



PROGRESS REPORT **2017**



**TOYA CALDERA AND USU VOLCANO
UNESCO GLOBAL GEOPARK**

1 INTRODUCTION

Eight years have passed since the Lake Toya and Usu Volcano region was designated a global geopark in August 2009. Over the years, the status of geoparks has undergone remarkable changes in Japan and the world as the global geopark initiative became a UNESCO's official programme. The more geoparks are designated, the better known the name and concept of Global Geopark will become. The geopark network is more global and vibrant than ever; subcommittees and workshops now provide opportunities for



members to share best practices and discuss policies. Toya Caldera and Usu Volcano UNESCO Global Geopark (hereinafter referred to as “the Toya-Usu Geopark” or “the Geopark”) began its history as an eco-museum. In the first four years of its Global Geopark status (2009-2012), the region worked to shift from an eco-museum to a geopark, while laying the foundation for the Geopark. Over the 2013-2016 period following the revalidation, the focus has been more on analyzing the local/regional characteristics, producing media which encourages residents to better learn the links between people and the earth, conserving valuable sites, and highlighting disaster mitigation education. This progress report will summarize the practices of Toya-Usu Geopark for the latest four year period.

2 CHARACTERISTICS OF TOYA CALDERA AND USU VOLCANO UNESCO GLOBAL GEOPARK: GEOSITES OF GLOBAL IMPORTANCE

The Toya-Usu Geopark mainly consists of the Toya caldera (“Lake Toya”) and the Usu volcano (“Mt. Usu”). Since the ancient Jomon period, 14,000 to 300 BC, Mt. Usu and Lake Toya have helped form a distinctive natural environment, bringing to the region both disasters and benefits. The region is characterized by the fact that people have lived near an active volcano which has erupted with some regularity every several decades.

The volcanic activities of Usu volcano and Toya caldera have gifted humans with the magnificent landscapes of the caldera lake, lava domes and gas-emitting craters, in addition to hot springs. People visit the Toyako Onsen hot spring area for comfort. Farm produce and seafood harvested in the region are additional blessings of nature.

Mt. Usu, unfortunately, does not only bestow benefits to the region. The volcano has repeatedly erupted with ballistic ejecta, ash falls, pyroclastic flow and volcanic mudflow, forming active volcanic faults and tilting the ground; all of which have resulted in devastating damage. Though it is impossible to eradicate disaster damage from the region as long as the mountain volcano remains active, the damage could be minimized by leveraging human knowledge to better understand the volcanic activities. Within the Toya-Usu Geopark, damaged facilities, roads and sites are preserved as ‘disaster remains’, reminding people of past eruptions and the resulting damage. Footpaths are developed close to the remains so that visitors can see close up the effects of the eruptions.

Local communities are also trained to be prepared for future eruptions. The Geopark is supported by

volcano meisters, trained experts who lead activities such as disaster risk reduction education and guided tours.

(A) Eruption Disaster Remains and Disaster Risk Reduction Culture

The Toya-Usu Geopark has initiated many practices that have led to damage mitigation compared to earlier eruptions of Mt. Usu. During the 1910 eruption, Professor Fusakichi Ohmori and his team installed a pendulum-type seismometer into the erupting volcano. Their measurements revealed the volcanic tremors of the mountain, which was a world first and a new finding in volcanology. Also, Mr. Seiichi Iida, then the Muroran Police Chief, successfully evacuated all residents from the site prior to the eruption. When Mt. Showa-Shinzan was formed during the 1944-1945 eruptions, Mr. Masao Mimatsu precisely recorded how the new mountain was formed.

Every time it erupts, Usu volcano causes massive crustal movements at the foot of mountain, as well as in the mountain itself. The 1977-1978 eruption deformed faults, which caused the collapse of apartments and hospitals. The 2000 eruption created more than 65 craters at the mountain base near a town centre, and new faults which made stair-like formations on a national highway. Mt. Usu has erupted with high-viscosity magma at least nine times since the 17th century; and eruptions are expected to continue into the future. In order to remind people of past eruptions and help them to be well-prepared for future eruptions, damaged buildings and roads are preserved so that everyone can easily observe the results of the disasters. These eruption disaster remains are the subject of guided activities and disaster risk reduction education. It is significant that the community of a tourist destination chooses to preserve damaged sites and keeps them accessible for tourism and education purposes, as most tourist destinations typically do not want such sites visible to visitors.

(B) Mt. Showa-Shinzan and the Mimatsu Diagram

The birth of Mt. Showa-Shinzan began with a volcanic earthquake in December 1943. Six months after the quake, a phreatomagmatic and phreatic eruption occurred on farmland east of Mt. Usu, followed by clouds of volcanic ash, ballistic ejecta, pyroclastic surge and ground uplift. The land deformation devastated the Fukaba village community.

Mr. Masao Mimatsu, then a local postmaster, drew a series of sketches of the formation process of the rising ground by making multiple observations over time from the same location. While in contact with professional scientists, Mimatsu recorded the course of eruptions, the growth of the lava domes and the number of earthquakes. His records, referred to as the 'Mimatsu Diagram', are very detailed, revealing how eruptions developed and residents responded to the eruptions from both scientific and community viewpoints. The diagram clearly shows the process which changed a wheat field into a mountain with a lava dome also formed by the series of eruptions. Mimatsu's achievements were greatly valued in volcanology; the Mimatsu Diagram was presented at a 1948 International Union of Geodesy and Geophysics (IUGG) in Oslo, Norway, and highly acclaimed. This precious record is preserved at the Mimatsu Masao Memorial Museum in Sobetsu. Mimatsu later purchased Mt. Showa-Shinzan in order to preserve the rare lava dome, as well as to help the residents who lost their farmlands due to the eruptions. Mt. Showa-Shinzan was designated as a Japan special natural monument in 1957.

(C) Craters Where Phased Forest Succession is Observable

Since 1822, Mt. Usu has erupted six times from different craters. This has caused each site to exhibit a varying pace of succession. It is possible to observe herbaceous vegetation at the 2000 eruption craters or tall perennial grassland and a young Japanese poplar forest at the 1977-1978 eruption sites. People can also find middle-aged forests of Japanese poplar at the base of Mt. Showa-Shinzan formed by the 1944-1945 eruptions; matured forests of Japanese poplar at Yosomi craters from the 1910 eruption; or the forests where climax species such as Japanese oak trees become prevalent following the 1822 and 1853 eruptions. These different forest distributions show the process of, and the time required for, succession.

There are few locations like the Toya-Utsu Geopark where such different phases of forest ecosystems are found within a limited zone. The area serves geotour and school outdoor learning opportunities, for example high school lessons about succession. The Toya-Utsu Geopark Council published a textbook in 2015 aimed at high school students for learning about the birth and succession of forests at Mt. Usu.

(D) Remains from Jomon to Ainu Culture Periods

In the Toya-Utsu Geopark, there are many remains which showcase the cultures from Jomon to modern Ainu cultural periods. For example, the Irie Takasago Shell Mound in Toyako and the Kitakogane Shell Mound in Date are both Japan's historic sites and evidence that the communities lasted for more than 2,000 years. Studies of the remains are underway.

The coast of Funka Bay has one of the best clusters of shell mounds in Japan. The shell mounds are a symbol of the Jomon culture, which lasted for 10,000 years across the ancient Japanese archipelago. The culture was characterized by hunting, fishing and gathering instead of crop- and stock-farming. The bones of many different animals which were excavated at the shell mounds have revealed the nature and diets of that time. Surprisingly, human bones were also discovered at the shell mounds, which indicated that the shell mounds were used for ceremonial burial and as a place to wish for the revival of life, not just a refuse site. It highlights the sophisticated spirituality of the people during the Jomon period. Notably, this spirituality of the Jomon people may be coincident with the Ainu indigenous peoples' core funereal rituals.

The remains of communities, shell mounds and religious service sites are evidence that the rich nature of the Toya-Utsu region supported the life of people since ancient times.

3 CONSERVATION STATUS AND ACTIVITIES OF GEOSITES

Geosite Databook

The Toya-Utsu Geopark consists of nine chronological themes with 35 geosites, 19 trails (footpath, trekking trail, cycling road) and 22 facilities for exhibition, learning and guidance purposes. The Geosite Databook, released in May 2013 in five languages, compiles information of the sites and facilities. The Geosite Databook is available online.



Geosite Databook

Site Conservation Policy

Geosite conservation is a critical responsibility of geopark administrators. Conservation is based on national/prefectural regulations and supplemented by the policy specified in the Toya Caldera and Usu Volcano Global Geopark Master Plan Chapter 4-2. Under the Master Plan's policy, the Geopark Council, municipal offices and communities are engaged in conservation practices.

There are four major regulations on geosite conservation which apply to the Toya-Usu Geopark:

- (a) **Natural Parks Act**, designed to conserve plants, animals, geological features and others in national parks
- (b) **Act Concerning Utilization of National Forest Land**, designed to conserve ecosystems and control development of national forestlands
- (c) **Act on Protection of Cultural Properties**, designed to protect tangible/intangible cultural properties and (special) natural monuments from damage
- (d) **Hokkaido Ordinance on Natural Environment Conservation and municipal ordinances on cultural property conservation**, restricting development of designated areas, such as Usu Zenkoji Temple, Minamikogane and Rebunge

For the geosites exempt from protection by these regulations, the Geopark Council monitors the conservation status. On a community level, residents regularly patrol, weed and clean all the geosites while guiding visitors. When they find geosites damaged or exposing visitors to danger, the Council contacts responsible offices or organizations in respective municipalities, as well as landowners, to repair the damages.

It should be noted, however, that the Toya-Usu Geopark is a place demonstrating the 'ever-changing earth', which means the Geopark must display how the earth, including its vegetation, has been recovering over time after eruptions. Therefore, the Geopark categorizes geosite management into (1) no human intervention (i.e., leaving the sites as they are) and (2) minimal human intervention to secure safety and visibility.

Among the geosites of Toya-Usu Geopark; Irie Takasago Shell Mound and Kitakogane Shell Mound are included in the Jomon Archaeological Sites in Hokkaido and Northern Tohoku, currently aiming to be listed on the UNESCO World Heritage. As these remains are subject to conservation of both the remains and buffer zones, the Date Board of Education formulated the Conservation and Management Plan for Historical Site Kitakogane Shell Mound (released in July 2015), and the Toyako Board of Education formulated the Conservation and Management Plan for Historical Site Irie Takasago Shell Mound (released in September 2015).

Conservation of Geosites

Conservation practices undertaken within the Toya-Usu Geopark are as follows:

【Voluntary activities by private groups】

- (a) NPO Toya-Usu Geopark Friends
 - (i) Weeding once a year **Mt. Donkoro Observatory Outcrop** on the northeast of Mt. Usu, where people can observe the pyroclastic fall deposits from a pyroclastic cone formed during the Usu stratovolcano period.



Conserves Mt. Donkoro Observatory Outcrop geosite



Removal of fallen timber at Mt. Showashinzan trail (2016)

(ii) Weeding the margins of the walking path around **the summit of Mt. Yosomi**, formed by the 1910 eruption, and pruning excess branches around the observatory, to secure the safety and landscape. This was started in 2014.

(b) Toyako Onsen Cooperatives

When a new hot spring source was discovered in 2014 near the craters of the 2000 eruption, the cooperatives held discussions with the council's academic advisor to construct a service road while maintaining the eruption faults on the Konpira Path; and afterwards installed an interpretation billboard about the faults. In order to prevent the waste of hot spring resources, the water use is strictly controlled by the cooperatives.

(c) Toya-Usu Volcano Meister

When footpath trees fell over in a typhoon in August 2016, Volcano Meisters and the Geopark Friend members removed the trees.

【Activities by the Council/Municipalities】

(a) Changed the plan to straighten out **Prefectural Road No. 2** in order to preserve the faults and its landscape (under construction as of the end of 2016).

(b) Worked with residents to weed the grounds of the **former Toyako Kindergarten** site to allow observation of the ballistic effects of the

2000 eruption (conducted twice a year since 2013).

(c) Weeded **Nishiyama foot crater trail** ('miniature Graben') to allow observation of the 2000 eruption faults (2015-2016).

(d) Weeded the **former National Highway 230** (around the Nishishinzannuma) to allow observation of the 2000 eruption faults (2016).



Conserves the fault observation point on Pref. Rd No. 2



Weeding the grounds of the former Toyako Kindergarten

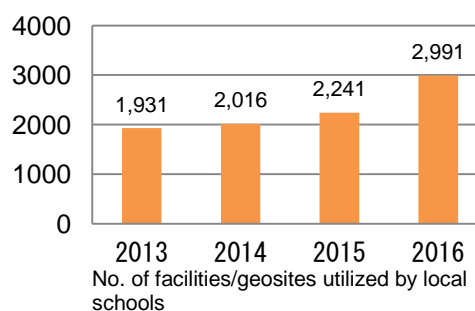
4 EDUCATION IN THE REGION: SCIENCE, DISASTER RISK REDUCTION AND ENVIRONMENT

Education for Reducing Risks from Volcano Disaster

The Toya-Usu Geopark Council values disaster risk reduction education, in addition to promotion practices, they are intending to build the capabilities of people who support the region's future. Since 2012, the Council has dispatched Volcano Meisters in response to local school requests for classes concerning disaster risk reduction, outdoor activities and evacuation shelter experience.

From 2013 to 2016, Volcano Meisters provided 74 lessons to children, speaking about volcano formation processes (as a part of local history class), the history and nature of Mt. Usu through the observation of disaster remains, and methods for managing a shelter.

In Japan, many elementary school teachers are not continuously employed at the same school eight years or longer; thus few teachers



Lesson at Mt. Konpira Footpath

in the region experienced the latest eruption. In place of teachers, Volcano Meisters help school children learn about how to reduce damage from the disaster, and help teachers acquire skills for disaster reduction.

Publication of New PR Materials

Effective geopark promotion necessitates appropriate information provision to the right target audiences. Over the past four years, the Toya-Utsu Geopark has added the following publications to its general pamphlets.

(a) Geopark Guidebook series (2013) (4 issues: No. 00, No. E0¹, No. 06 and No. 07)

- * Designed for local guides and tourists who hope to learn more about the geosites, the books summarise geosites of individual courses.

- * Written by Saburo Mimatsu (Director of Mimatsu Masao Memorial Museum, Council's academic advisor), Tadahide Ui (Prof. Emeritus, Hokkaido University), Wataru Hirose (Chief Coordinator, Geological Survey of Hokkaido) and Volcano Meisters.

- * Describes the nature and process of geosite formation in easy vocabulary. Includes an area map, scenic spot and route descriptions. Available at facilities and convenience stores for 200 yen.

(b) Outdoor Learning Textbooks (2013-2016) (Volcano, Jomon & Ainu Cultures, Birth of Forests, Quiz Disaster Damage Prevention)

- * Designed for school students (Grade 6, high school students), school teachers and local guides, the book series systematize the contents, learnable at the Geopark, under Japan's MEXT course of study guidelines.

- * Written by Hikaru Yokoyama (Associate Prof. of Hokusho Univ. Faculty of Education, Council's Education Committee Chairperson)

- * Guides onsite learning of disciplinary contents. Effective for educational trips to follow science and social studies topics. Contents shareable between teachers and guides. Available online by course, which makes it easier for schools to access the materials whenever necessary, and for guides to meet their demands.

Geopark municipalities also issue materials in cooperation with the Council, designed for scientists and residents. New publication on volcanic eruption include: "A Collection of Photo Documents: Live on the Living Earth" (2016) and "Utsu Volcano Eruption Records from Meiji to Showa Period: the Sobetsu Historical Museum Friends edition" (2016). A publication which communicates the value of life at the Geopark to local communities includes "Time Travel – the Album for Three Generations" (2016).

5 SUPPORT FOR ACADEMIC STUDIES, NEW FINDINGS IN ACADEMIC PAPERS

Support for Academic Studies

From 2013 to 2016, Volcano Meisters and the Council staff guided and/or lectured to researchers of Hokkaido University, Hokkaido University of Education, Hokusho University (Hokkaido), Rakuno Gakuen University (Hokkaido), Shinshu University (Nagano Pref), University of Toyama (Toyama Pref), Waseda University (Tokyo), Tokyo University of Agriculture, Fukuyama City University (Hiroshima Pref),

¹ E means 'English publication'.

Kumamoto University, Earthquake Research Institute of University of Tokyo, Hokkaido Study Group for Japan Society of Engineering Geology, and Japanese Geotechnical Society. Service for excursions to academic congresses includes Hokkaido Science Teachers Study Group, Asia Oceania Geosciences Society Congress 2014, Japanese Archaeological Association Congress in Date 2014,



Excursion at the Geopark, AOGS2014

International Symposium on Safety, Security and Rescue Robotics 2014, International Wildlife Management Congress 2015, and World Archaeological Congress 2016.

The Toya-Usu Geopark also supports the Super Science High School (SSH) Project, which advocates advanced science education at high schools in Japan. Muroran Sakae High School has been designated a SSH, working to establish the science education programme through local resources. Volcano Meisters and academic advisors work with Muroran Sakae SSH to incorporate the geology and the practices (lecture, excursion support and research) of Toya-Usu Geopark into the programme.

Additionally, the Volcanic Study Archives of the Sobetsu Information Center 'i' exhibit some references on volcanological studies in the world for the benefit of researchers, Volcano Meisters and local guides.

New Findings

Over the past four years, a total of 65 new findings on the Geopark were presented in the form of papers and oral presentations (See Appendix). The findings cover the fields of archaeology, biology, volcanology/petrology, pedology, pedagogy, tourism, fisheries science and disaster risk reduction.

In geology, the Geological Survey of Hokkaido Research Organization conducted studies on hot spring sources around Mt. Usu from 2012 to 2015. A drilling survey at Konpira Crater formed by the 2000 eruption led to the discovery of a new hot spring source, which has been used for service at Toyako Onsen hotels since 2014. Meanwhile, other studies were also conducted on the history of Mt. Usu stratovolcano formation, analyzed the internal structure of Mt. Showa-Shinzan and Usu by using muon particles and magnetron/electric conductivity, and analyzed the topography of Nakajima by airplane laser measurement.

In archaeology, since 2015 the Hokkaido Museum and Date City Institute of Funkawan Culture have studied the influence of the coldest period of the little ice age, massive eruption(s) and tsunami on the Ainu people, led by Yuji Soeda, and have excavated the Kamui-tapukopu Remains in Date. They discovered the remains of a crop field before the time of the 1663 eruption, found between the layers of a gigantic tsunami caused by the 1640 eruption of Mt. Komagatake, a volcano located on the other side of Funka Bay, and a layer of volcanic ash from the 1663 eruption. From the remains, the team has been studying the daily life of Ainu people of the time. These findings were presented via newsletters of the organizations and lectures to local populations.

On-going studies include the Jomon culture on the Funka Bay coast (2014-2016), and the recovery method of human activities by using volcanic fluorine concentrations (2016-2018), both led by Tomoya Aono.

6 GEO TOURS AND GEO GUIDE GROUPS

Volcano Meister System and Meister Network

The Toya-Usu Volcano Meister system began in 2008, with the aim of building the capabilities of local people to be well-prepared for future volcanic disasters. Through the system, those who (1) are the residents of the Toya-Usu Geopark region (consisting one city and three towns), (2) have proper knowledge on the volcano and nature of the region, and (3) are recognized as capable of communicating the knowledge/experiences to future generations, may be certified as Volcano Meister.

The occupations of Volcano Meisters include: tourist association employee, Japanese hotel landlady, school teacher/staff, nature guide, mountain guide instructor, curator, visitor centre employee, ropeway operation company's employee, photographer, town assembly member, local Chamber of Commerce employee, Ministry of the Environment ranger, active ranger, independent business person, homemaker and municipal government employee. They range in age from 20s to 80s. From 2013 to 2016, 20 people



Junior HS students experiencing the shelter life (2016)



Geotour for children at Takarada Nature House

were added to the Volcano Meisters' list, and 43 Meisters are actively engaging in activities as of February, 2017.

In 2011, Volcano Meisters set up the Volcano Meisters Network, which enabled them to meet requests for lecturing smoothly and to share knowledge and information with each other effectively.

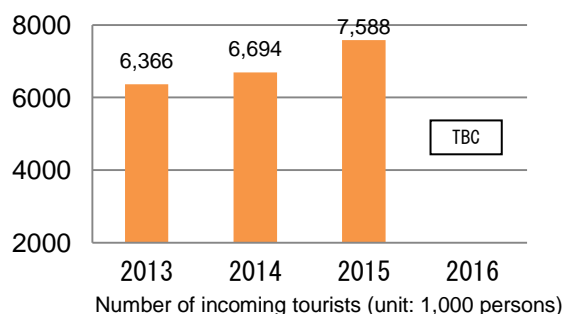
Volcano Meisters and their network take full advantage to organize study groups that communicate experiences on evacuation from eruption and methods for mitigating damage, give lectures for geo-tours, and to promote the Geopark in and out of the region. Meisters who speak English often operate geo-tours for people from overseas or JICA trainees.

From 2013 to 2016, there were 290 lectures given through the Volcano Meisters Network for 5,106 participants. In 2016, the number of Meisters' lecture participants, whether the Meisters spoke within or outside the network capacity, totalled 17,000.

Other Groups on Guiding and Hands-on Experience

Besides the Volcano Meisters Network, there are 16 groups which provide guide services and hands-on experience opportunities. Individual groups are based in geosites or geopark facilities, having served 55,000 visitors in 2015.

In 2012, the Geopark Partnership system was launched to connect guides and tourist operators who are actively committed to Geopark programmes. From 2013 to 2016, 79 members became Geopark partners, totaling 144 as of February, 2017. The Geopark Council organized 31 lectures to equip them with extensive knowledge of the Geopark and the capability to meet visitors' demands.



Since 2012, the Council has partially funded the participation of the Geopark partners in APGN or JGN conferences and workshops. From 2013 to 2016, a total of 23 members were funded to participate in these networking opportunities.

Geo tours have been increasingly organized in Toyoura and other areas outside Mt. Usu over the past four years. This shows that the geo-tours are not only about the active volcano, but also about ancient submarine volcanic activities, the human-earth link, and many other areas of interest.



Geo tour in winter: snow-shoe trekking

7 CONTRIBUTING TO SUSTAINABLE DEVELOPMENT IN THE ECONOMY & COMMUNITY

Promotion of Educational Trips

Toya Usu Region is a well established destination for educational trips in Japan. However, the number of school visitation has become stagnant compared to the 1990s (before the 2000 eruption), partly due to the fierce competition from other tourist destinations.

To address this situation, the region's municipal offices and tourist associations have developed a publicity strategy in Japan's metropolitan and Tohoku (northeast Japan) areas, as well as organized promotional campaigns three or four times a year jointly with the Noboribetsu/Toya Tourism Council and the Hokkaido Tourism Organization. In 2011, a campaign began to promote Geopark resources for disaster risk reduction to schools and travel agencies, with a package of outdoor learning textbooks and Volcano Meisters' guided tours. Although overall arrivals for educational trip continue to decrease, partly due to the declining child demographics, there are an increasing number of schools for learning disaster risk reduction, notably; Yokohama's Makita JHS visitation in 2012.

Since 2013, tourist arrivals to the region have been increasing; exceeding 7.5 million in 2015. With a remarkable increase in Asian tourists, the region has gained a higher popularity outside of Japan.



Briefing session for Sendai and Morioka educational trip operators/organizers, August 2016

Promotion of Local Resources via Book/Cards on the Story of the Earth

In 2014, the Toya-Usu Geopark Council published a picture book on the Geopark, "1 DAY on top of 110,000 YEARS", including pictures that show cross sections of the earth and its geo stories. Intended for adults in the Toya-Usu region, this book tells about geological formations from volcanic activities, the Jomon culture, flora and fauna, farming, fishing and hot springs, all of which are closely connected to the region. It is an anthology of the earth heritage of the Geopark.

Many experts contributed to the book's production: Council academic advisors, nature guides and farming experts, as well as local farmers and fishers, suggested and commented on both the wording and details of the visual



Picture book "1 DAY on top of 110,000 YEARS"

illustrations. Professional illustrations are well-integrated with a story-oriented but easy, plain writing style. It was well-received by community residents.

Through 2015 to 2016, the storybook was developed into story cards, which feature local foods. These cards, packed with gift boxes, describe the unique value of Geopark products. Such 'advertising novelties' have been extended to bags, cards and picture books featuring storybook illustrations.

The 20 story cards tell about:

- (1) potato, beans, wheat, Takarada rice, octopus and scallop (produced in 2015)
- (2) Date-brand vegetables, scallop, apple, corn, burdock, Chinese yam, carrot, red perilla, tomato, pumpkin, celery, flounder, red salmon, and beef (in January 2017)



Story cards

Development of Symbolic Food Menu: Geopark Pizza and Hot Sandwiches

Prior to the development of the symbolic food menu, the Geopark Council made a list of 314 locally produced food ingredients, and released it online. It was determined from the list that a small volume, but a variety of seasonal foodstuffs, are available throughout the year in the Geopark region.

In a new project, the Council combined the foodstuffs with geo stories, to invent casual and tasty meals: Geopark pizza and Geo hot sandwich. In accordance with the guidelines, four restaurants are certified to serve Geopark pizza: Roadside Station Forest 276 Ohtaki, Date; Namihey Pizza, Toyoura; Restaurant Karzz, Toyako; and Parlor Fukuda, Toyako.



Roadside Station Forest 276 Ohtaki, Date

Local Events

The Toya-Usu Geopark has organized events on 'geo-harvests' since 2014, informing residents and operators of the characteristics of local products and proposing to them methods for effective promotion of the products. Also, there are sport- and food-focused events in the region, featuring the Geopark promotion.

- (1) Food fair events designed to promote geo-harvests

December 2014	Geo Cafe in Lake Toya
February 2015	Geopark Pizza cooking class (4 classes)
February 2016	Yakuzen meal workshop (4 sessions)
March 2016	Geo Blessing Talk Session & Cafe (Discussion of local tourism operators, broadcast live on the radio)
March 2016	Five-day event for geo blessings, celebrating the GGN status in ownership of UNESCO (6 sessions)

- (2) Showa-Shinzan International Yukigassen (Snowball Fight)

The event is held annually in February. In 2016 event, a total of 136 teams were entered from Canadian and Japanese regions, with 21,000 visitors. The Geopark installed a public relations booth from 2014 to 2016.

(3) Toyako Marathon

This is held annually in May with 7,400 participants (2016 figure). The Geopark placed an article about the Geopark in the programme booklet.

(4) Hokkaido Two Day March

This is held annually for two days in September with 1,000 participants (2016 figure). Geosites on individual courses were introduced. The Geopark placed an article about the Geopark in the programme booklet.

8 CONTRIBUTION TO GEOPARK NETWORKING IN JAPAN AND THE WORLD

UNESCO Global Geopark (UGG) Networking

No one can ignore the risks associated with geological disasters. It is essential for people to understand the nature of the earth based on scientific knowledge and logic, which may help the entire community reduce possible damage from disasters.

The Toya-Utsu Geopark has long addressed the challenges on how to live in harmony with Utsu volcano, an active volcano which erupts every several decades. Capacity building programmes, such as the Volcano Meister system and disaster risk reduction efforts are two important pillars for the coexistence of the earth and human beings. In the course of the 'globalisation' of Geopark activities, the importance of disaster risk reduction education and capacity building must be more recognized in all Geoparks.

The Toya-Utsu Geopark is a member of UGG Network, and the staff has participated in international, interregional and domestic conferences to present their experiences and expertise. The conferences include UGG International Conferences in Stoneham, Canada 2014 and English Riviera in England 2016; APGN Conferences in Jeju, Korea 2013 and San'in Kaigan, Japan 2015 (See Appendix for details). At the most recent 2016 conference in English Riviera, team staff presented oral and poster presentations in regular sessions, as well as joining as an organizer for a workshop on disaster risk reduction, during which one of the staff made a presentation on the practices of the Toya-Utsu Geopark. Articles were also contributed to GGN Newsletters (2014 ISSUE 01, 2015 ISSUE 01).

UGG Evaluator

In 2016, Mr. Nire Kagaya from the Toya-Utsu Geopark was authorized as an UGG evaluator. At the request of UGG, Kagaya participated in an evaluation mission of Keketuohai Geopark, China.

Contribution to and Networking of APGN

The Toya-Utsu Geopark is also a member of JGN's Capacity Development Project (JCaP). This project aims to (1) assist Southeast Asian countries with their launch of Geopark programmes, (2) develop competent Japanese personnel for JGN's international contribution and (3) foster interactions between Japanese Geoparks. In 2016, the working group invited groups representing prospective UGGs in Thailand, Malaysia and the Philippines to several meetings (Niigata



JCaP meeting at English Riviera

International Forum in July; UGG English Riviera Conference in September; JGN Izu Peninsula Conference in October; and a Tokyo event in December), in which the participants shared the expertise of JGN. Through such efforts, the group addresses issues of individual regions to vitalize the APGN.

Acceptance of Overseas Excursions and Trainees

Another commitment of the Toya-Usu Geopark is to 'sow the seeds' of the Geopark concept in countries where there are few UGGs. In 2016, the Geopark welcomed 50 government employees from the Yongpyeong County of Korea, who wish to be listed in the GGN, in response to an observation request. Also, the Geopark has accepted 121 JICA trainees from 2013 to 2016.

The visual impact of disaster remains is enormous as a reminder of the effectiveness and importance of conserving some of the damage. To those from developing countries, the Geopark impresses their placement of emphasis on the Volcano Meister system and the knowledge of disaster risk reduction education, because such non-infrastructure measures are more effective in reducing disaster risks than infrastructural development.



Acceptance of JICA trainees

Networking with Japan's UGGs and JGN Regions

The Toya-Usu Geopark participates in the annual JGN conference, workshops and working group meetings (e.g., evaluation, international commitment, ODA, disaster risk reduction); as well as dispatching Council staff, local nature guides, and Volcano Meisters to other Geoparks as lecturers. The Geopark invited lecturers from Unzen Volcanic Area UGG (Norikazu Ohno in 2016).



"A pocket of the earth" (2014)

Joint projects with other Geoparks include the production of a tote bag, "a pocket of the Earth", with a commission to a bag manufacturer in the San'in Kaigan UGG region (2014-2016); the production of rock-designed patch playing cards with geo-stories of symbolic stones (2014), logistics promotion between Geoparks (2016) across JGN included eight UGGs (Toya-Usu included). The Geopark has leveraged the Geopark network for the benefit of all stakeholders in educational and economic areas.

Collaboration within Hokkaido

The efforts of Toya-Usu Geopark also include the Hokkaido network with two UGGs (Toya-Usu included) and three JGN members. The Hokkaido Museum, the prefecture's largest museum, hosted a special Hokkaido Geopark exhibition in 2016, attracting more than 59,200 visitors. Coupled with the exhibition, Hokkaido-based Geoparks organized events for children/adults, contributed to media feature articles, hosted geo-tours, and provided complimentary goods; all aimed at improving their brand recognition.



Exhibition "Let's Go To Geopark!" (2016)

In 2015, NPO Geopark Friends organized an overnight interaction session with Mt. Apoi UGG and hosted a joint guide training session with four other Geoparks at Shirataki Geopark in 2016.

9 RESPONSE TO COMMENTS FROM THE LAST REVALIDATION

Up-to-date responses of the Toya-Usu Geopark to the comments pointed out in the GGN revalidation in 2013, are as follows.

“Further work needs to be done to highlight, interpret and promote the relation between humans and the Earth heritage of the region.”

The theme of the Toya-Usu Geopark is the “coexistence with the ever-changing earth”. This has been more significant than ever for all practices of the Geopark, and thus all activities give a strong emphasis to this theme. It is reflected in the storybook project in 2014 (“ONE DAY on top of 110,000 YEARS”) and the story cards project in 2015/2016; stories and episodes are presented with simple vocabulary and illustration to tell how the area is linked to Mother Earth. Through these projects, the Geopark has been systematizing geo stories within the Geopark territory, and further promoting those stories to local communities.



Picture book “ONE DAY on top of 110,000 YEARS”

Further work needs to “spread a more equitable development across all parts of the Global Geopark. ... The whole area should be further developed and new sites (geological, ecological or cultural) and activities be added. The whole area of the Global Geopark needs to be developed, presently the majority of activities are limited only to the area close to Toya caldera and Utsunomiya volcano.”

In the “ONE DAY on top of 110,000 YEARS” book production, the Geopark associated each element within the Geopark region to the volcano.

Also, the Geopark Council encouraged collaboration among Geopark municipalities in the following events:

- (1) Geopark Partnership events (eight in Date, four in Toyoura, eight in Sobetsu and 11 in Toyako)
- (2) Geo-harvest events (three in Date, two in Toyoura/Sobetsu and 10 in Toyako)

Also, interaction projects between guides (seminar, forum, party) motivate the guides to create a new network, which may be difficult for them to do individually during regular activities. This has led to mutual understanding and collaboration among all stakeholders of the Geopark.



Partnership lecture at Funka Bay coast



Seminar to learn the relationship between the earth and food

Further work needs “to improve some aspects regarding international cooperation and promotion of the GGN. ... International relations with GGN members should be enhanced.”

The Toya-Utsu Geopark’s major contribution to the GGN is in disaster risk reduction, due to the fact that the community is uniquely situated in close proximity to active volcanoes. Through disaster remains conservation/utilization and the Volcano Meister system, distinctive activities on disaster risk reduction based on modern volcanology studies and the experiences of residents have been developed.

Such experiences have been presented in past GGN meetings (Langkawi, Shimabara, Stonehammer, English Riviera) and APGN meetings (Hanoi, Jeju, San’in). In 2016’s English Riviera conference, the Council managed the workshop for Geoparks and geo-hazards with Shimabara UGG, during which a staff member presented a case study of disaster risk mitigation and Volcano Meister activities.



Presentation at APGN 2015



Acceptance of JICA trainees in 2016

The Geopark also accepts JICA trainee groups every year from Southeast Asia, Latin America, Middle East and Eastern Europe, who learn of Geopark activities, disaster risk reduction, environment conservation or tourism promotion. They are shown disaster remains preserved at the foot of the active volcano and utilized as a tourism resource or learning material, and learn the effectiveness of disaster risk reduction efforts. Explanations of Geopark programmes to stimulate developing countries, in which there are few Geoparks, raise their awareness of Geopark initiatives.

In 2014, the Toyako Tourism Information Center was renovated to add meeting rooms, where there are regular exhibitions of GGN profile, network activities and Geopark programmes. Such exhibitions are effectively used to augment the Geopark information at training sessions.

These efforts have led to an interaction with the Mt. Merapi region, Indonesia, which is now considering the launch of a Volcano Meister system.

“Special care should be taken of the preservation of the ‘Eruption Memorial Park’, which is one of the best examples in the world of the consequences of volcanic eruptions. This area should be of the highest priority for the Global Geopark management body.”

One good example is the fault conservation on the former National Highway 230. The fault was formed during the 2000 eruption of Mt. Utsu. Although the concrete-paved, stair-shaped faults were clearly visible close-up, visitors could not see them from the path, which is far off-site because of geothermal condition and collapse risks. As the site was not well-maintained and the vegetation recovered, it was hard to observe.

Several years after the eruption, the risks of excessive ground temperature or gas burst has become low. Accordingly, an extension of the path closer to the site has been under consideration since 2014.



Validation of faults (2014)

“Special care should be taken of the promotion of the connections between Earth heritage and evidence of the human history ... such as “Lifestyle of the Ainu People” or the “Jomon Era Residents”.

The close relationship between earth heritage and human habitation is the foundation of today’s community. To focus on this viewpoint, the Toya-Usu Geopark maintains the remains of sites of the Jomon and Ainu periods along the Funka Bay coast as Geopark sites. Archaeological studies have added to knowledge of the lifestyle of the people in those ancient times. To share those new findings with local people, a series of lectures were conducted, such as the Workshop on the Archaeological Site of Kamui-Tapukopu in January 2017.



Kamuichashi (God's Fort), a remains from Ainu culture

The Ainu people have been acknowledged in the global/domestic society. In 2007, the United Nations ratified the Declaration on the Rights of Indigenous Peoples; and the Japanese Diet passed a resolution to recognize the Ainu as an indigenous people the following year. In Shiraoi, in southwest Hokkaido, a national Ainu museum and park for ethnic harmony will be built by 2020.

Hokkaido is the traditional home of the Ainu people. Their culture is characterized by respect for natural blessings and threats, as well as a sustainable lifestyle. There is common ground between Ainu culture and the theme of the Toya-Usu Geopark, “coexistence with the volcano; disaster risk reduction”. Records of Ainu people during the time of the 1663 Mt. Usu eruption is another reference to be integrate into the geo-stories. As a first step, stories of Jomon people’s daily life and the relations between Ainu and unique geology of where they lived, for the picture book “ONE DAY on top of 110,000 DAYS” were chosen.

The English definition, “a natural park where ...” found in “almost all materials of the Global Geopark”, is inappropriate. “It is recommended to change the definition of Geopark” to, e.g., “an area where ...”.

We do not use the term “Natural Park” in English explanations.

“The relation between volcanoes and hot springs should be promoted, including a visit to a natural occurrence of a hot spring.”

There are a few improvements:

- (1) The picture book, “ONE DAY on top of 110,000 DAYS” illustrated the process of hot spring production, and linked the hot spring to surrounding communities.
- (2) The Geopark and municipal executives attended trade shows to market the Geopark as a UGG hot spring resort.
- (3) Eighteen hotels in the hot spring area set up individual promotional booths which showcase the attractions of the Geopark and guide groups.
- (4) Eggs cooked in a hot spring (Geo egg) were produced commercially.



Geopark PR booth in a hotel

10 FUTURE GOALS AND ACTION PLAN

Since being designated and added to the Global Geopark list eight years ago, the Toya-Usu Geopark has improved and coordinated related systems and plans through the production of promotional materials and bilingual interpretations. Further work to verify and improve the current systems and practices is required. Additionally, appropriately responding to changing trends in the Geopark programme and carefully reviewing the current media and system are necessary; or otherwise, it will be difficult to further promote geoparks.

Therefore, the Toya-Usu Geopark intends to spend the first two years of the next revalidation period (2017-2018) on the examination of the following issues:

Improvement and Streamlining of Promotional Materials

In May 2016, the Geopark started a two session workshop at which Volcano Meisters, local guides and the Council discussed guidelines for the wording used on interpretation panels. This encourages local people to be committed to designing interpretation panels for better usability. New guidelines will be based on the workshop discussion, and validation of the guidelines will be secured academically.

Multilingual material production started in 2009 when the Geopark was first recognized by the GGN. A review will be conducted into the accuracy of the information and systematization of the materials to ensure appropriate materials for visitors (tourists, school children, and others).

Revision of the Master Plan

The Toya Caldera and Usu Volcano Geopark Master Plan was formulated in 2012. In the five years since, the situation of Global and Japanese Geoparks has been dramatically changing: Global Geopark became one of UNESCO's official programmes, which now requires the Toya-Usu Geopark to reconsider the policy of activities and the integrity of the plans. This will be an urgent task to work toward during the next four year revalidation (2017-2020).

Reconsideration of the Geopark Guide Certification Process

The Geopark Council recognizes the importance of securing skilled and experienced Geopark guides. Verifying the effectiveness of the present certification process and itemizing the requirements for Geopark guides will be done by the end of March 2017, then a new system of Geoguide certification, which will be more local-based, complementing existing certificate systems will be considered.

Restructuring the Geosite List, Redefining Conservation Classes and Utilization Policy of Geosites

The list of geosites in the Toya-Usu Geopark is based on the application reference made in 2008; since then the list has added new sites. The list must be reorganized as per the current UGG categorization into geosites, ecological sites and cultural sites. Redefining the policies for conservation of individual sites, designation of sites which necessitate the Council's intervention, and for geosite utilization will also be completed.

In the second half of the next revalidation period (2019-2020), reviews made during the first half period, utilizing reviewed media and systems, as well as updating the interpretation panels will be acted on. As well, more schools will be encouraged to utilize the Geopark, priority projects will be designed to increase visitors' satisfaction, and projects based on the action plan will be carried out.

11 CONCLUSION

Toya Caldera and Usu Volcano Geopark will continue to serve as a member of Global Geopark Network to increase the UNESCO Global Geopark brand value, and share with the world the experience and expertise that the region has in living with a volcano, through the UGG network. Collaborating with other active Japanese geoparks will further contribute to the UGG's valued popularity.

For the communities, Geopark practices give them an excellent opportunity to discover the advantages of their hometown. They can maximize the advantages not only to make the community or tourist destinations more attractive, but also to foster bonding and a better life within their community. In the future, the Toya-Usu Geopark will take greater responsibility in networking with UGG and APGN. What must be done is not merely to respond to requests, but to initiate collaboration, which will be rewarding for all, by leveraging the value that the Geopark possesses.

The two greatest strengths of the Toya-Usu Geopark are 'the culture of coexistence of human with volcano and its disasters', and 'the manageability of disaster risks in a tourist destination'. The Geopark will strongly promote these strengths worldwide through the GGN, to create a unique world brand. At the same time, it will accept overseas trainees and observers, as well as offer unique geo-tours by Volcano Masters, to create new interactions in an effort to double or triple the value of the Geopark.



Mt. Showa-Shinzan and Lake Toya

