

## The Experience Learning Program of Sakurajima Geopark

FUKUSHIMA, Daisuke<sup>1\*</sup>

<sup>1</sup>Sakurajima Museum

Sakurajima-Kinkowan Geopark offers various kinds of experience learning programs. In 2013, we welcomed around 5000 students as a school trip. Digging hot spring, volcanic ash clay activity, and creating pizza and its kiln are the popular programs.

These are not just "simple activity" but we give them a twist as to "learn" about the volcano. In digging hot spring program, we explain about the lavas of three different eras and the difference of the vegetation on the lavas. After the explanation, the students experience the hot spring comes out from the sand near the sea shore. Within digging the sand 5cm in deep, the hot spring appears every places in the area, however the color and the temperatures are different depends on the points. We make the students to find the hottest hot spring and give a present to the champion team who found the hottest one. The reason why this program is popular is that it has the contents of both "finding" and "competing". However, there is a difficulty that it cannot be offered in the rain. We tend to go around the Sakurajima by bus and give the tour guide, however students get the bored with when they have plain explanation. Therefore, we are now developing the "escaping game" program that can be offered on the rainy day.

"Escaping game" is an experience-based event that participants gathering one room corporate with each other to escape from the room by figuring out the puzzle with using the clues. This is not only experience-based game but introduce the learning contents about Sakurajima-Kinkowan Geopark so that it will respond the needs of school trip.

We also develop the program named "rogaining" which is the field sports similar to orienteering. The rogaining is the game that group of 2 to 5 people go around the check points written on the map within a time limit and compete the total score. It has the contents similar to treasure hunting, so that the participants can go to the places where they rarely can visit and the minor regional resources.

Sakurajima-Kinkowan Geopark, offers the school trip program with learning and enjoyable contents to make them fulfilling activity programs. Please visit Sakurajima to learn and enjoy them.

Keywords: Sakurajima, Geopark, Experience Learning Program

## Enjoy time travel for 100 million years!! Proposal of educational travels at the Mikasa Geopark

KURIHARA, Ken'ichi<sup>1\*</sup> ; SHIMOMURA, Kei<sup>1</sup>

<sup>1</sup>Secretary of the Mikasa Geopark Promotion Council

The Mikasa Geopark, admitted to the Japanese Geoparks Network in 2013, is located in Central Hokkaido, Japan.

The story of modern Mikasa begins with the discovery of "burning stone" coal in the Horonai district, southeastern part of Mikasa, in 1868. This discovery became an opportunity for forming the coalmine city, and supporting the industrialization of Japan. Moreover, the investigation of underground resources, including coal, also revealed that well-preserved ammonite fossils, that lived 100 million years ago, yielded abundantly.

Hence the Mikasa Geopark is a place where visitors can enjoy "Time travel for 100 million years", and know the evolutionary history of ancient life, and human history into which it developed with coal.

The Mikasa Geopark is now trying to attract educational travels for science education and social studies education. In the presentation, we introduce attribute of the Mikasa Geopark, and propose the educational travels in which students can learn and/or experience in the Mikasa Geopark.

Keywords: time travel for 100 million years, science education, social studies education, educational travel, Mikasa Geopark

## ”Outdoor learning text of Toya Caldera and Usu Volcano Global Geopark” which deepen the learning of the student

YOKOYAMA, Hikaru<sup>1\*</sup> ; TAKEKAWA, Masato<sup>2</sup> ; NAKAYA, Asami<sup>2</sup> ; KAGAYA, Nire<sup>2</sup>

<sup>1</sup>Hokusho university, <sup>2</sup>Toya Caldera and Usu Volcano Global Geopark

Toya Caldera and Usu Volcano Global Geopark is the area that can learn easily ”the activity of the volcano”, ”Remains of the structure of the disaster”, and ”the history of humans living closely together with an volcano”. Therefore students more than 20,000 come as a learning trip every year and perform outdoor learning. And elementary schools, junior high schools and high schools of the whole country use this Geopark as materials of science and social studies and general learning. In addition, there are some guide groups in this area, and the school uses those guides, or teacher guides to own school. However, there were some problems until now. For example, the content of the guidance was different each time and it did not accept the request from a school enough.

So we made texts and learning programs for outdoor learning along the curriculum of the school. These contents are shown on Web site, and every school can use these free. Every school can choose the text depending on a purpose and use it free. In addition, we communicated these contents to the guide groups. And they will guide along these texts if the school request to use this text.

Now, there are three kinds of text ”Let’s feel a change of the earth at Mt. Usu (for elementary school)”, ”Let’s feel the wisdom of ancients that they got from Nature (for elementary school)”, and ”Let’s study plant succession of the forest at Mt. Usu (for junior high school and high school )”.Furthermore, we are planning making of the text” Let’s guess the activity of the volcano from changes of the ground at Mt. Usu”. Each text deepens learning by feeling it from observation of nature.

In this speech, we will introduce much learning contents written in these texts. And we will introduce how to use these texts and how to associate with guide groups. We wish every school come to Toya Caldera and Usu Volcano Global Geopark by school trip. And we wish these texts deepen the learning of every students.

Keywords: school trip, outdoor learning text, educational curriculum

## Utilization of Geopark for high school education - In case of San'in Kaigan Geopark -

MATSUBARA, Noritaka<sup>1\*</sup>

<sup>1</sup>Graduate School of Regional Resource Management, University of Hyogo

Recently, a practicing education program is necessary in a high school education. The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) proposed that it was important to cooperate with a research institute and university in a high school education by education guidelines. But a university and research institute doesn't have a special educational program for high school, and it is difficult to cooperate with a university and research institute for high school. The other hand, a school education is one of important programs in geopark activities. Geopark can offer various educational programs and act as an intermediary between high school and university.

In San'in Kaigan Geopark, we offer various educational programs by cooperating with a university and local research institutes. University of Hyogo cooperates with Toyooka high school in SSH from 2010. We utilized San'in Kaigan Geopark, Itoigawa Geopark, Muroto Geopark, Jeju Geopark and Lesvos Geopark for high school educations.

Keywords: geopark, high school education, Super Science High School, SSH, San'in Kaigan Geopark

## Experience the Excitement of Earth Sciences in the Itoigawa Geopark

TAKENOUCHI, Ko<sup>1\*</sup>

<sup>1</sup>Itoigawa Geopark Promotion Office

Since receiving Global Geopark Certification, the number of school trips to the Itoigawa Geopark has increased. In Itoigawa, school trips are centered on the Fossa Magna Museum (Earth Sciences) and the Chojagahara Archaeological Museum (History and Archaeology). Additionally, consultations are done with individual schools with regard to outdoor excursions, lectures, hands-on experiences, and other activities. Also, if the following study bases are expanded upon, school trip options can be offered even in rainy weather.

### 1. Study Bases

#### (1) The Fossa Magna Museum

An Earth Sciences Museum, it was totally renovated in March 2015 in order to better share the story told by the Itoigawa Geopark's land. Through a variety of exhibits including jade (science, hands-on experience, history, and legend), the Fossa Magna Theater, Dr. Edmund Naumann (the Father of Japanese Geology), stones, minerals, fossils, seismology and more, visitors can learn about the history of the Japanese Islands through resources found in Itoigawa. Video, hands-on exhibits, models, and more have been added to the museum. All panels and videos include English interpretation, allowing the museum to be enjoyed by an international audience. Exhibits are well-suited for study preparation or a concluding summary lesson. The museum also includes a lecture hall (80 seats), class room (80 seats), and a hands-on lab (40 seats), making it equally suited for lectures or hands-on learning. Small groups (5 ? 10) can also use the analytical electron microscope, polarizing microscope, petrographic saw, and other lab equipment. The museum also features the "Fossil Valley" outdoor limestone fossil-hunting exhibit where up to 60 visitors at a time can hunt for coral, sea lily, and similar fossils.

#### (2) Chojagahara Archaeological Museum (5 min walk from the Fossa Magna Museum)

Artifacts uncovered from the nearby Chojagahara Site (Middle Jomon Period, National Historical Landmark) are displayed at this museum. Chojagahara is the site of the world's oldest jade culture, and the museum features exhibits on the collection of jade stones from the coast and rivers, jadeworking, trade, seasonal food sources, pottery, dog?, and more. The Chojagahara Site, with reconstructed pit dwellings and dioramas, is only a five minute walk from the museum. The outdoor activity center beside the site seats up to 40 and can be used for fire-making, bead-crafting, and other hands-on activities.

### 2. Consultation

The above museums have 5 curators (3 Earth Science, 2 Archaeology). They are available for pre-visit consultation, guided tours and lectures, and hands-on activities. Certified Geopark Guides are also available to assist school trips. Contact the Fossa Magna Museum for more information about school trip consultation.

### 3. Itoigawa Area Access

Tokyo Station to Itoigawa Station (Hokuriku Shinkansen, 2 hours), Nerima IC to Itoigawa IC (Expressway, 4 hours), Itoigawa IC to Toyama IC (Expressway, 1 hour), Itoigawa IC to Nagano IC (Expressway, 1 hour), Itoigawa to Hakuba (National Route, 1 hour)

### 4. Public High School (Kanto Area Super Science High School) Example Course

Nagano-Itoigawa-Hokuriku Trip (1 day in Itoigawa). 9:30 a.m. Arrive at Fossa Magna Museum; 9:45-10:15 a.m. Lecture-"The Fossa Magna and the Japanese Islands" History of the Japanese Islands explained using field trip sites; 10:40-11:40 a.m. Fossa Magna Park, Inspection and sketching of the Itoigawa-Shizuoka Tectonic Line, study of connection with earthquakes, study of pillow lava and plate movement from sea to land; 12:00-12:45 p.m. Museum (Lunch and Break); 13:05-13:55 p.m. Seaside Stone Study, Stone Collection (Sedimentary, Volcanic, Metamorphic), Stone Labeling and Composition Study; 14:20-15:10 p.m. Fossil Hunting Coral, sea lily, etc. Students take home fossil collection case; 15:20-16:10 p.m. Museum Exhibit Tour (Review); 16:20 p.m. depart the Fossa Magna Museum

Keywords: Itoigawa Global geopark, School Excursion, Earth Science

## Learn the earth in the Izu Oshima Geopark.

NISHITANI, Kana<sup>1\*</sup>

<sup>1</sup>Izu Oshima Geopark Promotion Committee, <sup>2</sup>Global Nature Club

Izu Oshima is a volcano island, which stands in the Pacific Ocean 120km away from Tokyo. Because of the risk of ship cancel by high waves, there are not many schools, which visit us as a school excursion trip. But Izu Oshima Geopark has the various elements such as volcano, forests, sea, unique industries and lifestyles and the disaster prevention. We are sure that we are able to provide the attractive experiences according to the purpose of the visitors.

Izu Oshima Geopark can provide these following experiences

- 1 It is possible to feel the active volcano and the earth.
- 2 It is possible to consider about the relationship of volcano and waves, wind, rain through the previous points of views.
- 3 It is possible to feel the strength of plants which turn over new leaves every after the eruption.
- 4 It is possible to see the process from a seed to a forest only 30 minutes walk along single path in the mountain.
- 5 It is possible to confirm that all our lives are involved with the earth.
- 6 It is possible to consider the importance to live on the earth from the people on the island who try to learn the disaster prevention and to try to live with the volcano.

After the landslide disaster in 2013 we have storyteller guides about the disaster. We are sure that we can provide some kinds of sightseeing by which visitors can learn about the disaster prevention.

I will introduce some geo-resources of Izu Oshima Geopark based on some examples such as the field trips of SSH, super science high school, and some training camps of the biological club of high school.

Keywords: Geopark, Earth, Disaster prevention, Science, Volcano, Learning

## Place that disasters, history and the blessing of an active volcano can realize - Unzen Volcanic Area Global Geopark

OHNO, Marekazu<sup>1\*</sup>

<sup>1</sup>Unzen Volcanic Area Geopark Promotion Office

Theme of Unzen Volcanic Area Global Geopark (Unzen Geopark hereafter) is "coexistence of an active volcano and human beings". Volcanic eruptions of Mt. Unzen have brought local inhabitants serious disasters repeatedly. However, the people continue living near the active volcano of Mt. Unzen and bring up original culture there. If you visit Unzen Geopark, you can learn why local inhabitants living in Shimabara Peninsula have stay near the active volcano through experiences. In this presentation, I introduce some education plans to learn a relation between active volcano and human beings in Unzen Geopark efficiently.

Keywords: Geopark, Unzen Volcano, Volcanic Disasters, Shimabara Rebellion, Educational Travel, House Accomodation

## Island experience introduction in Amakusa Islands

UGAI, Hiroaki<sup>1\*</sup>

<sup>1</sup>Amakusa Geopark promotion office

The Amakusa Islands, consisting of about 120 islands are located in the southwest area of Kumamoto Prefecture: a beautiful archipelago with geologic and geographic characteristic landscapes and a 100 million year history, not to mention a treasure of ancient fossils offering its visitors a fantastic glimpse into times gone by. A unique culture has been carved out of life on these islands by its inhabitants adding to the many breath-taking sightseeing opportunities. Amakusa Geopark is to show off the diversity of geology, geography, history, culture, industry and ecology in Amakusa with a mind of ecologic conservation and economic growth. Purpose of the Amakusa Geopark are increase in the nonresident population, regional development for increase in the nonresident population, local patriotism, and the commercial activity in Amakusa area, based on good effect of Amakusa Goshoura Geopark activities. We promote the "Amakusa Geopark" for original geopark activity (Amakusa style) and keep the sustainable development in Amakusa area.

There are many important geologic aspects including valuable fossils of dinosaurs, mammals and mollusks in the Goshoura area. There are over 40 educational spots for finding fossils in the area, a fossil park, a show-house of ammonite and others with plates for explanation, not to mention various dinosaur remains. Sea taxi or rent yourself a bicycle takes you to these geosites and short trip programs giving for elementary, school students and tourists, which include taking fossils, learning a traditional fishing method called tontoko-ryo and a home-stay plan from 2001. The Goshoura area was selected as the 'top 100 geologic areas in Japan' in May 2006, Amakusa Goshoura geopark in October 2009 and "Amakusa Geopark" in August 2014.

The purpose of Geopark guide training program, through a lecture and the local training, is aimed for the guide of the local geology and creature of nature, culture and industry. We expect through this program an effect guide authorization, common knowledge of the activity for local inhabitants and the interpreter for geopark which can convey resources in this area to anyone clearly. Geopark guide is important as a diffuser explaining "What is geopark" precisely and is necessary for an action united with local inhabitants or the education spread.

Keywords: Amakusa, experience, Goshoura



## How to Experience and Connect with the Land at Muroto Global Geopark

SHIRAI, Takaaki<sup>1\*</sup>

<sup>1</sup>Muroto Geopark Promotion Committee

Muroto Global Geopark is located on the Muroto Peninsular in the east of Kochi Prefecture. As the land here continues to be uplifted by earthquakes, even now the culture and history of its determined people vibrantly remains. Close to the coastline stand tall marine cliffs topped with flat, wide terrace plains. These marine terraces are symbolic geographical features of the land in Muroto. They were formed by glacial sea level change in the Pleistocene and uplift from earthquakes, causing them to rise around 2m every 1000 years. The terrace plains with the largest surface area were formed in the latest interglacial stage and at some points reach an elevation of 200m. They tell of the scale of uplift that has taken place in Muroto.

One of the features of the Muroto area is how the results of geological uplift have become a part of the peoples' lives. The terrace plains provide good drainage and abundant sunlight, and the people have made extensive use of them as farmland. Also, in the past Muroto prospered as a open sea fishing town, while presently the ports of Muroto are thriving from fresh seafood catches. These ports are known as excavated ports. Here you can see a unique view, where the seafloor of the ports is excavated, and the houses around the ports are around 7 to 8 meters above the water level. This is the result of continuous excavation required every time the land is uplifted by earthquakes. In this way, the people of Muroto have understood the nature of the changing land, and developed methods to live with it.

The greatest charm of the Muroto Global Geopark is without doubt the geotours guided by local residents. Stories from the formation of the land to the activity of the people are called forth by the words of the local guides. Presently there are three geotours on offer at the Muroto Global Geopark.

### <Cape Muroto Guided Tour>

At the tip of the Muroto Peninsula, jutting out into the Pacific Ocean, is Cape Muroto. A promenade stretches along its coastline. Here you get up-close and touch the geology of the Shimanto Belt Accretionary Complex, which provided the first on-land verification for the theory of plate tectonics. 365 days a year you can experience this on a guided tour as you walk through the cape's subtropical and coastal vegetation that is cultivated by the warmth of the Kuroshio current.

### <Mt. Dannotani Guided Tour>

At the Mt. Dannotani Site in the north of Muroto Global Geopark a number of giant cryptomeria grow wild, with trunks larger than 10m in circumference. The locals continue to care for the forest here and as well as cryptomeria, there are a number of other evergreen trees, along with wild deer and monkeys. On this tour, you can observe this ecosystem that flourishes upon land formed by an accretionary complex.

### <Kiragawa Township Guided Tour>

In the east of the geopark is the Kiragawa Township Site. This area has been recognized as an Important Preservation District for Groups of Traditional Buildings. Here you can see the form of a traditional Tosa Domain townscape. From the mid-19th century, the township prospered from the production of Tosa Binchotan charcoal. Now, wherever you look you can see examples of the wisdom of the people in the ways they protect themselves while living amongst the climate of Muroto, with its strong winds and rain.

There is much to witness and experience on these guided tours: the formation of the land at Cape Muroto, the prosperous ecosystem that lives upon it at Mt. Dannotani, and the harmony in which the people live with the land at the Kiragawa Township. The way of life of the people of Muroto is about accepting the changing land, utilizing it and living with it. Japan rests upon a mobile belt, and is prone to earthquakes and volcanoes. This way of life in Muroto might just be a signpost for how the Japanese people should live.

Keywords: Geopark, Muroto

O01-P01

Room:Convention Hall

Time:May 24 18:15-19:30

## Eruption of Nakadake Aso Volcano, continued November 25, 2014, and the correspondence of Aso Geopark

NAGATA, Koki<sup>1\*</sup> ; KATAYAMA, Akira<sup>1</sup> ; ISHIMATSU, Akinobu<sup>1</sup> ; YAMAUCHI, Mariko<sup>1</sup>

<sup>1</sup>Aso Geopark Promotion Council

Aso Geopark has conducted a variety of correspondence about eruption of Nakadake Aso Volcano. In Aso Geopark to have been made to communicate with residents and has made certain achievements. We 're going to the correspondence of the eruption in cooperation with various institutions.

Keywords: Geopark, Regional alliances, Disaster prevention

## Geoeducation and disaster prevention through exploring the Jogashima geosites

KAPUSCIK, Dorota<sup>1\*</sup>

<sup>1</sup>Department of Earth Science, Graduate School of Creative Science and Engineering, Waseda University

The beauty of sea attracts people to visit coastal areas, particularly during summer time when the number of tourists is very high. In Japan, where natural disasters including typhoons and tsunamis occur relatively often, it is important to save the citizens and people during their vacations. However, in nowadays the coastal zones are protected, it is the awareness and proper education on the dangerous disasters most effective measure in saving lives. This work presents results of field study from the Jogashima Island in central Japan, to show an example of using geosites in the purpose of people education that would significantly reduce the tragic impact of natural dangers in popular tourist regions, as well as geological and topographical education.

Jogashima Island is located off the southern tip of the Miura Peninsula, in Kanagawa Prefecture, and is facing the Sagami Bay to the south. Its rugged coastline characterizes well-exposed sediments produced through the accretion of the Neogene Miura Group. Low coastal terrace is formed by uplift during big earthquake in Kato region. This island is one of the best places to observe strata near Tokyo, and many high school and college students use this island for geological field trip. The strata consists of Misaki Formation and overlying Hatsute Formation being in uncomfortable contact. Interestingly, the Hatsuse Formation consists of island-arc bedded volcanoclastics deposited in the deep sea on the Izu Arc side, whereas the overlying Hatsuse Formation of shallow marine scoriaceous sediments from the Honshu Arc. Various deformations features, such as imbricate thrusts, slumps and flow folds, are frequently presented in the sedimentary sequences and illustrate well the dynamism of the Japanese land formation. Considering the significance of these formations, the island has been selected for the list of 100 remarkable geosites in Japan in 2007 and serves as an open-air geological museum in the region.

Presented area and neighboring Misaki Port are famous for local tuna products and well-known for travelers since Kamakura Period, though some lost of tourists interest is observed. Attractive geosites would provide new amusement for travelers, as well as create opportunities for education through geotourism and thus bring important socio-economical benefits for local community. Therefore, this study indicates needs of interest of local communities and geoscientists in constructing interesting geo-stories based on the most significant features for better understanding of the island formation. It also characterizes the actual level of safety performance in the Jogashima area, including evacuation routes, in the context of geotourism development, and then, it provides constructive suggestions how to improve the safety attitudes in this area.

Keywords: geosite, Jogashima, disaster, education, Miura Group

## The activities of Izu Oshima Geopark after the eruption of Ontake-san

NISHITANI, Kana<sup>3\*</sup> ; KAJIYA, Akimi<sup>2</sup>

<sup>1</sup>Izu Oshima Geopark Promotion Committee, <sup>2</sup>Izu-Oshima Resident Office for Volcanic Disaster Mitigation, Japan Meteorological Agency, <sup>3</sup>Global Nature Club

The eruption disaster of Ontake-san last year was a shocking incident for the people who live in Oshima with an active volcano. Eighty percent of the industry in Oshima is tourism and the most important tourist attraction is the crater of Miharayama. We have to think how we can cope with both the safety of tourists and tourism.

If we don't travel near the crater, it will be safer. However, it doesn't mean that we can learn what a volcano is and how we can live with it. The possibility of an eruption from the top of the mountain is still high. We also have the same possibility from other places on the mountain. If we only think about safety, it means we have to give up life on this island.

Thirteen days after the eruption of Ontake-san, we posted a notice at the entrance to the crater. It said "How to keep us safe from an unexpected eruption". Furthermore, we started to lend helmets to tourists free of charge. All tour guides have started to explain how to keep everyone safe. They have always carried a helmet with them during the tour.

Izu Oshima has one of the most developed observation systems of a volcano in Japan. We have one hundred and fifty (150) volcano observation machines in a ninety-one (91) square kilometer area. This means that we can get more detailed information about the mountain, which will reduce the danger of an eruption. On the other hand, we should not forget that it is not completely safe to climb up to the volcano or to live on an island with an active volcano.

The administration of Oshima and members of the Japan Meteorological Agency in Oshima recognize the risk. This is the one of the biggest reasons why the notice was posted and the rental of the helmets free of charge was brought to fruition. This is one of the results of the work of at the Geopark, which has researched the volcano and disaster prevention.

We should know more about volcanoes. It is very important for us to protect ourselves from disasters like an eruption. This is well known to the people on Oshima through work at the Geopark.

As workers at the Geopark, we have learned about past disasters from specialists of volcanology and members of the Japan Meteorological Agency in Oshima. After the eruption disaster of Ontake-san, we thought it became much more important to learn what is happening on the mountain at this time. We invited Prof. Morita of the Earthquake Research Institute at the University of Tokyo, and had lectures twice.

This is a report about the work of Geopark including some opinions, which were given by the participants after the lecture.

Keywords: Geopark, Ontakesan, Disaster prevention, Disaster prevention, Tourism, Volcano

## The School Emergency Educational Support Program making use of Geopark work

NISHITANI, Kana<sup>1\*</sup> ; YAMADA, Mitumasa<sup>2</sup> ; KAJIYA, Akimi<sup>3</sup>

<sup>1</sup>Global Nature Club, <sup>2</sup>Izu Oshima Daiichi junior high school, <sup>3</sup>Izu-Oshima Resident Office for Volcanic Disaster Mitigation, Japan Meteorological Agency

Until 2013, we had several lectures about volcanoes. These lectures included a study in the Volcano Museum for the sixth graders, a study in some Geo Site areas and Miharayama for seventh graders, and a lecture on Miharayama for teachers of elementary schools and junior high schools

From 2014, Geopark workers (hometown section) have provided methodical learning programs on science and emergency for elementary and junior high schools. They have started teaching about volcanoes and emergencies as well. It is expected to improve the ability of teachers.

Although lectures about volcanoes and emergencies were programmed into the education course, we still have some problems. We have to determine a purpose of the programs and then find the best way to teach into the education course. This will help students continue to learn.

It is not easy to secure two hours in a school curriculum for activities like the study in the Volcano Museum. But the importance of emergency education and safety education has been accepted by the board of education. Those educational activities can be programmed into the education course. The terms below made it possible.

1. The mayor recognizes the Geopark as a part of his measures and supports it.
2. A school principal takes part in the Geopark committee and there is a section of the Geopark in the principal committee.
3. The head of the Izu-Oshima volcano disaster measures office has a concrete guiding principle, a methodology, and has appealed and showed details.
4. After the activities, we reviewed them. Some of the opinions given were "Good" or "Necessary". These opinions supported our cause.
5. The Tokyo Metropolitan Government supported our activities. This made it possible to make a study tour of the barrier to control soil erosion and to improve awareness of disasters.
6. The disaster was tragic, but it increased awareness of disaster prevention.

The purpose of the Geopark education in the school curriculum is "To learn Oshima through the scientific factors and disaster prevention."

We have to improve our awareness of disaster prevention. It is also useful to be aware of protecting Oshima and its peaceful life. It is necessary that we love Oshima more, that we know about the disaster prevention, and that we live in peace in Oshima. Therefore, we would like to continue our activities as a Geopark.

The posters we made show the details about the programs of the school disaster prevention support system.

Keywords: Geopark, Disaster prevention, School, Learning program, Education, Volcano

## How is it possible to utilize education of Geopark for disaster management?

NAKAGAWA, Rie<sup>1\*</sup>

<sup>1</sup>Mt.Kurikoma base geopark promotion committee

A study of art and science educates the utilization purpose by this stage, and the Mt.Kurikoma base Geopark plan sets us as sightseeing. Even the inside is that children learn home by the angle of Geopark, and I'm thinking it's possible to be succeeding to experience of an earthquake disaster in the 2008Iwate-Miyagi Nairiku Earthquake. Because the activity by which we're as Geopark for not making a memory of this earthquake disaster weathered, I make them start because it's one of triggers.

When a Geopark declaration was performed in February, 2012, and beginning activity, we shared the recognition that it's "the one by which it's a priority matter to make Mt.Kurikoma base geopark plan permeate through an area", and children grew, it can be understood what kind of place home Kurihara is, and settle as the area activity that more Geopark is proper, I have initiated Geopark education from a memory, the next year and 2013. 11 began education of Geopark modeled after one school elementary school in the city at the beginning, and set a model course of field learning in 2014 using the experience.

The city elementary and junior high schools conducted educational activities to 29 people as environmental education learning program development business by 6 points and 518 people, 41 students in a friendship sister city and the city young people natural science school about JIO education in fiscal year 2014. Time of the overall learning, an educational object utilized schooltime of a grade event time of the protection against disasters and put it into effect because he were elementary and junior high schoolers in the city mainly. They went to sight of Geopark actually and there was a fluctuation in the earth every day by its personal appearance, and though I realized that sometimes brings an accident to a person, it was advanced. Before going out to a field as a device on it, about a hour was learned in a classroom, and I was thinking a flow as local training was important after I understood understanding to Geopark and a mechanism of an earthquake, etc. And got background information but the school which could be carried out actually was limited. Children would like to go next year while concentrating composition in the earth and such device the understanding about disaster prevention is easy to deepen, and to do.

"For quite nice Kurihara, disaster prevention GEO chrestomathy (tentative name)" is being made at present for conscious improvement about disaster prevention. Of two accidents, slope accidents and floods by which this is made with the part which builds Mt.Kurikoma base Geopark, Geopark-like viewpoint and the understanding which is a natural phenomenon in essence are global scale to understand that it's related to disaster management, and where the seen natural disaster spot of frequent occurrence is being narrowe.

O01-P06

Room:Convention Hall

Time:May 24 18:15-19:30

## Disaster Mitigation Education Efforts in the Shirataki Geopark.

KUMAGAI, Makoto<sup>1\*</sup>

<sup>1</sup>Engaru Town Geopark Promotion Department

Shirataki Geopark is located in Engaru, an inland town in the northeast of Hokkaido.  
The northeastern side of the Geopark area is around 20km from the Sea of Okhotsk coast.  
I will introduce disaster mitigation education efforts in the Shirataki Geopark.

Keywords: Geopark, Disaster Mitigation Education

## Mt.Apoi Geopark's Efforts in Elementary School Science Education

KATO, Satomi<sup>1\*</sup>

<sup>1</sup>Mt. Apoi Geopark Visitor Center

### <Introduction>

Elementary school 6th grade students learn about volcanoes in science class unit "The Earth's Structure and its Changes." But in Samani, there are no volcanoes. In Japan, there are a lot of areas with no volcanoes. We considered how to guide children's understanding of volcanoes in non volcanic areas.

According to a questionnaire answered by teachers, 80% of elementary school teachers feel "Geology" is difficult to obtain documents and information for when the teachers teach about regional geological characteristics. More than 50% of elementary school teachers feel that the units "Weather" and "The Earth's Structure and its Changes" are difficult to teach. Many elementary school children can imagine fossils and volcanoes, but they feel it is difficult to consider the Earth's underground structure and its changes.

Here, we introduce the elementary school science education efforts put into place in Samani's neighboring town Urakawa's elementary school. We aim to foster student's understanding of the scale of volcanic eruptions and natural forces.

### <Content>

Urakawa Elementary School 6th grade students spend 11 hours on unit "The Earth's Structure and its Changes" during the school year.

Students learn about geological faults, fossils, volcanoes, earthquakes, geological folds, sedimentary rocks, igneous rocks, and the Earth's underground structure and its changes. Mt. Apoi Geopark supports units "Volcanoes" and "The Earth's Structure and its Changes".

Learning about Volcanoes. We lead lectures on volcanic activity in Hokkaido. The lectures feature Usu Volcano's eruption since it is one of the nearest volcano.

Learning about the Earth's Underground Structure and its Changes. Students went to 2 rocky outcrops in Samani to see in person layers and the different rocks that compromise the layers. Because there is no volcano in Urakawa, students were shown an outcrop made by volcanic ash. Urakawa's outcrops could not be used, but by using a geological map, students could see that Urakawa's outcrops were connected to the ones they saw in Samani.

### <Conclusion>

Students often find it difficult to learn about the Earth's underground structures and its changes, but if they participate in on-site, outdoor learning by visiting local, visible, and tangible outcrops, students can gain a deeper understanding. However, teachers often find it difficult to execute outdoor education because this method of teaching takes a lot of time to prepare. Teachers would like geoparks to offer local geological information, geological materials, and information on outcrop locations for outdoor, on-site education.

Geoparks would like to work with schools to educate children on geological information.

### <Literature>

Research for enhancing science education in Hokkaido. -5th Survey on Science Education in Hokkaido- Study report (2012) Science Education Center attached to Hokkaido Education Research Institute, Hokkaido University of Education.

Keywords: Mt.Apoi Geopark, Geopark, Elementary School Science Education, Volcanoes, unit "The Earth's Structure and its Changes", outdoor education



## A Report of Educational Activities in Yuzawa Geopark

NUMAKURA, Makoto<sup>1</sup> ; HATAYAMA, Ryoei<sup>1</sup> ; SHIBATA, Momoko<sup>1</sup> ; ENDO, Kenji<sup>1</sup> ; KAWABE, Kenichiro<sup>2\*</sup>

<sup>1</sup>Yuzawa Geopark Promotion Group, <sup>2</sup>Network of Earth Science Museums in Whole Akita Prefecture

Yuzawa Geopark Promotion Group (YGPG) carries on educational activities. These programs can be classified into four : Lifelong learning, School education, Workshop for college students and Experiential learning events.

In the early stages of the Geopark promotion activities in yuzawa city, YGPG was doing geotours and Lectures for residents in order to propagate Geopark. From Japan fiscal year 2014, YGPG has moved the focus from it to other. So that, Lifelong learning programs has decreased. YGPG instead of not doing these promotion , do Lifelong learning programs : ” Local studies in Yuzawa” and ” Geosite Study Group for in Yuzawa Geopark” .

School education has increased from next year of Japanese Geopark certification. If you look at the trends in the number of educational activities, It will look like school education has been decreasing. But, schools in Yuzawa city are working on their own learning program in Yuzawa Geopark. YGPG has recorded these activities, *Report on Learning Programs in Yuzawa Geopark* .

Keywords: geopark, lifelong learning, school education

## The effect of learning support to elementary and junior high school in Choshi geopark

YAMADA, Masahito<sup>1\*</sup> ; ANDO, Takao<sup>2</sup> ; UMEZAWA, Mikinao<sup>3</sup> ; IWAMOTO, Naoya<sup>1</sup>

<sup>1</sup>Geopark Promotion Office, Choshi City Hall, <sup>2</sup>Faculty of Risk and Crisis Management, Chiba Institute of Science, <sup>3</sup>Board of Education, Choshi City Hall

### 1. Introduction

Geopark is a unified area with valuable geology and landscape as well as natural environment, history, culture and industry which relate with the earth in the region. In order to spread geopark activities, it is important to conduct educational activities. According to Guidelines and Criteria for National Geoparks seeking UNESCO's assistance to join the Global Geoparks Network (GGN), "One of the main issues is to link geo-education with the local context, thus local students should learn about the importance of their geological heritage inter-related to the biodiversity and local cultural heritage. Creating Earth science curricula for primary and secondary schools, using the local information about geology, geomorphology, physical geography as well as all components of its heritage will help to preserve the Geopark while at the same time reinforcing local awareness, pride, and self-identity".

Therefore, we introduce the learning support to elementary and junior high schools in Choshi. And we also introduce the result of a questionnaire survey about to what extent the people aware Choshi geopark.

### 2. Method of learning support that targets first-year junior high school

Learning support to elementary and junior high schools about the Geopark has been carried out mainly by Ando, one of the authors (Ando, Kasukawa 2013, 2014). Here we will introduce learning support intended for the students for the first year at junior high school. According to the curriculum guidelines of the Ministry of Education, Culture, Sports, Science and Technology in Japan, the objective of the Science(Field Two) in the junior high school is "to enable students to acquire skills for observation and experimentation by making observations and conducting experiments regarding geological events and phenomena, while also cultivating their ability to analyze, interpret, and express the results." And the detail contents related to "Overlapping of strata and aspects from the past" is "to enable students to discover regularity with regard to how strata overlap and expand based on records of these observations which they conduct outdoor and consider how strata are accumulated. To enable students to estimate past environments and geologic age by using strata and the fossils contained within them as clues." Therefore, the method of learning support was as follows.

### 3. Contents

#### 3.1 Visits Byobugaura cliff geo-site and sampling (2 hours)

- Sketch outcrop
- Draw a geologic column
- Take sample from the volcanic ash layer
- Explain about faults, folds and widespread tephra
- Explain how strata at Byobugaura cliff are accumulated
- Explain about coastal terrace and unconformity

#### 3.2 Lectures and observation in the laboratory (2 hours)

- Lecture of "How the strata have been formed?"
- Stereomicroscope observation of the sample
- Observation of sedimentary rocks and fossils
- Summary

### 4. Questionnaire survey about awareness of Choshi Geopark among the students and general public in Choshi city

Choshi city of grade five, grade eight, Municipal High School sophomore and teachers (except the Prefectural High School) targeted for everyone, was carried out a questionnaire survey on awareness of Choshi Geopark in September 2014. In addition, we conducted the same survey among the general public at the hill top observatory at Mt. Atago-yama in Choshi city for three days weekend from January 10 to 12, 2015.

The result show that the percentage of people who responded that they "know" the Choshi Geopark are significant in the group of grade five and grade eight students, which indicate that higher awareness of Choshi Geopark than the grade eleven students and the general public who have not received learning support. It has been found that the learning support program has penetrated to elementary and junior high school students to a certain extent in Choshi city.

---

O01-P09

Room:Convention Hall

Time:May 24 18:15-19:30

Keywords: learning support, geo-education, Byobugaura cliff, questionarie survey

O01-P10

Room:Convention Hall

Time:May 24 18:15-19:30

## Education and Geopark in shikaoi - introduction of junior high school "New Earth Studies" textbooks -

ONISHI, Jun<sup>1\*</sup>

<sup>1</sup>Tokachi shikaoi geopark Promotion conference

In shikaoi, an original consistent curriculum has been carried out over a period of 12 years beginning in 2003.

This program has been carried out in elementary, junior high and senior high schools. This unique education has developed a new subject called "New Earth Studies".

I would like to introduce a textbook for junior high school "New Earth Studies" in this poster.

Keywords: geopark, education, Tokachi shikaoi, textbook

## Research, education, and sightseeing in the Mishimamura village taking advantage of natural sulphur

OIWANE, Hisashi<sup>1\*</sup>

<sup>1</sup>Mishimamura Village

Satsuma Iwo-Jima is located at about 40 km south of the southern tip of the Kyushu Island. Also, the island is a volcanic island on the Northwestern edge of the Kikai Caldera. The eastern part of the island features Iwo-dake volcano, which shows fumarolic and hydrothermal activities. These activities have been benefiting local people, supplying natural sulphur ores for hundreds of years. Recently, we started to use the sulphur ore for diverse purposes, 1) for making fireworks using natural sulphur, 2) collaboration with academic studies, 3) study tour for students, and 4) adventure tour for tourists. In this presentation, I will introduce examples of our efforts to take advantage of the sulphur ore, as a part of a campaign to be certified as a member of the Japanese Geopark Network.

Keywords: geopark, caldera, education, sightseeing, sulphur

## Promotion Activity of Geoparks in Oita Himeshima Geopark

HORIUCHI, Yu<sup>1\*</sup>

<sup>1</sup>Oita Himeshima Geopark Promotion Office

Oita Himeshima Geopark is located about 6 km off the coast of northern part of Kunisaki Peninsula in Oita Prefecture. Himeshima is an island, about 7 km from east to west and about 3 km from north to south. Our geopark is a compact geopark, where geosites are closely located, characterized by Pleistocene sediments and seven monogenetic volcanoes. Since Oita Himeshima Geopark was approved as Japan Geopark in 2013, several promotion activities are conducted for community residents and visitors.

Understanding and cooperation of community residents are necessary for regional development through geopark activity. Himeshima is an island which is comprised of one village. As a result, information concerning geopark is relatively easy to spread and percolate among community. In Oita Himeshima Geopark, one approach to spread information is cable TV programs which are broadcasted to the most residents of island. Information about geopark is effectively broadcasted through TV programs, such as event news and sightseeing guidance including highlights of Oita Himeshima Geopark.

Though about 35,000 tourists visit Himeshima for a year, there are not many people come for the purpose of visiting geopark. Especially many people visit Himeshima on event such as Himeshima Flounder Festival in May, Himeshima Bon-odori in August and Himeshima Prawn Festival in October, for the purpose of enjoy watching Bon dance or eating fresh sea foods. As a promotional activity of geopark, we have conducted free bus tour guide of Oita Himeshima Geopark at the Himeshima Flounder Festival and Himeshima Prawn Festival. In addition, according to the request of group visitors who come Himeshima for business such as workshops and meetings, short time Geotours have been conducted for introducing an overview and highlights of Oita Himeshima Geopark.

As mentioned above, we have carried out several kinds of promotion activities for introducing Oita Himeshima Geopark. The promotion for community residents is important in order to induce positive action by their own. The attempt of free tour with geopark guidance is expected to impress geopark on visitors whose purposes are not for visiting Geopark, even for a short time.

Keywords: Cable TV, Geotour

## Sand painting as a new educational activity -Using the two types of sedimentary rocks

HATANAKA, Takenori<sup>1\*</sup> ; YOSHIKAWA, Hirosuke<sup>1</sup>

<sup>1</sup>Dinosaur Valley Fukui Katsuyama Geopark Promotion Council

In the Dinosaur Valley Fukui Katsuyama National Geopark, Fossil excavation experience is carried out for children and parents. Rocks used in fossil excavation experience are broken into small pieces, and they become unusable. At present, these smaller rocks are used only for repair of puddles and parking lots at parks. This situation is unreasonable for this geopark. We felt very Mottainai (= wasteful). These stones should be effectively utilized for more educational purpose. Also, effective use of the rocks is very important from the concept of conservation of resources. We started sand painting as a new educational activity to lead the interest of children in rocks, regions, and the earth science. This time, I would like to report on such problems and effectiveness with the case of sand painting for an educational activity.

Keywords: two types of sedimentary rocks, sand painting, educational activities, effective utilization, fossil excavation experience

## Application example of geosites for school education in the region of Kunibiki Geopark Plan

TSUJIMOTO, Akira<sup>1\*</sup> ; NOMURA, Ritsuo<sup>1</sup> ; TAKASU, Akira<sup>1</sup> ; IRIZUKI, Toshiaki<sup>1</sup> ; HAYASHI, Hiroki<sup>1</sup> ;  
TASAKA, Ikuo<sup>1</sup>

<sup>1</sup>Kunibiki Geopark Project Center, Shimane University

The area of Kunibiki Geopark Plan is the “ground of Kunibiki myth”, surrounded by the Shimane Peninsula, Mt. Daisen, and Mt. Sanbe. The Kunibiki myth is described in Izumo-no-kuni Fudoki, completed in 733 AD. The story of the Kunibiki myth is that the god pulled the countries of the Korean Peninsula and then formed the Shimane Peninsula by using them. The area of Kunibiki Geopark Plan has traced the history of i) part of the continent, ii) detached from the continent, iii) the creation of the Sea of Japan, iv) volcanism in the Japan Islands, and v) the creation of alluvial plain and brackish lakes. These geological histories are in common with the Kunibiki myth. So, we promote Kunibiki Geopark Plan as merging mythology and geology.

In the area of Kunibiki Geopark Plan, there is the Hii River that familiar with “the Legend of Yamata-no-Orochi” and the “tatara iron-making”. In addition, we can observe turbidite bed comprised of alternation of sand and mud, formed 15-14 Ma. These sites are readily-accessible, and therefore the sites are applicable for the unit of “the function of running water” in fifth grade and the unit of “the structure and change of land” in sixth grade, respectively. On the other hand, teachers find it difficult to use those filed educational materials because of the lack of special knowledge and the difficulty of the use of regional materials. So, Kunibiki Geopark Project Center of Shimane University performed field studies utilizing these geosites for the regional elementary schools in cooperation with the regional education committee.

The sand mining so called “Kanna-nagashi” continued to be used for the tatara iron-making around the Hii riverine system since early times. The evidence can be observed as its remains and the slag in riverine sediment. The fact that a magnet sticks to granite gives a realization that magnetite used for the tatara iron-making is contained in rocks. In addition, the recurrent flooding of the Hii River creates “the Legend of Yamata-no-Orochi”. In sum, this place is valuable as the site where we can learn the perspective of Geopark that the structure and change of land directly connects to life of people and culture.

Keywords: Kunibiki myth, Izumo-no-kuni Fudoki, Shimane Peninsula, Hii River, function of running water, structure and change of land



## Instructional activity of the Naeba foot of a mountain Geopark

SATOU, Nobuyuki<sup>1\*</sup>

<sup>1</sup>Naeba foot of a mountain Geopark promotion meeting

In the Naeba foot of a mountain Geopark, I push forward an instructional activity.

The sixth grader of Tsunan Elementary School learned by a class of the composite learning under the theme of a Geopark for one year.

They went to the museum and heard the lecture about the Geopark and observed the display.

And children went to the geo-site and observed it while hearing the commentary by the guide.

In summer vacation, children carried out a questionnaire to a townsman. There were many people who did not know the Geopark, but the result that the father recognition that was the place where nature and culture were rich had appeared. Children analyzed the result of the questionnaire and thought about activity in the future.

And many ideas were born. I made the production of a newspaper and the picture book, routes of the stamp rally, and, besides, I produced a song and the introduction animation, and announcement was performed in areas.

Many people were impressed, and the song which children made shed tears.

In addition, I introduce the actions such as the observation society of the stone of the riverbank, local brewing, a post office, the inn.

Keywords: the Naeba foot of a mountain Geopark, instructional activity

## Practice of Geopark Lecture for various participants

HASUOKA, Makoto<sup>1\*</sup>

<sup>1</sup>Bandaisan Geopark Council, <sup>2</sup>Mt. Bandai Museum, <sup>3</sup>Fukushima Museum

The geopark has many uses: Students, for example, will be able to utilize it for understanding their environmental geography. Local inhabitants can make use of it as life-long teaching materials and become more interested in their own surroundings. . As for tourism, products and souvenirs related to the geopark can be developed, or attractive tourist guiding can be arranged from new points of view.

On the other hand, because the geopark is not always well-known to everyone, the lecturer always needs to find appropriate contents of the course according to participants. Bandaisan Geopark Council has given delivery lectures for various classes and wishes to make people interested in the geopark. I will introduce some of our practices here.

Keywords: Practice of Geopark Lecture for various participants

## Making up a Geosite Map in a Fun and Interesting Way with Local Elementary School Students

SHIBASAKI, Hiroko<sup>1\*</sup>

<sup>1</sup>Association of Nankikumano Geopark Guides

We often use these words, "easy to understand for an elementary school student" and "enjoyable and interesting" when it comes to a Geopark. But it seems that few Geopark guides can talk in such a way.

Generally speaking, Geoguides or academic members are usually called "teachers" and students are just passive "students", although developed areas have recognized the important role of the Geopark in school education and have achieved good outcomes (TAKENOUCI *et al.*, 2014). However, it is natural that Geoguides should be taught by local children who were born and raised around the Geosites. By doing so, Geoguides will be able to help children learn about geology, topography, climate, creature, history and culture of the region through a program of Geopark studies.

Then, we make a suggestion of this activity to develop a technique for guiding with the idea of elementary school students.

Nankikumano Geopark consists of a city, 7 towns and a village in the southern part of Wakayama. This is a new member of the Japan Geopark Network from 2014. This area consists of three kinds of geological conditions formed by a series of plate movements, namely accretionary prism, forearc-basin sediments and igneous rocks. On these grounds, we can see various features of geological formation, vegetation, ecosystem, culture and history, and their value has already been recognized in the world (YAMAMOTO & TANIWAKI,2014). Therefore, some areas are overlapped with the World Heritage Site, a wetland under the Ramsar Convention and Yoshino Kumano National Park. That is why we already have many guides such as a storyteller and a tourist guide and also have a variety of guide maps and picture maps.

In contrast, Arahune-kaigan Geosite is different from others. Most people don't know about this site: a natural coast on the south of the Uragami peninsula across Kushimoto-cho and Nachikatsuura-cho and a part of Yoshino Kumano National Park.

This presentation tells you the process and effects of making up a Geosite map with local elementary school students in the period of comprehensive learning.

Keywords: Geosite, guide map, Geopark Studies

## Let's find secrets of Kyushu in Shimabara

HASEGAWA, Yoshiomi<sup>1\*</sup> ; COMMITTEE, For outreach activities<sup>2</sup>

<sup>1</sup>Japan Meteorological Agency, <sup>2</sup>Seismological Society of Japan

The Seismological Society of Japan(SSJ), the Volcanological Society of Japan(SSJ) and the Geological Society of Japan(GSJ) manage the children's summer school on earthquakes and volcanoes(<http://www.kodomoss.jp/>) every summer. The 15-th children's summer school on earthquakes and volcanoes was held in the Unzen volcanic area global geopark in Nagasaki Prefecture from August 2nd to August 3rd in 2014. 21 children were actively looking for the secrets of Kyushu into such as scenery of Shimabara peninsula, Chijiwa fault and spring water. Children showed off their own discovered the secrets of Kyushu in Kyushu Geopark Festa on August 3rd in 2014. This program can prompt children to feel the movement of the earth and to find grace and disasters which are brought by volcanoes.

We will report this program, the secrets of Kyushu which were discovered by Children, and achievements of the children's summer school on earthquakes and volcanoes in the presentation.

Keywords: Education for disaster-prevention, Geopark, Shimabara Peninsula



## Interaction of Geopark network by the geo-story

SEKIYA, Tomohiko<sup>1\*</sup>

### Interaction of Geopark network by the geo-story

The Shimonita Geopark located in Southwest Gunma is located in the course which links Kanto to Shinshu. It was the land where a product intersected culture for a long time. On the other hand, a southwest Japanese outer zone and inner zone intersect geologically across the medial line. It is the Geopark where I hid various geological feature phenomena to hold a secret of the Japanese Islands birth in. There are many common stories with other Geoparks simply because it is the Geopark of a miniature garden clogged up with various ingredients of the Japanese Islands.

Through the earth and a connection of the history with the person, it is thought that it has two merits to share other Geoparks and stories. Firstly, The tour visitor between Geoparks can expect it by a guide talking about the story that I shared to a visitor. And it is slightly difficult and can feel the other as the thing which the story of the earth to feel is familiar to by introducing the hometown of the visitor.

In this announcement, I report the common story that we made based on past experience.

Keywords: geopark, Earth science education, Shimonita

## Additional Products of Toya-Usu Geo-Stories

TAKEKAWA, Masato<sup>1</sup> ; TANI, Takashi<sup>1</sup> ; KAGAYA, Nire<sup>1\*</sup> ; HATA, Yoshiaki<sup>1</sup> ; NAKAYA, Asami<sup>1</sup> ;  
SASAKI, Hikaru<sup>2</sup> ; SASAKI, Mayuko<sup>2</sup>

<sup>1</sup>Toya Caldera and Usu Volcano Global Geopark Council, <sup>2</sup>sesensitka

Toya Caldera and Usu Volcano global geopark is a volcanic geopark located in Hokkaido in northern Japan. We can find a lot of hidden tales "Geo-Stories", associated with the activity of the living Earth when we focus on the different aspects of local industry, people's livelihood, and the natural habitats of living things in our geopark.

In 2014, Toya-Usu global geopark produced the picture book Toya-Usu Global Geopark Storybook "1 DAY on top of 110,000 YEARS" in order to comprehend the relationship between the worlds above and under the ground world. It is edited to include easy-to-understand text and illustrations to reach local people of all ages.

In 2015, additionally we produced new products "The Geopark Story-Big-size-book", "The Geopark Adventure Cards", "The Geopark Tote Bag", and "The Story Cards of the Geopark Products".

We are promoting our geopark in a broad range by using these products based on the world view of the picture book and hopefully we can let all the residents know our "Geo-Stories".

Keywords: Geo-harvest, residents, Geo-Stories, picture book

O01-P21

Room:Convention Hall

Time:May 24 18:15-19:30

## The Exhibition of the Geo-harvest in Toya-Usu Global Geopark

TAKEKAWA, Masato<sup>1</sup> ; TANI, Takashi<sup>1</sup> ; KAGAYA, Nire<sup>1\*</sup> ; HATA, Yoshiaki<sup>1</sup> ; NAKAYA, Asami<sup>1</sup>

<sup>1</sup>Toya Caldera and Usu Volcano Global Geopark Council

Toya-Usu global geopark is a volcanic geopark located in Hokkaido in northern Japan. "The Exhibition of the Geo-harvest" is holding in Toyako tourist information center from Dec 2014.

The most popular corner in the exhibition is "The Various of Local Products from JGN Members". This exhibition provides you an actual feeling of possibility which geopark movement can make a new charm and add an extra value for the regional products and affect stainable regional development.

Keywords: JGN, Geo-harvest, residents, Geo-Stories

001-P22

Room:Convention Hall

Time:May 24 18:15-19:30

## The Power of a waters:It's a natural carver

KUDO, Hidemi<sup>1\*</sup>

<sup>1</sup>Promotional Meeting for Happo-Shirakami Geopark

Happo-Shirakami Geopark area are situated in the Japan seashore. The sea waves sometimes attack many rocks surrounding areas.

As those action. beautiful carves were made here and there on the seashore. For instance,“Sphinx watching over the Shirakami-Sanchi” ,“Fesher rock” and more or so.

In addition the terrace formations and beautiful valleys were made in the place.

Keywords: World heritage area, The power of a water, Sphinx watching over the Shirakamisanchi



## The Haiku Poem Meeting in the Geopark -A new approach by Hakusan Tedorigawa Geopark

HIBINO, Tsuyoshi<sup>1\*</sup>

<sup>1</sup>Hakusan Tedorigawa Geopark Promotion Council

The area of Hakusan Tedorigawa Geopark is same area of Hakusan City Ishikawa Prefecture that have from Hakusan (altitude is 2,702 meters) to the Sea of Japan. We are connecting variety of sites and things like geological features, the living thing, and the culture, with the journey of water and rocks that continues since the past as the theme.

This time I will report about Hakusan Tedorigawa Geopark Haiku Meeting that was held in July, 2014. This is a new approach by the Hakusan Tedorigawa Geopark.

The Haiku Poem is made based on nature four seasons and life in the region. And it is just related Geological history of the region. It can be thought that the haiku is one of expression and enjoyment of Geopark.

Keywords: Hakusan Tedorigawa Geopark, Haiku Poem, Chiyo-jo

## Learning Geopark through cooking geopark-symbol-shaped Shinko

ICHIHASHI, Yayoi<sup>1\*</sup>

<sup>1</sup>Geopark Promotion Office Social Education Division Sado City Board of Education

Actually, the promotion of Sado Island Geopark doesn't go well for locals yet, especially for children and their parents. So, we arranged an event for these children to learn Geopark with cooking a local specialty.

We chose one of the local traditional dishes called Shinko for the cooking session. Shinko is a steamed rice dumpling. Traditionally, we cook it and decorate our room with it for seasonal festivals. We use locally-grown rice flour and dye it with food colorings. Then, we form it into various shapes such as flowers or birds with a mold. The mold is also called Okoshi-gata. We made our own mold, which is made of wood and shaped like the symbol of Sado Island Geopark, to make one and only Sado Island Geopark Shinko.

The other day, we visited a nursery school and performed a picture-story show. We taught them what the symbol really means and how the earth and food connect with using the picture-story there. These children seemed to be really interested in our story which could tell a connection between local foods and the earth.

Sado Island has a lot of local specialties and traditional performing arts, so we can make use of these traditions in order to show people the close relationship between their lives and Geopark. It must be the best way to promote Sado Island Geopark here for locals. At the same time, it can be a good opportunity for them to know their traditions better.

Thorough this experience, Children enjoyed learning Geopark and we could show them what Sado Island Geopark is like and what it means for them. We think that the very first fun experience of learning Geopark must be a good effect to learn Sado Island Geopark more when they go on to the next stage of education. That is why we must develop further educational programs for each generation as soon as possible.

Keywords: Sado Island, Geopark, local traditional dish

001-P25

Room:Convention Hall

Time:May 24 18:15-19:30

## Hakone Geopark -The development of regional specialties.

AOYAMA, Tomofumi<sup>1\*</sup>

<sup>1</sup>Hakone Geopark Promotion Council

The Hakone Geopark Promotion Council, established in 2011, consists of 72 affiliates including educational institutions, volunteer groups, a wide variety of companies and NPOs in the area. Each organization works for Geopark's activity not only independently but also cooperating each other.

For instance, some affiliates launched a committee to develop Hakone Geopark's regional specialties. 15 local specialties which satisfied specific conditions were chosen among the public. It is our next task to promote these products.

Keywords: Geopark, Hakone, volcano, regional specialties

## A system of authorized products of the Mikasa Geopark

SHIMOMURA, Kei<sup>1\*</sup> ; KURIHARA, Ken'ichi<sup>3</sup>

<sup>1</sup>Secretary of the Mikasa Geopark Promotion Council, <sup>2</sup>Regional Development and Geopark Promotion Division, Mikasa City Office, <sup>3</sup>Mikasa City Museum

The Mikasa Geopark has put a system of authorized products of the Mikasa Geopark from 2014, to promote local development within the area of the geopark. The system is, 1) to invite souvenirs and foods that can imagine attributes of the Mikasa Geopark, 2) to evaluate these products under a certain criteria, 3) to approve as authorized products of the Mikasa Geopark, and finally 4) to increase buying intention of tourists. Moreover, we also expect that the system gives commercial and industrial people an opportunity to take part in the geopark activities.

Now the 22 authorized products are selected by the examination board held on five times. The special promotion of these products are taking effort on the website and SNS site (Facebook) of the Mikasa Geopark, and are used preferentially in the geo-tours and geo-events (e.g., lunch box).

In the presentation, we introduce the system of authorized products of the Mikasa Geopark, and discuss the results and effects.

Keywords: local development, authorized products, development of new products, geopark activities, Mikasa Geopark

## New style of pilgrimage. (Chichibu Geopark activities.)

MIYAGI, Satoshi<sup>1\*</sup>

<sup>1</sup>The Chichibu Geopark Promotion Council

Chichibu area is a small basin located in the west of the Kanto Plain.

It's easy to access from Tokyo and has rich natural environment. That's why so many people visit here.

Chichibu is famous as one of the industrial city thanks to the timber and the limestone which is a material for the cement, and plays a part in a modern Japan.

The sericulture also has flourished and famous for silk textile as "Chichibu Meisen".

In '70s, Chichibu changed from an industrial city to the countryside which soothes people with its rich nature, local festival, etc.

Historically, the cooper found in Chichibu offered to the Imperial Court in A.D.708, and many famous people such as Dr. Edmund Naumann came to Chichibu for their geologic field work.

Now, Chichibu is called the cradle of the Japanese geology.

In addition, Chichibu is well-known as one of pilgrimage, "Fudasho", in Japan.

Last year, in 2014, was a special year once every 12 years to open their principal objects to the public, and we offered new style of pilgrimage which was collaborated with Geopark.

These activities interested many people in Geopark.

Chichibu Geopark Promotion Council continues to provide various activities such as model courses to visit, videos, maps of Geo-sites, etc.

Keywords: Chichibu area, pilgrimage, Fudasho, the cradle of the Japanese geology



O01-P28

Room:Convention Hall

Time:May 24 18:15-19:30

## Possibility of coming geo tourism visible from the questionnaire survey conducted in Shikoku Seiyo Geo Guide Network sub

MAKITA, Takanori<sup>1\*</sup>

<sup>1</sup>Sikoku Seiyo Geopark Promotion Council

Founded the Shikoku Seiyo Geo Guide Network in July 2014. Rather than only Geo guide, a person or interested in Geopark, and is configured former teacher, in a wide range of members of the 30s ~70s, such as those of Seiyo live outside. To the network members in December, I went a questionnaire for future geo-guide business. I tried to explore the possibility of as direction and future of geo-tourism with respect to the incoming Geo guide training that seen from there.

Keywords: Geo guide, Geotourism, Geopark, Ehime, Seiyo

## The possibility of the Geopark in the marginal villages

HIRANO, Koudai<sup>1\*</sup> ; FUKUDA, Masashi<sup>2</sup>

<sup>1</sup>Nankikumano Geopark, <sup>2</sup>Nankikumano Geopark

There are a lot of beautiful villages in Wakayama Prefecture. Kitayama Village is the only municipality which is a detached land, surrounded by Mie Prefecture and Nara Prefecture. It is famous for jabaras and river-rafting.

In fact, there are a few detached lands except for Kitayama Village. One of them is Shimazu, Kumanogawa-cho in Shingu City. Sasabi, Kumanogawa-cho is also a small village in a remote place, though it is not a detached land.

Shimazu and Sasabi are included in Nankikumano Geopark and have some Geosites. Shimazu has a population of 15 people and 8 households. The population aging rate is about 67%. Sasabi has a population of 30 people and 20 households. The population aging rate is about 87%.

Almost nothing has changed in these areas since a few decades ago, but one thing has changed. It is the fact that the population has been decreasing. These areas might disappear and be forgotten by us after several years. Even people in Shingu City do not know where these areas are. That is why we call them the marginal villages.

Young people move away from their hometowns for a variety of reasons. As a result, the rate of population aging accelerates in many villages. Some local people engage in various activities to do with such villages.

What could we do with the marginal villages through the Geopark activities? What has changed? Then what can we do from now on? We will explore the possibility of the Geopark in the marginal villages.

jabara: a citrus fruit made specially in Kitayama Village

Keywords: marginal village, geopark, population aging, Kitayama village, shimazu, sasabi

## AmakusaGeopark : A 100 million year record

UGAI, Hiroaki<sup>1\*</sup> ; HASE, Yoshitaka<sup>2</sup> ; HIROSE, Koji<sup>2</sup>

<sup>1</sup>Amakusa Geopark Promotion Office, <sup>2</sup>Goshoura Cretaceous Museum

The Amakusa Islands are located in the southwest area of Kumamoto Prefecture: a beautiful archipelago with geologic and geographic characteristic landscapes and a 100 million year history, not to mention a treasure of ancient fossils offering its visitors a fantastic glimpse into times gone by. An unique culture has been carved out of life on these islands by its inhabitants adding to the many breath-taking sightseeing opportunities. The purpose of the AmakusaGeopark is to highlight the diversity of geology, geography, history, culture, industry and ecology in Amakusa with a mind of ecologic conservation and economic growth.

The geologic history of the Amakusa area began about one hundred million years ago, when some granitic magma intruded into the deep underground in the eastern area of Amakusa Islands resulting in uplifting and the formation of an ancient land development. Various ancient life forms flourished both on this ancient coastal area and in the sea.

After the extinction of the dinosaur, the Amakusa area underwent a repeated uplift and subsidence where its palaeoenvironmentchanges from deep-sea floor to terrestrial, and was under a tropical climate in the Eocene(50 to 40 million years ago). Intrusive rocks originated from felsic and intermediate magma intruded into the Paleogene strata of Amakusa Islands sometime during the early Miocene.

At the Amakusa Islands, the Cretaceous and Paleogene rocks were tectonically deformed due to the spreading of the Japan Sea crust forming three distinct synclines and two anticlines in the area.

In the Last Glacial period (about 20,000 years ago), the human hunt for animals such as deer and ancient elephants flourished on the plains and in the forests of Ariake and Yatsushiro sea areas. Modern humans settled on these coasts from about five thousand years ago. At the end of the 16th century, western culture began to blossom in the Amakusa area due to the geographical advantage of facing the East China Sea. After the Amakusa Rebellion, people began to exploit underground resources working in coal, ceramic and stone mines which lead to the development of stone masonry in the 20th century.

The Amakusa area is currently focusing on new regional development promotion using the AmakusaGeopark as its prime vehicle of education, research and public interface.

Keywords: Geopark, History, A 100 million year



## Attractive collaboration of global "peridotite geoparks"

NIIDA, Kiyooki<sup>1\*</sup>; HARADA, Takumi<sup>2</sup>; KODAMA, Masatoshi<sup>2</sup>

<sup>1</sup>Hokkaido University Museum, <sup>2</sup>Mt. Apoi Geopark Promotion Council in Samani Secretariat

Mt. Apoi is located at the southern end of the Hidaka mountains, and composed totally of peridotites derived from the upper mantle of the Earth's interior. The geological history of the uplifting of the Mt. Apoi peridotites has been explained as a westward thrusting of the North American plate on the Eurasian plate during the building stage of the Hidaka mountains (Niida, 1999, 2010). Mt. Apoi geopark's appeal is summarized with the main theme 'A story of gifts from deep inside the Earth connecting land and people together'. The first subtheme is on peridotite, which is aimed at the interior and the dynamic movement of the Earth. Here are some 'peridotite geoparks' in the world, which are organizing geosites of peridotites, as follows:

1. Sesia-Val Grande Geopark (Italy): Orogenic lherzolites are exposed in the Ivrea-Verbano zone in NW Italy. The Balmuccia and the Finero peridotites are well studied as well as Horoman peridotites of the Mt. Apoi geopark.
2. Geopark Harz Braunschweiger Land Ostfalen (Germany): The type locality of 'harzburgite', which represents a peridotite type formed after a high degree of partial melting, is organized as geosite (No. 100) in a mountain valley.
3. Lands of Knights Global Geopark (Portugal; Terras de Cavaleiros Geopark) has become a new member of the global networks in 2014, organizing many geosites in the area of very old ophiolite complexes generated during the European Variscan orogen (560~245 Ma).
4. Oman is also planning a global geopark. Oman ophiolite is well known as a representative ophiolite complex in the world, showing a perfect succession of the oceanic lithosphere from the upper mantle to the crustal sections.
5. Global geoparks organizing geosites with peridotite xenoliths: (1) Jeju Island Geopark (Korea), and (2) Azores Geopark (Portugal), which are both on volcano islands, have beautiful geosites of lava including a lot of peridotite xenoliths.

The above 'peridotite geoparks' are all organizing some excellent geosites of peridotites derived from the upper mantle of the Earth's interior. Through geosites containing peridotites such as orogenic lherzolites and ophiolitic ones, these geoparks allow visitors to experience large-scale global movement and the history of the Earth's dynamic changes from the past to the present. In this presentation, explore the goal of Mt. Apoi Geopark working together with the 'peridotite geoparks' in the world in order to share world-wide the fascinating mutual themes of the Earth's interior and the global dynamic movement.

Keywords: Mt. Apoi Geopark, peridotite, upper mantle, magma, Earth's interior, global dynamic movement

## A geological history of the Oshima peninsula, southern Hokkaido, Japan - The tentative plan for "Yurappu Geopark"

OYA, Shigeyuki<sup>1\*</sup> ; KATOH, Takayuki<sup>2</sup> ; YONEJIMA, Mayuko<sup>2</sup> ; TAKAHASHI, Shizuka<sup>3</sup> ; AKAI, Yoshinori<sup>3</sup>

<sup>1</sup>Yakumo education committee, <sup>2</sup>Earth Science Co.Ltd, <sup>3</sup>The Association of Geopark Plan, in Yurappu

Yakumo-cho is a town that has the chief industries of the dairy farming and the fishery which owns the two seas of the Pacific Ocean and Sea of Japan, being in the narrowest part in Oshima Peninsula.

Since 2012, it is doing an activity while the geopark conception preparatory meeting of the private base gets the support from Yakumo town, too.

The tentative plan for Yurappu Geopark is in the process of being selected geo-site Yakumo in the entire as its range. Last time I introduced the movement of people to see through Archaeology as one of the main theme. This time, I want to introduce geo site to learn about the origins of the Oshima Peninsula.

1.Oshima Peninsula is made from 200 million years ago stratum.

Geo Site:Mt. Yurappu and Tatehira

2.Magma of granitic rocks occurs in 100 million years ago.

Geo Site:Tatehira and Hiratanai river

3.Oshima Peninsula away from the continent to 30 million years ago, made the Sea of Japan.

Geo Site:around Shinkansen Tateiwa tunnel.

4.The reason for dykes of dolerite (dolerite) is connected to the north-south direction.

Geo Site:Under the Tateiwa bridge.

5.Oshima peninsula rose by being pushed to the east and west.

Geo Site:Tateiwa park,Oka no yama and Yurappu river.

Keywords: The tentative plan for Yurappu Geopark, the Oshima peninsula

## Virtual Geotours in Mine-Akiyoshidai Geopark Plan

OBARA, Hokuto<sup>1\*</sup> ; YAMAGATA, Tomoko<sup>1</sup> ; WAKITA, Koji<sup>2</sup>

<sup>1</sup>Mine-Akiyoshidai Geopark Promotion Council, <sup>2</sup>Yamaguchi University

### 1. Introduction

The geopark activities in Mine-Akiyoshidai area located in the middle western part of Yamaguchi Prefecture have been based on "**Mine-Akiyoshidai Geopark Plan**" decided in last April. We give a presentation about Virtual Geotours along Geostories in our area.

### 2. Theme

The theme of this plan is "**The history of the earth and the life to breathe on the karst plateau: For harmony between the nature and culture**". There is the karst plateau "Akiyoshidai" largest in Japan in our area central part. The Akiyoshidai limestone plateau where a limestone pillar and a doline (Conical hollow) are seen in consists of the coral reefs about 300 million years ago. The Akiyoshidai has been used in picking grass and cultivation as a place of the common land of neighboring inhabitants than old times. In Akiyoshidai, grassland is maintained for several hundred years by performing mowing and igniting regularly. This theme was set under the following ideas; the inhabitants and tourists know the history and the present of Akiyoshidai, and connect local nature and culture with the future.

### 3. Geosites and Geostories

We set 34 Geosites, 3 base facilities, and 11 related facilities. We will determine a maintenance plan about the Geosite in future. The base facilities are placed to become the focal point of geopark activities, while the related facilities are places to introduce local nature and culture. Geostories are composed of 5 past big events in geologic time scale and 1 thinking about the local future.

Keywords: **Mine-Akiyoshidai Geopark Plan**, Akiyoshidai, karst plateau, geopark, Mine City, Yamaguchi Prefecture

## Consideration of geosite Utilization aiming at wide area cooperation: Case of Sanriku geopark

HASHIMOTO, Tomoo<sup>1\*</sup> ; ISOMAE, Sayaka<sup>1</sup> ; ITO, Taku<sup>1</sup> ; TAKEFUMI, Shimomukai<sup>2</sup>

<sup>1</sup>Chuo Kaihatsu Corporation, <sup>2</sup>Sanriku geopark promotion conference

Sanriku Geopark consists of 16 cities, towns and villages in 3 prefecture. Activity in Geopark can see the difference between the area. That's here because of the case that the damage of the Great East Japan Earthquake is different.

On the other hand, the story of the wide area that can enjoy Sanriku Geopark widely is necessary to promote activity more.

In this report, we introduce the example that examined a wide area story about "iron".

Keywords: Geopark, iron, Wide area cooperation

## Age of Hachirogata layer, which is estimated from the mollusc fossil

SHINDO, Tomoya<sup>1\*</sup> ; WATANABE, Akira<sup>1</sup>

<sup>1</sup>Ogata-Village Board of education

In 2011, Oga Peninsula-Ogata Geopark was certified by the Japan Geopark Committee for the first in the Tohoku district, eastern Japan. In Oga Peninsula region, a lot of strata showing the geological history of 70 million years are exposed, including the big event in the formation of the Sea of Japan. On the other hand, Ogata region, which is reclamation land, has an important theme how the relationship between human lives and alternation of nature or land use.

In order to understand the characteristics of Geopark in Ogata region, opportunities to learn the geohistory of Hachirogata is required. However, in the reclaimed Ogata region, there is no outcrop, such as those found in the Oga Peninsula region. Therefore, to deepen their understanding of the geohistory of Ogata area, we tried to outcrop the stratum, and to display the samples peeling off outcrop with obtained many information at Polder Museum

This time, to perform radioactive dating for fossil that has been collected at the time of specimen preparation, will be considered consists of again Hachirogata.

Keywords: Hachirogata layer, Geology, Dating, Fossil

O01-P36

Room:Convention Hall

Time:May 24 18:15-19:30

## Lessons for the public in Minami Alps Geopark

KASUGA, Hiromi<sup>1\*</sup> ; KOBAYASHI, Ryuta<sup>1</sup> ; FUJII, Riyeko<sup>1</sup>

<sup>1</sup>Minami Alps Geopark Conference

Some of the lessons held for the public last year are going to be reported.

Keywords: geopark, lesson, public

## Geographic History of the Purple Mountain and Kasumigaura Lake and the Life Carried on to the Future

SHIBAHARA, Toshitsugu<sup>1\*</sup>

<sup>1</sup>Mt. Tsukuba Area Geopark Council

Mount Tsukuba is located in the northeast of Kanto Plain. From the distance, the mountain looks like a single peaked mountain which is a rare view in Kanto area. The mountain is called "Shiho", meaning a purple mountain, since the color of the mountain surface looks purple in the evening reflected by the setting sunlight.

The crest has steep double peaks constructed of solid gabbros which were intruded and risen approximately 75 million years ago.

The mountainside (declive) and the base of the mountain (piedmont) are covered with debris of gabbro and weathered debris of granite.

The gentle curves of the mountain skirts make its mountain shape beautiful. Additionally, as the northeast tip of Kanto Plain, the surrounding regions centering the Kasumigaura Lake make the scenic beauties of "Suigo" with broad platforms and lowlands formed by the 4th period of the sea level change.

Therefore, blessed with the "geological inheritance", the Mount Tsukuba is renowned as we have an expression, "Mt. Fuji in the west, Mt. Tsukuba in the east." So, the mountain has been regarded as the landmark of Kanto. Also, even competing with Mt. Fuji, which has just been approved as one of the World Heritages, the mountain worship and many Japanese traditional culture and art have originated in this area.

The activities typified by the water transport in Kasumigaura Lake, stone manufacturing and pottery, have had developed its own style independently even though the region was located near Edo (Tokyo). It is particularly worth noting that they supported the modernization of Japan. Inada granite was used for architectures such as the Diet Building, Bank of Japan and Nihon-bashi Bridge in the Meiji Era.

In the modern age, Tsukuba Science City is established on the platform at the base of Mount Tsukuba. The area is vitalized from both inside and outside Japan and has started to create the future.

Evaluating the features of this area-the nature, the history and people's activities-from the geological and geographical points of view, each element may not seem to relate to each other. However, once you change your perspectives, you can find fascinating, charming and attractive aspects in them.

So, in Tsukuba Area Geopark, we view every geographical and geological feature of this area as a series of the eternal history and rediscover the value of the geological features of this area, share it with people inside and outside of the region and carry on to the future.

## The theme of the Hagi Geopark Plan -The geological history of the Hagi district,SW Japan

ITO, Yasuko<sup>1\*</sup> ; FUKUSHIMA, Yasuyuki<sup>1</sup> ; HIRATA, Toshiro<sup>1</sup> ; HIGUCHI, Naoki<sup>2</sup>

<sup>1</sup>Geopark Promotion Office, Hagi City, <sup>2</sup>Hagi Museum

We will introduce the interesting geosites of the Hagi Geopark Plan that can learn the events of the Earth's history 300 million years.

The Hagi Geopark Plan covers the Hagi City, northern part of Yamaguchi Prefecture. More than 95% of this district consists of the rocks and strata related to the magmatism in various age.

Earth's history of the district can be divided into eight periods.

1) About 300 million years ago; Limestone (coral reef) which is oldest strata in this district was formed on the sea mount (volcanic island) located near the equator.

2) About 100 million years ago; The basement of the Hagi district, which was an eastern margin of the Asian Continent, was formed by the violent and voluminous caldera-forming eruption of silicic magma.

3) About 43 to 30 million years ago; Violent and voluminous eruption of silicic magma was occurred in the limited area and then formed the caldera.

4) About 22 to 15 million years ago; The eastern margin of the Asian Continent was fractured. A part of the continent moved to the south and formed the foundation of the Japanese Islands.

5) About 16.5 million years to 15 million years ago; The strata consisting of conglomerate, sandstone and shale deposited in the Sea of Japan. The gabbroic (basaltic) magma intruded in these strata and changed the strata into the hornfels.

6) About 12 million years ago; Basaltic magmas formed by partial melting of the upwelling mantle diapir erupted from the fissure and form the large lava plateau.

7) About 2 million years ago to 10,000 years ago; The Abu Volcanoes consist of over 50 volcanic edifice distributed through Hagi, Abu, and Yamaguchi in the northern part of Yamaguchi Prefecture. They show the characteristic volcanic topography, small basaltic and andesitic to dacitic lava plateaus.

8) About 4500 years ago to present; Hagi delta has been formed by the debris flow deposits of the Abu-gawa River.



## The efforts of Sakurajima-Kinkowan Geopark

IDEMORI, Koichiro<sup>1\*</sup> ; FUKUSHIMA, Daisuke<sup>2</sup>

<sup>1</sup>IDEMORI KOICHIRO, <sup>2</sup>FUKUSHIMA DAISUKE

The area of Sakurajima-Kinkowan is certificated as Japanese National Geopark in September of 2013.

We organized the guide tours and seminars to increase the opportunity to experience the geological attractiveness and feature that could be proud of Sakurajima-Kinkowan. Also, we broadened the people who are involved in geopark such as holding the events named "Geo-Kids" for children or "Geo-Cafe" for women and young people.

Also, we launched a working group as a beginning to broaden the member of our geopark. The volcanic ash is troublesome and gives the negative image to the people in Kagoshima; however the environment that volcanic ash falls almost every day is a distinctive characteristic of Kagoshima which is rare in the world. Therefore, the working group organizes the event to rethink how to coexist with an active volcano by introducing the examples of the way to utilize the volcanic ash.

Sakurajima-Kinkowan Geopark promotion council promotes various kinds of activities for citizens to participate in the geopark and raise the awareness of geopark.

Keywords: sakurajima, kinkowan, geopark, sakurajima-kinkowan geopark

## Influence on local sightseeing industry with the setting of the regulation area in the Kirishima volcano

MITSUHIKO, Nakamura<sup>1\*</sup> ; ISHIKAWA, Toru<sup>1</sup> ; MIYANOHARA, Yusei<sup>1</sup>

<sup>1</sup>Kirishima Geo Park

Mt. Shinmoedake, a part of Mt. Kirishima, one of the most prominent active volcanoes in Japan, last erupted in January 2011, in what was the first eruption there in about 300 years. At the moment, it is at alert level 2, and the area in the 1km radius around the crater continues to be off limits. In addition, in August of 2014, Mt. Ioyama experienced volcanic tremors. This led to the area in the 1km radius of Mt. Ioyama to also be placed off-limits in October.

Based on the volcanic activity and warnings, we have seen a decrease in visitors to Kirishima, especially after the 2011 eruption, which saw many hotel cancellations.

As a geopark with a volcano, we are mulling our options on how to deal with the current tourism trends and the local tourism industry.

Keywords: Volcanic Eruptions, Warnings and Tourism Trends, Things Geoparks Can Do

## Formulation of Protection and Conservation Administration Plan

MIYATA, Hiroshi<sup>1\*</sup>

<sup>1</sup>San'in Kaigan Geopark Promotion Council

The San'in Kaigan Geopark Promotion Council formulated the Protection and Conservation Administration Plan in 2014. The plan aims to involve local government bodies, local residents, and visitors in protection and conservation of geosites. Under the plan, protection and conservation activities are expected to play a positive role in education and local economy.

Keywords: geopark, protection and conservation

## New Information Facilities and Their Roles of Itoigawa Global Geopark

TORIGOE, Hiroko<sup>1</sup> ; II, Toru<sup>1</sup> ; BROWN, Theodore<sup>1</sup> ; WATANABE, Seigou<sup>1</sup> ; MIYAJIMA, Hiroshi<sup>1</sup> ; TAKENOUCHI, Ko<sup>1\*</sup> ; IBARAKI, Yosuke<sup>1</sup>

<sup>1</sup>Itoigawa Geopark Promotion Office

With the opening of the Hokuriku Shinkansen Bullet Train Line (March 14, 2015) the connection between the Hokuriku region with Tokyo and Nagano will be stronger than ever before and access to the Itoigawa Geopark will be greatly improved. Needing to adapt to this large change, the work began to strengthen the Itoigawa Geopark's guidance facilities. These improvements include the creation of the Itoigawa GeoStation GeoPal center inside Itoigawa Station, a complete renovation and overhaul of the Fossa Magna Museum (a geological science museum) and its exhibits, and new transportation options which connect these two centers. Below is a description of each of these programs.

### Itoigawa GeoStation GeoPal

This is an Information Center located on the first floor of Itoigawa Station's Alps Entrance (South Entrance), targeted toward those visiting the Geopark by rail. It consists of three zones, the "Geopark Tourist Information Center," the "Kiha-52 Waiting Room," and the "Diorama and Model Railroad Gallery." The Geopark Tourist Information Center includes a Tourist Information counter where certified Geopark Guides are stationed at all times. It also features illustrations of sites within the Itoigawa Geopark, a photographic map of Itoigawa on the floor, the marine life living in Itoigawa's seas, an interactive exhibit on Japan's East-West culture divide, a stone identification diagram, touch panel displays, and information about other Japanese and Global Geoparks. Trick art, a Mt. Myojo-themed indoor slide, and a bouldering wall have also been installed to attract the attention of children. The Kiha-52 Waiting Room includes a preserved and rebuilt portion of the historic brick depot building which had been demolished for station construction and a display of a restored Model Kiha-52 train, which previously operated along the Oito Line. The Diorama and Model Railroad Gallery features a variety of model trains (HO Gauge, N Gauge, and plastic rail). These have been included in order to promote the use of trains to visit Itoigawa Geopark's many geosites. The entire facility has access to free public wireless internet.

### The Fossa Magna Museum

Located atop a hill about 2 km from Itoigawa Station, this information center is primarily used by those visiting the Itoigawa Geopark by car. A geological museum which opened in 1994, the exhibits which have been completely overhauled in order to better share the Geopark's most basic and valuable asset, that is to say, the story of its land. Exhibits on jade (science, hands-on experience, history, and legend), a Fossa Magna Theatre, exhibits on the father of Japanese Geology, Dr. Edmund Naumann, and exhibits about rocks, minerals, and fossils have all been renovated to better showcase Itoigawa as a "Geopark Town." The birth of the Japanese Islands are explained using resources found in and discoveries made in Itoigawa, which shows not only visitors, but the people of Itoigawa the value of Itoigawa's land. New video displays, interactive exhibits, and dioramas have been added to make the museum enjoyable for children as well as adults. All exhibits and videos have been translated into English as well, to better improve the museum's ability to reach international visitors.

### New Transportation Options

These two facilities function as a gateway to the Itoigawa Geopark. GeoPal provides a wide variety of basic information about the Geopark, while the Fossa Magna Museum offers visitors a more in-depth view into the land. As the two are complementary in their focuses, we want visitors to be able to visit them both. To that end, a new bus line, the Miyama Park and Museums Line, will begin operation starting on April 1st, running shuttle buses regularly between the Itoigawa Station Alps Entrance and the Fossa Magna Museum. Rental bicycles, including electric bicycles, will also be available for rent, providing multiple ways to visit the two facilities.

Keywords: Itoigawa Global Geopark, Hokuriku Shinkansen, Information Center, GeoPal, Fossa Magna Museum

## The Concept of a Central Operating Unit at Geopark: Izu Peninsula Geopark

YAMAGUCHI, Akira<sup>1\*</sup>

<sup>1</sup>Izu Peninsula Geopark Promotion Council

In this presentation we describe about the importance of the Central Operating Unit at Izu Peninsula Geopark. It is not enough to merely have geopark office/council staff working for conservation, education and research, common people (residents) and tourists also need to understand the value of geological heritage of Izu. Izu Peninsula Geopark is spread over a large area and a lot of visitors come to our geopark. So multiple visitor centers are needed to respond to the needs of the tourists. The concept behind this Central Operating Unit is that it not only becomes a center for all information about the geopark but also functions as the hub for the different visitor centers at Izu. It also aims to create a bridge between Izu and researchers/scientists and provide explanations of geology, land formation processes that allow visitors to understand the long geological history. The plan to create this Operating Unit is implemented by the Task Force of administrative workers from 15 cities/towns and workshops on the concept and requirements were held among local residents and geoguides. These workshops helped us to understand the needs and opinions of local people. The Central Operating Unit will have researchers, displays, geoguides, the administrative section and library for children. A satellite research facility will be set up at the now abandoned Yugashima Elementary School. Shizuoka University has a seminar house nearby, and researchers from outside can also avail this facility during their stay and field research at Izu.

Keywords: Geopark, Operating Unit at Geopark

■中央拠点施設の機能と関連施設・組織との関係

