of the Ocean Bottom Seismic and Tsunami Network Laboratory at the National Research Institute for Earth Science and Disaster Prevention, had the following to say:

“At the time of the Great East Japan Earthquake there were two observation devices installed just off the coast of Sanriku for collaborative research by the Earthquake Research Institute of the University of Tokyo to which I belong and Tohoku University. The land-based station that was installed on the coast was destroyed by the tsunami in the earthquake, interrupting data collection, but the movement and size of the tsunami during the period until it reached the coast had been accurately captured. Although the devices were for research purposes only, some researchers believe that if this real time data had been reflected in the warnings the extent of the damage may have been slightly different.”

Outline of the Ocean Bottom Seismic and Tsunami Network along the Japan Trench



ALL FIGURES AND PHOTO COURTESY OF NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION

A fiber optic cable (pink line) measuring approximately 5,600 km long and having 150 observation points (dots) will be submerged in the inner part of the Japan Trench and in the outer part of the Japan Trench (blue region) from Chiba Prefecture to Hokkaido.

While only two observation devices were installed on the ocean floor, their position was optimal for observing the tsunami in the Great East Japan Earthquake, and as such they have yielded precious data.

A capsule called an “observation node” will be installed on the ocean floor of the Pacific in the Ocean Bottom Seismic and Tsunami Network along the Japan Trench. This stores a seismometer, a tsunami gauge (water-pressure gauge), a power source, and so forth, together with ocean bottom fiber optic cables that link these together. These will be submerged in the inner part (western side) of the Japan Trench

and in the outer part (eastern side) of the Japan Trench from Chiba Prefecture to Hokkaido. This means that it will attempt to cover a wide area of sea on the eastern side of the Japanese archipelago by forming an extensive observation network on either side of the Japan Trench. There will be a total of 150 observation points, with the total length of the ocean bottom cable approximately 5,600 km.

The observation node is cylindrical in shape measuring 32 cm in diameter and 2.3 m long, and is divided into an open part that measures water pressure and an airtight part that stores the other devices. The body of the node is made of high strength beryllium copper. Further, the airtight part into which the devices have been placed is sealed using laser beam welding rather than packing, which can age over time allowing seawater to penetrate. Even if trouble were to occur, such as the fiber optic cable breaking at some point, or part of the observation equipment or land-based station being destroyed, it employs redundant design so as to operate continuously.

“The observation devices have a life of more than thirty years,” says Professor Kanazawa. “To secure durability and a high level of reliability is indispensable for a disaster prevention system.”

The data collected in this way is sent in real time not only to the National Research Institute for Earth Science and Disaster Prevention but also to the Japan Meteorological Agency and other bodies, enabling it to be used in a range of disaster prevention

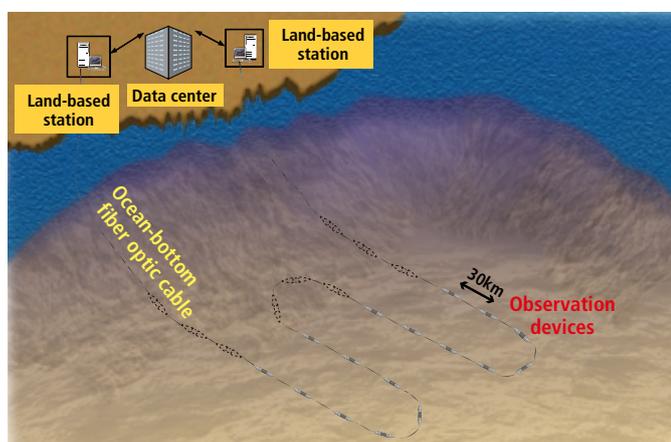


Illustration shows a section of the fiber optic cable belonging to the Ocean Bottom Seismic and Tsunami Network along the Japan Trench.



The observation node is 32 cm in diameter and 2.3 m long.

scenarios, including earthquake information and tsunami information. It could be also useful for local government evacuation orders, and public transport traffic control.

Previously, when a tsunami was approaching, it could only be estimated from the epicenter or size of the earthquake, but if actual observation data can be obtained offshore using multiple observation devices, highly precise forecasts can be sent out swiftly. Further, since seismic waves can be caught close to the epicenter, an earthquake early warning can be technically circulated as much as about 30 seconds earlier than previously, in the case of an earthquake that occurs on the bottom of the ocean near the Japan Trench.

The construction work for the observation network will begin in April this year at the earliest, starting with the coast off Boso in Chiba Prefecture and the northern part of the coast off Sanriku in Miyagi Prefecture, with partial trial operation beginning around July. Full-scale operation will commence approximately two years later when all the construction work is completed. Not only will it be able to provide accurate and speedy information on earthquakes and tsunamis, but if the collection of highly precise data reveals the mechanism of earthquakes that have occurred deep in the ocean floor, it is expected to help predict earthquakes in the future, as well as contribute to urban planning and disaster damage prevention planning in the Tohoku region. 

Takashi Sasaki is a freelance writer.

Harnessing Cloud Computing for Disaster Prevention

In the Tokai region facing Suruga Bay in the Pacific Ocean, on the western side of Mount Fuji, massive earthquakes with their epicenter off the coast have struck every 100–150 years, and it is speculated that there is a high possibility of a magnitude 8 earthquake occurring in the near future. Because of this, Shizuoka Prefecture, which is situated in this area, is devoting a great deal of effort to various disaster prevention measures in respect of earthquakes and tsunamis, with local governments in the prefecture at the center of such initiatives.

One such measure is Japan's first disaster prevention system utilizing cloud computing, which commenced operation in July 2011, the Fujinokuni Joint

Information System and Network (FUJISAN). (“Fuji-san” is the Japanese for “Mount Fuji.”)

Prior to introducing FUJISAN, Shizuoka Prefecture had constructed a disaster prevention system using two dedicated servers located in the prefectural office building. Through this system, Shizuoka Prefecture collected information from the municipalities on the extent of damage which was used for rescue and relief activities, as well as being conveyed to the national government. However, there were a number of major problems with this system. Firstly, while the prefectural office building is exceedingly earthquake resistant, if by any chance it were to sustain a level of damage that destroyed the building there was a dan-

Displays of Fujinokuni Joint Information System and Network (FUJISAN) in the Shizuoka Prefectural Government Office in Shizuoka City. Officers can see the real-time situation of disasters via electronic maps and cameras.



ger that the system itself would cease to operate. Also, in a prefectural trial run, it became clear that when 800 members of staff access the disaster prevention system at the same time the system stops. What is more, even during normal use the volume of data is large, so the electronic maps displaying various types of information do not work smoothly.

To resolve these problems using independent servers would require the investment of enormous sums of money. So the solution that emerged was to switch to cloud computing. Preparations began in April 2010, and in March 2011, when the construction of the new system was in its final stages, the Great East Japan Earthquake struck. Shizuoka Prefecture was untouched by the disaster. However, in the disaster-affected areas, the destruction of disaster-prevention facilities and the disruption of communications networks caused existing disaster-prevention information systems to cease functioning, making the problem that had been feared in Shizuoka a reality.

By utilizing the Internet to decentralize information processing, cloud computing made it possible to process large volumes of data speedily. As a result, electronic maps work a great deal more smoothly with FUJISAN. Theoretically, simultaneous access too is almost limitless. As a result, various disaster-related data can now be confirmed speedily using electronic maps, and even people unfamiliar with the area or people with little experience of dealing with disasters can now easily comprehend the extent of the disaster. Further, since the data is stored on the cloud, the system would continue to run even if the prefectural office building were damaged.

When building the system, emphasis was placed on the collection and dissemination of information necessary for rescue and relief activities within 72 hours after a disaster occurs. The information handled mainly relates to earthquakes and damage caused by wind or flood, and in addition to information on damage and requests for assistance, four important databases for roads, heliports, evacuation centers, and first-aid stations have been developed. Further, a system was introduced (area e-mail)

whereby when a disaster occurs a disaster emergency announcement is delivered simultaneously to mobile phone holders in the entire prefecture through mobile phone companies.

FUJISAN can be used by prefectural government bodies and other municipal agencies within the prefecture, and when a disaster occurs members of staff can use their smartphones or mobile phones from their workplace to view detailed disaster information. Staff who are at the scene of a disaster can now also send photographs and latitude and longitude information, which are instantly reflected on electronic maps.

“This is a specialized system to collect the information that is required by the prefecture and send out requests for assistance without delay to surrounding areas and the national government,” says Takefumi Watanabe of Shizuoka Prefectural Government’s Emergency Management Strategic Division that supervised the building of the FUJISAN system. “As far as uploading information on damage from the scene of the disaster is concerned, detailed rules and regulations have also been put in place regarding who should upload information and when, in order to avoid confusion.”

New initiatives for the future too have already begun. For example, investigations are in progress in order to display information about road restrictions and information about evacuation orders when a disaster occurs on FUJISAN and car navigation systems simultaneously, by linking ITS, the state-of-the-art road information communications system, and FUJISAN via a network. Further, although citizens currently cannot access FUJISAN, in 2013 Shizuoka Prefecture will launch a service on its website enabling the public to check electronic map information in real time. This electronic map will display information on the establishment of emergency response headquarters, damage in each area, opening of evacuation centers, and official evacuation warning announcements. 

Toshio Matsubara is a freelance writer.

Touni, Kamaishi City residents, NPO members and local government officers gather to share information about reconstruction efforts, in a meeting facilitated by coordinators of the RCF Reconstruction Support Team.



LEADING RECOVERY

After the Great East Japan Earthquake, many volunteers from around the country and the world came to the affected areas to lend support for the victims. Notably, many of them were young Japanese. As they took part in the volunteering, they began to involve themselves in efforts for the reconstruction of Tohoku based on a long-term vision and with the aim of creating a sustainable society. *The Japan Journal's* Osamu Sawaji reports on two young leaders genuinely devoted to reconstruction efforts in the affected areas.

Bridging the Gap in Reconstruction

From the moment the Great East Japan Earthquake struck, the Japanese national government, local governments and citizens became active in efforts to help the victims, taking part in diverse activities that included rescuing victims and shipping relief supplies to evacuation centers. Yet the affected areas were faced with great confusion stemming from many different factors, such as the vastness of the affected areas and the massive number of victims. This kept evacuation centers from securing sufficient relief supplies, or caused unneeded supplies to be sent.

“I visited the affected area for the first time on

March 20. Many people were working extremely hard at their support activities, but I felt that much of the information we needed was poorly communicated over the areas,” says Retz Fujisawa, representative director of the RCF Reconstruction Support Team. “With the aim of helping volunteers efficiently provide assistance, I started gathering, analyzing and communicating information about what was going on, what kind of support was needed and where.”

As a consultant, Fujisawa supported venture businesses and nonprofit organizations (NPOs). After the Great East Japan Earthquake, he set up the RCF Reconstruction Support Team and started efforts to

support the affected areas. First, the RCF gained cooperation from NPOs supporting the areas and analyzed what was happening there. The NPOs used Twitter to assemble a total of 400 volunteers and spent three weeks gathering and analyzing information about food, sanitation and operation of nearly 600 evacuation centers. The RCF analyzed collected data and the results of the analysis were summarized into a report submitted to the partner NPOs, local governments and the national government. The analysis significantly helped supporters understand what kind of support was needed at the centers.

“Twitter, Facebook and other social media played a great role in gathering people and information,” Fujisawa says. “In the past, it was nearly impossible for a group supporting an affected area to quickly assemble volunteers. Social media made it possible.”

Backed by foundations and businesses, the RCF continued a range of activities in the affected areas. Examples include a project for recording buildings that were partially destroyed by the earthquake and/or tsunami in cooperation with the major Internet search company Google. These buildings are demolished because of reconstruction efforts and consideration for the victims’ feelings. The project involves photographing those buildings before they are demolished and storing the data digitally so that a record of the disaster can be handed down to future generations. As the project organizer, the RCF researched needs in local communities and gained the consent and support of nearly twenty local governments for photographing nearly fifty schools and municipal office buildings that were to be demolished.

These efforts were appreciated and the RCF began to receive more requests from businesses and local governments for supporting different reconstruction projects. Fujisawa increased the RCF’s workforce, and now fifteen people, mostly in their twenties and thirties, work for the organization. Apart from the RCF, those in their thirties make up a large part of local governments, NPOs, companies and volunteers working at the forefront of reconstruction efforts.



YUICHI ITABASHI

Retz Fujisawa, representative director of the RCF Reconstruction Support Team and director for General Policy Planning with the Reconstruction Agency. Fujisawa conducts research, analyzes needs in the affected areas, and makes proposals with the aim of reflecting his findings in the national government’s policies for reconstruction.

One of the activities the RCF is currently focusing on is community assistance in Kamaishi, Iwate Prefecture. Three RCF members stay in Kamaishi as reconstruction coordinators and support the efforts uniting the local government and people. The coordinators’ role is to serve as a bridge between them. Coordinators frequently participate in local meetings and events and take ample time trying to develop good relations with local people. The coordinators thus are able to uncover local people’s wishes more adeptly than the local government.

“When everyone is concerned with a specific issue, it is sometimes hard for anyone to express honest feelings. This is when you need an outsider to find those feelings. That is what the reconstruction coordinator does,” says Fujisawa. “Being involved in reconstruction efforts in an affected area means creating a new society, so to speak. This is a valuable experience for the whole world as well as for Japan. People who have this experience will become leaders in the future.”



Showing Guts in Ogatsu

Ogatsu-cho in Ishinomaki, Miyagi Prefecture, is a small port town facing the Pacific Ocean. It is about a two-hour drive from Sendai, the central component of the prefecture. Before the great earthquake, scallops, oysters, sea squirts, silver salmon and many other fish and shellfish grew along the deeply indented coastline. Ogatsu-cho is also the producer of Ogatsu stone. *Suzuri* (inkstones) made from Ogatsu stone have a 600-year history and make up 90% of Japan's total inkstone production.

“Ogatsu is extremely rich in nature, food and traditional culture,” says Takashi Tachibana, a member of a local company named Oh!Guts! “At night, an astounding spread of stars twinkles across the sky.

Here you can also enjoy the soothing experience of watching the glowing sunrise and sunset.”

One of the towns closest to the epicenter of the Great East Japan Earthquake, Ogatsu-cho was devastated by the tsunami. The town office building, elementary and junior high schools, fishery union buildings, stores and many other buildings that had stood in the central part of the town were wiped out by the tsunami. In August 2011, fishery workers set up Oh!Guts!

Besides hiring people both from Ogatsu and outside, Oh!Guts! trains fishermen, gives local children opportunities to experience fishermen's work and attracts sightseers. In this way, members of Oh!Guts! aim to mitigate social problems such as depopula-



Local primary school students experience aquaculture in Ogatsu, Miyagi Prefecture.

tion and industrial decline while generating profits from marine products, which is their primary job. The business style is unique among those of Japanese fishery-related companies.

Tachibana is from Sendai and ran a company in Tokyo when the great earthquake hit. Right after the disaster, he headed for Sendai to confirm the safety of his mother and younger sister. Fortunately, both were alive. Tachibana immediately started cooking and providing meals in the affected areas and sending food to evacuation centers. As he repeated roundtrips between Tokyo and the affected areas, he met likeminded people in Ogatsu-cho and got involved in the founding of Oh!Guts!

“Our fishery activities are meant to work together with producers and consumers,” Tachibana says. “In the past, fishermen had no idea who ate the fish they caught. We encourage consumers to visit Ogatsu as much as possible, aiming to nurture fisheries, the town itself and ties among people.”

Oh!Guts! is supported by Sodaten Junin (literally, nurturing inhabitants), a group of consumers who buy, on a prepaid basis, scallops, seaweed, oysters, silver salmon and other fish and shellfish harvested by Ogatsu fishermen. Marine products are delivered to Sodaten Junin twice a year. The fishermen whose aquaculture equipment or tools were washed away by the tsunami used the money collected from advance payments from Sodaten Junin, to resume aquaculture in the fall of 2011. In addition to buying products, Sodaten Junin members are also entitled to participate in aquaculture experiences and other events organized by Oh!Guts!

Tachibana, wishing to show urban people what is happening in Ogatsu, has made more than 200 twice-weekly round trips of 450 kilometers each way between Tokyo and Ogatsu, carrying more than 1,000 people. Through these people, the Internet and media reports, Sodaten Junin now has over 3,000 members.

“Upon request, Sodaten Junin members can be allowed to experience the local fishermen’s routines on the land. For example, they can practice using a

froe to remove mussels and barnacles from ocean-fresh scallops. They are all amazed by how complex the labor is. At the same time, they learn about marine biodiversity,” Tachibana says. “Visitors to Ogatsu become more thankful for nature and food.”

Also drawing attention from overseas media, Oh!Guts! has been covered by numerous reporters from countries like the United States, Spain, Germany and Taiwan. This past January, students of the Harvard Business School visited Ogatsu.

“Our activities are praised as very innovative in that we cooperate with producers, consumers, distribution industry and the restaurant industry in redeveloping a town and communities as well as establishing a new form of fishery,” Tachibana explains. “These overseas visitors are amazed to find that Oh!Guts! gains involvement by so many people.”

Oh!Guts! is scheduled to open a restaurant in Tokyo’s Ginza district in May, which will serve seafood caught in the Tohoku waters. Tachibana currently stays in an old house when he is in Ogatsu. The house will be rebuilt into an inn serving fresh seafood. Indeed, many things that were unimaginable before the great earthquake are happening in succession in Ogatsu.

“In the future, hopefully, I will start a restaurant run by fishermen overseas,” Tachibana says. “Today, depopulation and industrial decline are common problems for all local areas of Japan, including Ogatsu. These problems are also common on an international level. I wish for Ogatsu to serve as a model for the world as a solution to these problems.” 



Takashi Tachibana of Oh!Guts!

KATSUHIRO ICHIKAWA

INTERNATIONAL COOPERATION FOR DISASTER REDUCTION

Japan has been striving to use the expertise it has developed from its own long experience with natural disasters to help other countries, particularly in developing countries, better prevent and recover from similar disasters. Osamu Sawaji of the *Japan Journal* reports on two such examples.

International Base for Seismology and Earthquake Engineering

The Building Research Institute, International Institute of Seismology and Earthquake Engineering (IISEE) in Tsukuba, Ibaraki Prefecture, on the outskirts of Tokyo, in cooperation with the Japan International Cooperation Agency (JICA) and the National Graduate Institute for Policy Studies, provides training courses to researchers and engineers from developing countries to mitigate earthquake disasters. These courses have been running since 1960, and to date have been completed by 1,580 participants from ninety-eight countries. After returning to their native countries, many graduates have become government ministers, research institute directors, or university professors.

“This is the only institute in the world that runs regular courses for such a large number of people

from so many different countries,” says Shoichi Ando, director of the IISEE. “The lecturers are well informed about current conditions in developing countries, and use this knowledge to ensure that their teaching has relevance for each country.” The focus of the IISEE training is International Training in Seismology and Earthquake Engineering. The program is divided into three parts: Seismology Course, Earthquake Engineering Course, and Tsunami Disaster Mitigation Course, and its duration is around one year. Participants can obtain a master’s degree.

In addition, the China Seismic Building Course has been held since 2009 for Chinese structural technology specialists, in response to the 2008 Sichuan earthquake.

The 53rd International Seismology and Earthquake Engineering Training Course started in October last year. There are twenty-one participants from fifteen countries including China, Indonesia, Turkey and Nicaragua. The majority are aged between twenty and forty and hold



Participants on the “Tokyo earthquake simulation 72-hour tour” at the disaster prevention experience facility in Tokyo Rinkai Disaster Prevention Park. “72 hours” refers to the time from when an earthquake strikes to when organized rescue operations begin. The handheld game consoles have English capability.

BOTH PHOTOS MASATOSHI SAKAMOTO



Engaging in discussion at the Building Research Institute in Tsukuba, Ibaraki Prefecture: Joseph Nyago from Uganda (left), Nazeli Galstyan Grisha from Armenia (center) and Mauricio Reyes Gallrodo from Chile.

positions of responsibility for earthquake disaster mitigation in their respective countries.

The training course curriculum includes observation, practical training, lectures and presentation of individual research. The observation component includes visits to the Great East Japan Earthquake disaster site and Hyogo Prefecture, which experienced the Great Hanshin-Awaji Earthquake. In last November, the current cohort of participants spent five days visiting Sendai in Miyagi Prefecture and Miyako in Iwate Prefecture. Training in the disaster areas included observation of the damage, practical training that consisted of measuring the height of the tsunami, and lectures from local government officials in the stricken areas.

“International seismology and earthquake engineering training is excellent because we learn both theory and practice. Observing a disaster area, actually verifying with my own eyes the theoretical knowledge of disaster damage, for example the extent of the damage to a building caused by the force of the tsunami, was one of the most effective methods to learn,” says Nazeli Galstyan Grisha, a participant from the Ministry of Emergency Situations Western Survey for Seismic Protection in Armenia, to the west of the Caspian Sea. “After observing the disaster area, I felt strongly that I need to do my best to acquire knowledge about earthquake engineering. It gave me a renewed sense of the importance of earthquake engineering in saving people’s lives.”

In February this year, participants observed the

Tokyo Rinkai Disaster Prevention Park. The Disaster Prevention Park has an open park area that acts as a heliport and a base camp for personnel dispatched to provide rescue and recovery services in a time of disaster. Also, a Disaster Prevention Base and Disaster Prevention Experience-Learning Facility have been built in the administrative building inside the park. The emergency response headquarters for the government and relevant prefectures is set up in the Disaster Prevention Base in a time of disaster.

The “Tokyo earthquake simulation 72-hour tour” at the Disaster Prevention Experience-Learning Facility allows you to experience the flow of events from when an earthquake strikes through to evacuation, while responding to a quiz using a handheld game console. There is also a realistic life-size diorama that recreates a built-up area that has been struck by an earthquake.

“These facilities are amazing, the scale of them, the realistic nature of the diorama, the idea of using video games. My country absolutely needs this kind of facility,” says Professor Mauricio Reyes Gallrodo of the University of Valparaiso in Chile, South America. “I realized how important high quality education on natural disasters is for disaster mitigation.”

At IISEE, which is the base for training, lectures and discussions are held using the latest data. Earthquake and tsunami data as well as data on damage to buildings from the Great East Japan Earthquake are already being used in the training course. The course runs for one year, but for the last three months participants carry out research on a self-chosen topic.

“On this course you can meet people from many different countries and cultures. Virtually the world is here,” says Joseph Nyago of the Ministry of Energy and Mineral Development of Uganda in East Africa. “When I return to my native country I would like to use the knowledge and experience that I acquired in Japan to advance my government about disaster mitigation measures. For example, Uganda is severely affected by landslides. I want to make a commitment to ensure that the government takes appropriate measures to deal with this problem.” 

共同的责任



Learning methods of relaxation from a Japanese expert

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Psychological Support Following Earthquakes

The magnitude-8.0 Great Sichuan Earthquake that hit China's Sichuan Province on May 12, 2008 was a disaster that affected around 46 million people, with the number of deceased and missing exceeding 80,000. Children accounted for about 10% of those because over 7,000 elementary and junior high school buildings collapsed. Immediately after the earthquake, Japan rapidly dispatched a Japan Disaster Relief Team to the affected areas and carried out relief activities.

Earthquakes harm many people not only physically but also psychologically, and many cases of alcoholism, depression, post-traumatic stress disorder (PTSD) and other symptoms have been reported in their wake.

“Psychological disorders caused by disasters and accidents could occur in anyone. Many people recover naturally, but recovery delays or problems can surface over time due to loss of family and friends, changes in living environments, job changes and other reasons,” says Ryotaro Oda of the China Office

of the Japan International Cooperation Agency (JICA). “When the Great Hanshin-Awaji Earthquake struck in 1995, the greatest number of elementary school children requiring psychological care was four years after the disaster. For this reason, an organization and human resources development that enable continuous care over the medium and long terms are important.”

JICA has carried out diverse reconstruction support activities since the Great Sichuan Earthquake. Among the efforts, the Mental Health and Psychosocial Support Project for the Sichuan Earthquake has been implemented from 2009 to 2014. JICA has been working to establish systems that enable appropriate and continuous psychological support rooted in the communities in five model sites together with the All-China Women's Federation, which provides educational, welfare and other assistance to women, children and elderly people.

Experts from Japan and China have collaborated on human resources development, offering training

to doctors, teachers, counselors and others both in China and Japan. Support organizations rooted in communities have also been established. One example is a service, provided at community centers, that combines traditional medicine such as acupuncture and massage together with counseling. Advocacy activities are also being conducted through events in order to reduce prejudice and resistance to psychological support.

“In China, there was insufficient knowledge of appropriate ways to handle psychological support. Many organizations provided relief aid immediately after the earthquake, but psychological support was in some ways provided inappropriately,” Oda says. “In the Psychosocial Support Project, we have applied experiences and lessons learned after the Great Hanshin-Awaji Earthquake and kept these in mind to reach people who require support.”

At the time of the Great Hanshin-Awaji Earthquake, experts pointed out that even if people needed psychological support only a few sought help. For this reason, attempts were made to offer support without directly mentioning it, such as by having nurses casually ask about anxiety and troubles while they measured the blood pressure of affected people. These approaches have been considered in the Psychosocial Support Project as well.

There were also cases of caregivers suffering from trauma, because they were also victims, while there were others suffering from burnout syndrome because they had dedicated themselves to caring for others too much. For this reason, support has been provided to



An evacuation drill at an elementary school in Sichuan Province



Members of a Japan Disaster Relief Team active in an area affected by the Great Sichuan Earthquake in May, 2008

caregivers by giving lectures on stress management.

After the Great Hanshin-Awaji Earthquake, disaster prevention education to prepare for future disasters has become widespread. In itself such education helps children psychologically, because it contributes to a feeling of safety. So it was decided to adopt evacuation drills and other forms of disaster prevention education at schools in the Psychosocial Support Project for the Sichuan Earthquake as well; a step that was not often previously taken in China.

The Great East Japan Earthquake struck in March 2011 while the Psychosocial Support Project was underway in China. Following the disaster, children in Sichuan sent messages of encouragement for those in Tohoku through JICA's China Office; messages such as “Our hearts are one even though we are far apart,” and “Let's be courageous and hang on so we can keep up the fight against these disasters.” As a part of the Psychosocial Support Project training, Chinese participants have visited affected areas in Tohoku and held discussions with people involved, while Japanese experts have introduced their psychological support activities in Tohoku.

“The Psychosocial Support Project is becoming a platform for mutual learning on the path toward recovery for the people affected in the Great Hanshin-Awaji Earthquake, Great Sichuan Earthquake and Great East Japan Earthquake,” Oda says. “China is a disaster-prone country like Japan. Human resources cultivated in this project may help other disaster-affected areas in the future.”



The Japanese archipelago forms a country with mountains ranging north to south surrounded by ocean on all sides and with four rich seasons. Those geographical and meteorological conditions sometimes cause damage due to natural phenomena such as torrential rain, heavy snow, earthquakes and tsunamis. For example, from summer through to autumn, heavy rain due to typhoons causes flooding and landslides. And, on March 11, 2011, a huge tsunami generated by a massive earthquake in northern Japan wrought severe damage along the coastline.

To prevent or mitigate the damage from these disasters, many Japanese people take part in disaster prevention drills. Performed in schools, workplaces and elsewhere, emergency drills are a form of training for people to protect themselves in the event of a disaster such as an earthquake, tsunami or fire by walking to a designated evacuation area, using a fire extinguisher to put out a fire or performing some other task. On September 1 in particular, which has been designated "Disaster Prevention Day," large-scale disaster prevention drills take place across Japan. The day is associated with the Great Kanto Earthquake, which struck on September 1, 1923 and left more than 100,000 people dead or missing.

For example, when in-school sirens sound at schools across Japan to simulate a major earthquake hitting, students all hide under their desks to protect themselves

from objects falling from above. Then, the students don disaster prevention hoods (which are always kept at the ready) to protect their heads, and evacuate the premises.

Individual households also stock up on disaster prevention goods during normal circumstances in preparation for a disaster. For example, many people stockpile plastic bottles of water and foods which can



A lady learns how to use a fire extinguisher at a disaster prevention demonstration

DISASTER PREVENTION DRILLS

be stored long-term and eaten without preparation, such as canned and retort-packed items, in case of disruption to the supply of water, electricity or gas.

Schoolchildren crawl underneath their desks to protect themselves from falling debris during a disaster prevention drill



REUTERS/AFCO



1: The item pictured is used in the home to minimize damage due to an earthquake. What is it used for?



- A:** To prevent furniture from falling over
- B:** To prevent window glass from breaking
- C:** To stop people from falling down



2: In Japan you dial 110 to call for the police. What is the number to call for a fire truck or ambulance?



- A:** 119
- B:** 999
- C:** 911

See the back page for answers.

EASY DETECTION OF MULTIPLE GENES

Genetic technologies are applied in a wide variety of areas in addition to biology, including clinical testing, detection of allergic substances and criminal investigations. Genes are so minuscule and imperceptible that until now they could not be tested or analyzed without special equipment. However, a revolutionary system with a simple kit that paves the way for quick visual observation of multiple genes has recently been commercialized. Takashi Sasaki reports.

Genes pass information on biological traits down through the generations. Except for some viruses, a gene is composed of highly polymerized compounds in a double-helix structure, known as deoxyribonucleic acid, (DNA). In the double helix, four different bases—adenine (A), guanine (G), thymine (T) and cytosine (C)—form pairs. The sequence of pairs determines the hereditary information. Even in a simple microorganism, there are as many as tens of thousands of base pairs, and all

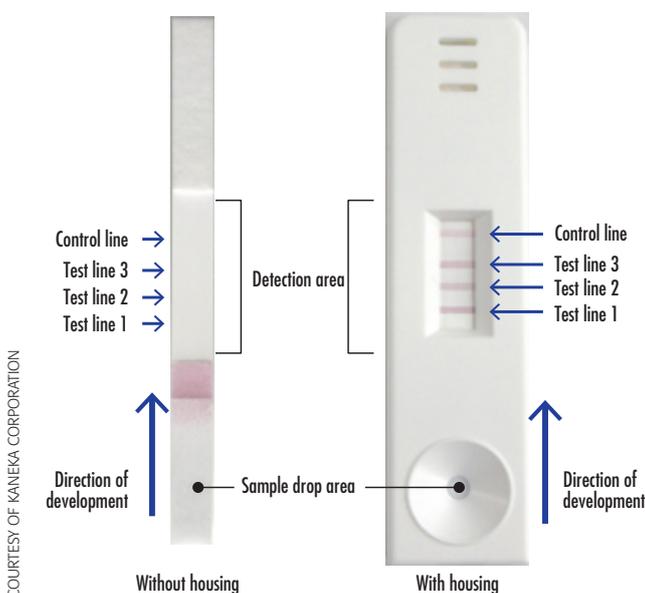
sequences of base pairs are different, which explains why DNA analysis unfailingly identifies a biological species or an individual.

“Among the four different DNA bases, A and T complement each other, as do G and C. For this reason they always form pairs. We have invented a chip for nucleic acid chromatography by capitalizing on this property of DNA,” explains Shigehiko Miyamoto from the Frontier Biochemical & Medical Research Laboratories in Kaneka Corporation, a major general chemical manufacturer based in Osaka.

The genetic testing method Kaneka has developed is outlined as follows. First, tissue of an animal or plant or a sample of a bacterium or cell is taken. Then, the multiplex polymerase chain reaction (PCR) method is implemented to amplify a trace amount of DNA. The PCR products are mixed with development fluid and the mixture is dropped onto and permeated into a test chip. A pink belt then appears on part of the chip to indicate the existence of DNA to be detected.

It previously took at least an hour to detect multiple genes at one time so specific DNA was separated by a method that takes advantage of an electric charge of electropho-

Exterior Views of Kaneka’s Genetic Detection Chips for Nucleic Acid Chromatography



A pink belt comes out on the test strip for each gene to be detected easy visual identification of multiple genes.

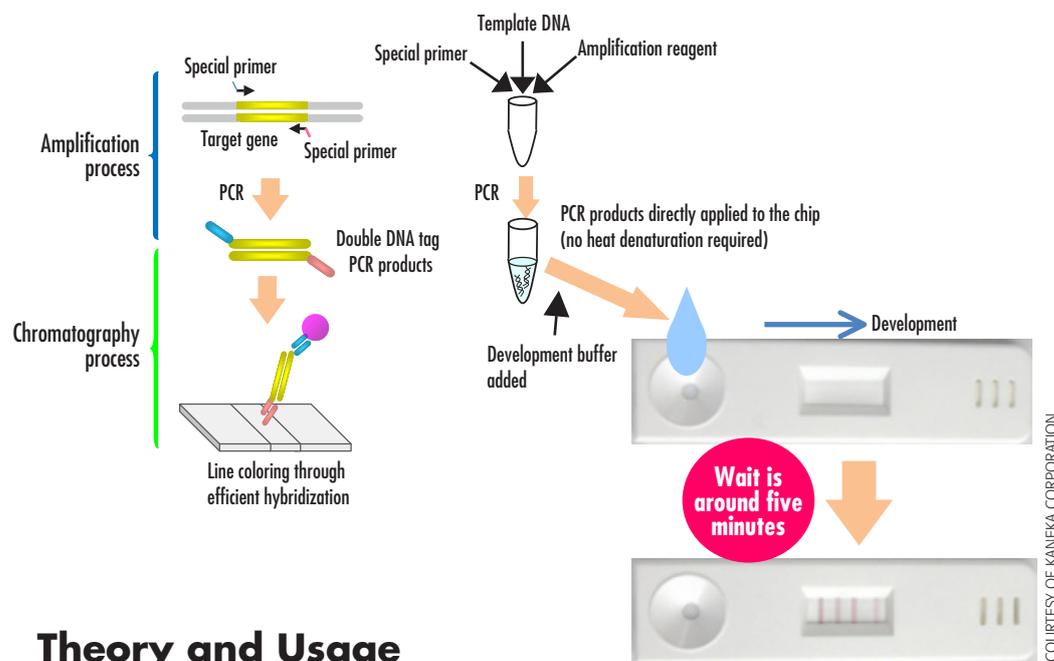
resis from a sample amplified in the multiplex PCR before dyeing and ultraviolet irradiation for identification. In contrast, only about five to ten minutes are required with the use of the newly developed test chip. Depending on the chip setting it is possible to detect more

than one gene at a time. This method requires no special device such as an electrophoresis tank or ultraviolet irradiator.

“Multiplex PCR is a method of amplifying multiple DNA in a sample with the use of artificial DNA fragments called primers and an enzyme called polymerase which carries out DNA replication,” Miyamoto says. “This method is already in wide use. We, however, use a special primer that we have invented to make the subsequent process much quicker and simpler. Put very briefly, the primer has a tag that maintains its single strand state after PCR. After a DNA tag that is paired with the sequence is embedded in the test chip, the tag combines with another tag. That appears in the form of a color change.”

From Kaneka’s New Business Development Department, Takaoki Saneyasu described the advantage of this new genetic testing system.

“Conventionally, genetic testing required special equipment, and we had to bring samples back to research institutions and else-



Theory and Usage

where, and take time analyzing them,” he says. “With this chip for nucleic acid chromatography, we can make a determination even at a hospital bedside. The system will help identify the causes of food poisoning and infectious diseases, make decisions on whether or not to administer medication for which the effect varies depending on the patient’s genes, carry out cancer diagnoses, and perform cell tests in regenerative medicine very quickly.”

In detecting multiple genes at the same time, the chip for nucleic acid chromatography is highly convenient for testing of food-borne allergens. It also enables food factories to easily check for the presence of transgenic crops. The chip was fully commercialized for professional use in November 2012. It is attracting great expectations from medical professionals in developing countries that are inadequately equipped with genetic testing facilities and from many different industrial domains around the world. 

Takashi Sasaki is a freelance writer.

Making Wine History in Martinborough

Hiroyuki Kusuda has been making fine wines in New Zealand for more than ten years. *The Japan Journal's* Osamu Sawaji spoke with the winemaker.



ALL PHOTOS COURTESY OF HIROYUKI KUSUDA

Hiroyuki Kusuda collects grapes from his vines in Martinborough, New Zealand.

Hiroyuki Kusuda makes wine in the well-known wine producing region of Martinborough, about 90 kilometers east-northeast of Wellington, New Zealand's capital. A product of painstaking work, Kusuda's wines have been acclaimed in the French, English and American wine media.

"The taste of wine is very much up to the sun, the rain, the soil, the grapes, the microorganisms involved during winemaking, and other natural forces. The fact that you are not in complete control is one of the attractions of wine-making," says Kusuda. "A wonderful wine easily crosses national borders and time. It would be fun if people who live on the opposite side of the earth a half century from now will taste a wine that I have made and find it enjoyable."

Kusuda became enamored with wine when he was at university. The trigger was a German wine recommended by his older brother who liked wine. While he continued to enjoy wine, he also became an avid reader of books about wine. He took a year off university to travel the world, visiting wineries in France and Germany where he tasted many varieties of wines not available in Japan. He thought about working with wine, but was reluctant to handle wine he himself felt didn't

taste good; so, in the end, he started a job at a major electronics manufacturer. Four years later he quit the job to fulfill his dream of living overseas, and started working at the Japanese consulate in Sydney, Australia. However, working there, his enthusiasm for wine-making gradually increased.

"Rather than working in an organization, I arrived at a point where I wanted to find out how far my own strengths could pass in the world of wine that I liked so much," says Kusuda. "I thought that making wine for me would definitely be more interesting than becoming a sommelier or a wine critic."

In 1997, Kusuda started his wine studies at the world-famous University of Applied Sciences Wiesbaden in Germany. As well as studying viticulture and oenology, he deepened his knowledge of chem-



The Syrah variety of grape in Kusuda's vineyard

istry including the analysis of aroma and alcohol content. On a visit to Martinborough in New Zealand to experiment for his graduation thesis, he met the owner of a winery who invited him to come and make wine together, and so he decided to emigrate. When he worked at the consulate in Sydney, he had visited New Zealand several times and had felt the potential of the wine. In particular, he was captivated by red wine made with the Pinot Noir variety of grape. Pinot Noir originates in Burgundy in France, and is said to be the most difficult grape to grow and use to make good wine.

“The history of modern wine-making in New Zealand is only about thirty years old,” says Kusuda. “I thought I would be satisfied in myself if I were able to make a wine recognized in the world by growing

the difficult Pinot Noir in this new soil, rather than the French soil with its ancient history of wine-making.”

In 2001, Kusuda moved to Martinborough, leased a vineyard and started making wine. However, making wine with nature as a partner was not easy. There were years when he had almost no harvest because of torrential rain or frost. But gradually, Kusuda's

wine built a reputation in Japan and New Zealand, and when his 2006 Pinot Noir won the Gold Award at a world-class wine competition in London in 2008, he gained an international reputation.

One of the characteristics of Kusuda's wine-making is the extremely careful sorting of the fruit, which shows up his perfectionism. He inspects the harvested grapes one by one and sorts out any berries which are unripe, diseased or showing the slightest damage. A prominent wine critic in Britain wrote in the Financial Times that Kusuda's wine is the product of “Japanese perfectionism,” and praised it as an “exceptional” wine.

Normally, Kusuda works on his own, but when the grapes are harvested in March, thirty to fifty volunteers from Japan gather at the vineyard. About half are students at the wine school that Kusuda's older brother works at as a lecturer, but the rest are people who have been captivated by the appeal of Kusuda's wine. For them, drinking it is not enough; they travel all the way to New Zealand because they want to participate in the work.

At present, Kusuda is growing grapes on about three hectares and produces about 10,000 bottles per year. About sixty percent of the wine is exported to Japan with the remainder consumed in New Zealand and Australia, and he plans to export the wine to other parts of Asia and Britain in the future.

“There is still room for improvement in both in the vineyard and winery,” says Kusuda. “Wine-making is not about making money. Making good wine is the goal.”



A bottle of Kusuda Wines' highly rated 2010 Pinot Noir

EHIME—Relaxing in “God’s Water”

Rob Gilhooly soaks up the atmosphere at what is thought to be Japan’s oldest spa resort, Dogo Onsen in Matsuyama, Ehime Prefecture.

Lazing in the soothing waters of Dogo Onsen, you immediately come face to face with the Gods. Chiseled into the cylindrical Aji stone tank that feeds the aptly named “God’s Water” bath, a benevolent-looking deity named Okuninushi-no-mikoto bathes a sick Sukunahiko-no-mikoto in Dogo’s waters. According to tradition, the latter makes a miraculous recovery, performing a dance on a rock to prove it.

The healing powers of Dogo’s waters are legendary, enticing not just ailing Gods but also emperors, princes and feudal lords, not to mention a lame white heron—the subject of another miracle-

cure myth.

“It is said that stories of the heron triggered the establishment of the first community here about 3,000 years ago,” says Motoki Komoda of the Matsuyama City-run spa, adding that the bath house is also mentioned in the *Kojiki*, Japan’s earliest historical record, which dates back to the early eighth century. “This makes it Japan’s oldest hot spring.”

Dogo Onsen has existed as a physical spa facility from about 700 years ago, Komoda said. The central part of the current premises—known as the “*honkan*,” or main hall—was opened in 1894, he added.



The entrance to Dogo Onsen *honkan* in Matsuyama, Ehime Prefecture (left); the Kami-no-Yu, or God’s Water bath (top right), and the unique lacquerware saucers used to serve tea (bottom right) at the onsen

Other Things of Interest in Ehime Prefecture

Mizuhiki

Mizuhiki is a craft made by tying, braiding or wrapping colorful decorative cords (*mizuhiki*), which are themselves made by twisting Japanese paper, into decorative objects.

Tai-meshi

One of Ehime's representative dishes. The *taimeshi* enjoyed in the southern part of the prefecture features hot steamed rice topped with a mixture of thin slices of red sea bream, soy sauce, raw egg, soup stock and other ingredients. Another type of taimeshi is made by steaming rice with red sea bream.



It is a majestic huddle of structures whose criss-cross of angular roofs, ornately decorated with gargoyle-like tiles and crowned with a red-glass tower (housing the *tokidaiko* clock drum), give it a temple-meets-fairy-tale-castle appearance.

Inside, old black-and-white photos and a series of amusing bathing etiquette cartoons adorn the cedar-wood walls. A maze of narrow corridors and steep staircases, which connect the various annexes that were built as Dogo's popularity spread, are like something out of an M.C. Escher lithograph.

The bathing experience is also slightly Escheresque. There are four courses available, each distinguished by color-coded lines running around the building like a subway map.

The most popular of these is the "*Kami-no-yu Ni-kai*" (blue course). Having climbed up the steep staircase to the spacious second floor resting space, you change into a *yukata* robe and descend via another set of steps to the bathing area. Back on the upper floor you are offered snacks and tea, which is served in cups balanced atop saucer-shaped red lacquer trays, just as they have been for over a century.

Another tradition that continues is the beating of the clock drum, performed three times a day in the tower, a heron-topped extension to the building that initially was little more than a folly.

The "Botchan" room, meanwhile, is named after a novel by Natsume Soseki, who once rested in this room after a soak in the baths in 1895. The author was extremely taken with the spa, which

was the most imposing building in the area at the time, affording views from this third-floor room to Matsuyama's castle and the mountains beyond.

Sadly those views are all but lost today due to high-rise hotels that sprung up around the spa during Japan's post-war economic charge.

Yet, its popularity continues, attracting visitors from far and wide. "It has become a popular destination for foreign visitors, especially among Europeans, who appreciate the spa's history," says Komoda, adding that visitors from mainland China, Taiwan and Singapore are also increasing.

"Some local voices have said we should do away with the bathing side and turn this into a museum, but visitors come here from far and wide because they can experience something truly unique and largely unchanged for over a century. We hope that will continue for another hundred years." 

Ehime Facts

Ehime Prefecture is located in the northwestern part of the island of Shikoku. The manufacturing of paper, pulp and towels prospers in the eastern part of the prefecture, while the southern part is one of the most well-known production grounds of citrus fruit, cultured pearls and red sea bream. Ehime is also known for the many *haiku* poets who have come from the prefecture.

Population	Approx. 1.4 million
Area	Approx. 5,678 km ²
Prefectural Capital	Matsuyama City
Best in Japan	Production of <i>iyokan</i> citrus fruit and pearls (2009)

FUKUI—THE *KAMI* OF ECHIZEN

Rob Gilhooly drops in on two historic *washi* paper making establishments in Echizen, Fukui Prefecture.

Inside the stark, chilly workshop, the four artisans conduct their work in almost total silence. Barely a word is spoken as the rhythmic clitter-clatter, swish-splash of the huge suspended frame they operate is rocked back and forth between them like a giant swing and dipped into a rectangular vat filled with a viscous milky-colored liquid.

As if by magic, within minutes a glistening membrane-like substance appears on the surface and the foursome brings the frame to an abrupt halt. With the help of a winching device the fruit of their labors is carefully transferred to a growing stack of other membranes.

What at this stage look like large, wafer thin slices of tofu will eventually emerge from the drying rooms at Iwano Heizaburo Seishisho as sheets of *washi* paper made in a process that dates back over 1,500 years. The workshop is located in Echizen, Fukui Prefecture, which is known as the old-

est *washi* production center in Japan.

According to tradition, a female *kami* (god) taught the local people the art of paper making. Craftsmen and residents alike greatly revere the *kami*, a Japanese homophone that can mean both “paper” and “god,” and hold an annual festival dating back 1,300 years to pay their respects.

“The *kami* gives craftsmen a sense of moral support and comfort,” says Sugihara Washipaper, Inc. President Yoshinao Sugihara, whose company has a history in the Echizen *washi* industry dating back over 500 years. “For generations it has been thought that they can communicate with the *kami* (god) through *kami* (paper). They treat both with extreme reverence, which is why you will rarely see us idly throwing away paper or treading on it.”

Echizen *washi* is made from the bark of paper mulberry, mitsumata shrubs or the *gampi* tree, which often are mixed with a mucilaginous substance known as “*neri*” that is made from the



Artisans make *washi* paper at Iwano Heizaburo Seishisho in Echizen, Fukui Prefecture (top left); a bookmark made from *washi* paper and coated with lacquer, by Sugihara Washipaper, Inc. (bottom left); a dragon made from Echizen *washi* paper in the display windows of Takashimaya department store in Nihonbashi, Tokyo, 2012 (right)

Other Things of Interest in Fukui Prefecture

Echizen soba

Echizen soba noodles with grated daikon radish: This version of soba noodles features soba that is a bit darker in color than the usual style, topped with soup stock and ample grated daikon radish. The simple way of enjoying soba allows the flavor of high-quality soba grain to be savored.

Tojinbo

This precipitous cliff stretches about one kilometer along the coast, and since ancient times has been known for its superb landscape. It is a dynamic sight to see the rocks rising above the sea surface for about 25 meters being washed by the rough waves of the Sea of Japan.



mashed root of the *tororo-aoi* plant. Artisans fix the mixture on frames to make hand-made paper of varying sizes for diverse uses, from *fusuma* sliding doors and *shoji* paper window screens to writing paper and woodblock printing.

The most prized type of washi is “*hosho*,” which was traditionally used for writing official documents and was prevalent until the introduction of Western paper-making techniques around 140 years ago. Today Heizaburo Iwano is one of just a handful of craftsmen making the high-grade paper, though mostly for use in fine art such as Japanese-style painting and ink-wash painting. His company has been operating for over 140 years and the great Nihonga artist Yokoyama Taikan is numbered among his illustrious clients.

“It is impossible to reproduce by machine the soft feel of washi,” says Iwano, 82, whose workshop is well known for the large sheets of paper first made on request by Yokoyama. “Even if you machine manufactured washi paper to the same thickness it would have a different character and weigh more than double that made by hand.”

Lightness is a characteristic of Echizen washi—but so too is its durability, a result of the paper’s long fibers, says Sugihara. Its variety of applications also distinguishes it from other papers, he adds. “Whereas Western paper has a lifespan of 100 to 200 years, washi documents stored in Nara’s Todai-ji temple have survived from over 1,300 years ago.”

Ironically it was Western paper that triggered a

severe decline in demand for washi—a trend that continues to this day. Sugihara has attempted to buck that trend by introducing innovative ways for using washi, such as in textiles and smaller products suited to modern lifestyles. In recent years he has also started to export paper made by Echizen craftsmen. Huge washi textiles with stunning designs can be found in buildings including the Grand Hyatt in Tokyo’s Roppongi district and recently in a window display of the Paris perfume house Guerlain.

Sugihara meanwhile has joined forces with a German designer to create a stunning series of lacquer-reinforced products, including cases for business cards, smart phones and tablet computers.

“There is an old craftsman’s song that basically means you can make washi all your life but never create the perfect paper,” Sugihara says. “In Echizen we continue to strive for perfection, but now on a much wider stage.”



Fukui Facts

Fukui Prefecture is located on the Sea of Japan side of central Japan. The textile and eyewear industries have prospered in the prefecture. Fukui is also the birthplace of koshihikari rice, which is known for its superb taste, and the prefecture is among the leading rice production grounds in Japan.

Population	Approx. 0.79 million
Area	Approx. 4,189 km ²
Prefectural Capital	Fukui City
Best in Japan	Production of glass frames

ちらし寿司

Chirashizushi



Chirashizushi (literally, scattered sushi) is a dish of sushi rice mixed with a variety of raw seafood, thin strips of omelet, and perhaps a few slices of cucumber. The exact make up of the dish varies according to the region. Chirashizushi is a popular dish to serve on Girls' Day, March 3, which is also when the *hinamatsuri* Doll Festival is held. Typically chirashizushi is presented in a large shallow bowl and distributed to individual plates at the table.

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Answers for p. 23 Q1: A. This item is placed between the ceiling and the item of furniture (a bookshelf, cupboard, etc.) to prevent the furniture from falling over. Q2: A. The same number is used in South Korea and Taiwan, and 119 is also used in China to call a fire truck.