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G02-01

Room:203

Time:May 21 10:45-11:00

## Is there quartz crystal in space?

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Quartz crystal is rare in space, whereas there is quartz on the earth in large quantities. This difference comes from existence of the water on the earth.

Keywords: quartz, granite, water, earth history, meteorite

## Aurora3D Project and Aurora Talk Show 2011

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Aurora3D project has been conducting stereo imaging of aurora in Alaska, supported by Housou Bunka Foundation and Nikon. The 3D aurora images have been presented at the science live show UNIVERSE at Science Museum. The website [aurora3d.jp](http://aurora3d.jp) plays an important role to distribute the education materials and to inform the related outreach events via Twitter etc. The obtained images of aurora by Aurora 3D project are used for the Aurora Talk Show 2011, which was held at several different places over Japan in December 2011. The Aurora Talk Show 2011 was the second time as supported by SGEPPS. The young researchers of SGEPPS and local science communication groups collaborated together to make the science talk show using the auroral images etc. The main topic depends on each speaker and place, broadly ranging from the Sun to planets. It is important to continue and extend such activities, collaborating with science communication groups. We would like to have your participation, support, and advice for Aurora Talk Show 2012 etc.

Keywords: aurora, science cafe, planetarium, twitter

## Public outreach activity using a digital 3-D globe, Dagik Earth

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A portable, scalable and affordable 3-dimensional digital globe system, Dagik Earth, is developed to present the Earth scientific research works. It uses a spherical or hemispherical screen to project data and images of the Earth and planets. The three dimensional presentation is the only way to present the correct shape on the Earth while any map distorts the shape. Furthermore it helps audience to understand the scale size of the Earth and planetary phenomena in an intuitive way. Dagik Earth has been used in public outreach programs of universities and research institutes. Several sets of the hardware are ready for rent to scientists, science museums and school teachers. The development of software is carried out to improve the interface and scientific contents. International collaboration with Taiwan, Thailand, and other countries is in progress. In the presentation, we introduce the system of Dagik Earth and public outreach program using it.

## Outreach Programs using Martian Meteorites

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<sup>1</sup>STEP, Aichi University of Education

Martian meteorites are thought to be rocks formed on Mars. They are divided into four groups; Shergottites, Nakhrites, Chassignites and ALH84001. Their young crystallization ages suggest they are derived from a planet-sized body. Coarse-grained textures of nakhrites also suggest that they are derived from a planet-sized body. Similarities the isotopic compositions of nitrogen and noble gases of the martian atmosphere and those trapped in shock-produced glasses in some shergottites suggests that it is Mars.

In this presentation, the events of the observation of two martian meteorites {Zagami (shergottites )and Nakhla(Nakhrites)} will be reported.

Keywords: Martian meteorites, Outreach

## Town watching to look for phenomena similar to volcano

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<sup>1</sup>Geological Survey of Japan, AIST

Even people who live far from a volcano can find various phenomena relating to earth science, especially, volcano in town walking. If we have such a training of observation in our town, we become good observers like volcanologists in front of a volcano. If we encounter risks such as volcanic eruption, earthquake, landslide, etc., our experiences from the town watching help us for surviving our lives. This paper will introduce various phenomena relating to volcanoes: tension fracture, faults, intrusion, flank instability, and caldera collapse.

Keywords: Outreach, volcanology, eruption, fracture, slope, intrusion

## Public outreach activities of the Japan Association for Quaternary Research: field excursion, lecture and concert

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The Japan Association for Quaternary Research performed field excursion, lecture talk and concert for general public as public outreach activities. These activities are effective and useful for spreading the knowledge of regional natural history far and wide to the public.

Keywords: Scientific association, Outreach, General public, Life-long education, Field excursion

## Practice of the tsunami hydraulic experiment and the large peel sample using for the tsunami disaster education

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Tsunami education is very important for disaster mitigation near the future. We are working on two outreach projects. First, we have been making large peels from tsunami deposit outcrops around the Pacific coast of eastern Hokkaido, and we have donated these to the local museums due to the tsunami disaster education for local residents. Second, we developed a simple water tank for tsunami experiment using PVC plates with plastic sheeting for agriculture (4.5m long, 30cm high, 30cm wide). It was filled by fresh water. If we pull up the other end of the plastic sheet to resemble seafloor uplift due to the earthquake, the water was pushed up to propagate, tsunami wave run up a slope and splash out the water tank. Our prefabricated tsunami laboratory equipment is a good for the disaster education at the elementary school.

Keywords: large peel sample, tsunami hydraulic experiment, tsunami disaster education, large tsunami, tsunami deposit, eastern Hokkaido



## Outreach activities of a university for the Great East Japan Earthquake

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The public programs of the Great East Japan Earthquake were held at Tohoku University on based on civilian needs since May 2011 . In this report civilian needs and public response were analyzed.

A request of lecture by civilian for the Great East Japan Earthquake were guided by media news. The request key words were changed from diffusion of radioactive material to effect for health, cooking method for excluding of radioactive material, wearing for radioactive surroundings, and removing method of radioactive material from self surrounding s. However we limited the providing information for propertied of radioactive materials measurement of radioactive materials, diffusion of radioactive materials based on our specialties.

The most important thing is speedy timing of providing information.

Keywords: The Great East Japan Earthquake, civilian needs, outreach of university



## Remote lectures by the connection of the Himalayas and Japanese classrooms via satellite communication system

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On-the-field introduction and discussion with live view and sound from actual site have impacts for the geoscience and disaster prevention education. In order to contribute the education and outreach of the research outcomes from the researchers to societies, we implemented remote lectures between a high school in Tokyo and a NPO the laboratory for Global Dialogue, and the field sites in the Bhutan Himalayas. The sites are the shrinking mountain glacier areas which have been notably affected by global warming. As the communication lectures, we featured present condition and issues regarding glacier and glacial lakes as well as the geology and geography in the Himalayas. Since the general network line and signal were not available in the sites, we used Inmarsat satellite communication system. Most of students and participants could learn a lot and took a keen interest in the geoscience and natural disaster. In the presentation, we will introduce the connection system and related issues, efficiency of the implementation and future plans. This activity was involved in the project entitled "Study on Glacial Lake Outburst Floods in the Bhutan Himalayas" financed under the Science and Technology Research Partnership for Sustainable Development (SATREPS) program, supported by JICA and JST.

Keywords: Disaster prevention and geoscience education, On-the-field lecture, Inmarsat, Glacier and glacial lake, Global warming, Bhutan Himalayas

The cheapest simulator for characteristic vibrations, YURAYURA 2012, by Dr. Avaranger

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<sup>1</sup>National Research Institute for Earth Science and Disaster Prevention

Recently, large swinging of the skyscraper which resonates by the long-period ground motion becomes a topic. In this paper, we will introduce the simple models to simulate the characteristic vibration of buildings for science education.

Keywords: Avaranger, Characteristic vibration, Yurayura

## A project to utilize Abuyama observatory as a science museum

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### 1. Introduction

Abuyama observatory is a seismological observatory of Disaster Prevention Research Institute (DPRI), Kyoto University, which is located in the city of Takatsuki, Osaka. Various observations have been conducted at this observatory since 1930. It is continuing observation as a base station for the project of the dense seismic observation of the next generation which is called MANTEN project mainly promoted by DPRI. Some of the historic equipments for the seismological observations such as the Wiechert seismograph and the Galitzin seismograph have been well maintained and exhibited. Since the history of the observations and experiences of the Abuyama observatory are very important, a project to utilize Abuyama observatory as a science museum started in 2011.

### 2. Abuyama Open Lab

The first problem for utilizing the observatory as a science museum is that the observatory has not been performing the exploitation campaign, because it is the place where we usually do observation and research, and that it is not ready for welcoming a lot of visitors. In order to solve these problems, a series of Abuyama Open Lab has been decided to be held as the first step of the project, and the maintenance of this observatory and publicity activities have been done. Moreover, a seminar on the history of seismology, lesson lecture on making a simple seismograph and various workshops that produce the contents of the museum have been developed.

In total, 4 open labs were held and about 500 visitors joined in the series of Open Lab in the 2011 fiscal year.

### 3. Study Tour

Biweekly study tour at the Abuyama observatory is also provided. Unlike the series of Open Lab, the exploitation campaign for this study tour has not been carried out except for the website. However, if the observatory will be operated as a museum, visitors should be always welcome. But now, since there are few staff members, it is difficult to open every day.

### 4. Future work

In order to open the observatory to the public at any time, the staff members who can do guidance at the observatory are needed. However, since technical knowledge is required, currently not all the members can always be guides explaining the seismographs. Therefore, it is necessary to make a manual that allows even volunteers to be a guide of the observatory. And it is also necessary to make the direction boards of showpieces.

Furthermore, we would like to develop the observatory as a museum where people can learn from and participate in the latest research projects. We aim at developing the science museum that keeps following the latest research activities.

Keywords: Abuyama observatory, science museum, earthquakes, MANTEN project, Disaster prevention education

## Development of natural disaster learning program in collaboration with museums and elementary and junior high schools

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Japanese Islands is located in the mobile belt plate convergence region. Hence it is, recognition of being a country of volcanoes and earthquakes is essential. We are working on a study that aims to develop and implement utilizing the historical materials of natural disasters and the nature of the western area of Kanagawa prefecture, the learning program of natural disasters through partnerships with elementary and junior high schools and museums, to evaluate . We believes that it is necessary to contribute to the development of aids to teaching and curriculum, such as can have the power to foster science literacy for children, live, to improve the quality of teachers to teach it.

Among the elementary schools and junior high school for each unit, build and implement a training program teaching method for learning the local natural disaster, such as tuition deployment. Learn the history of natural disasters that occurred in the western part of Kanagawa Prefecture, to investigate the record. To record changes in earthquake disaster in each region, active faults, such as floods and debris flow disaster damage of debris flow and landslide-tsunami, volcanic disaster by typhoon or heavy rain, due to the characteristics of the region, and the familiar materials of natural disasters. In collaboration with regional museums and research institutes and schools to learn the basic knowledge of natural disasters, and then rearrange the history of natural disasters in the region to raise the literacy of children and disasters.

Keywords: museum, elementary school, junior high school, natural disaster learning program

## A practiced study program of the soil liquefaction at the grade-school in the stricken area of Tohoku earthquake

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The reclaimed land around the Tokyo Bay, for example Urayasu, Chiba, was damaged by soil liquefaction of the 2011 off the Pacific coast of Tohoku Earthquake. Damage of soil liquefaction also occurred on the schoolyard. But the schoolyard is the important evacuation area in every school. The surface peels of cross section of sand cones which were formed by soil liquefaction in the schoolyard of a grade-school, Mihama-ku, Chiba were obtained and studied on March 30 and April 1, 2011 (Kasama et al., 2011). A special lesson of soil liquefaction using surface peels for the sixth grader was taken place at the same school on October 26, 2011. The lesson included such items, the outline of the Tohoku Earthquake, the history of the reclamation of the Inage seashore, the experiment of soil liquefaction using a PET bottle and the sand cone formation. The questionnaire was performed after the lesson. According to the replies by children, the shake of the Tohoku earthquake is slightly fearful (62%), about the water spouting by liquefaction on the schoolyard: although it was fearful, interest was also felt as a wonderful phenomenon (48%), about sand accumulating on the schoolyard: Interest was felt a little (52%), about our school is on reclaimed land: knew (97%), about liquefaction: knew after the Tohoku earthquake (65%), about sand cones: known by this lesson (55%), about understanding of this lesson: very well (the history of the reclaimed land: 51%, mechanism of soil liquefaction :71%, formation of sand cones :65 %), and the comment of the lesson: very good (86%). The result of the questionnaire showed that while aftershock continued, the children looked at the soil liquefaction with interest and fear in the schoolyard, and also that the soil liquefaction is over the range of the government guidelines for teaching, but by using suitable experiments, degree of comprehension and interest became high.

Tomohiro KASAMA, Saeko ISHIHAMA and Shuichi NIIDA (2011) Surface peels of the cross section of sand cones on the schoolyard formed soil liquefaction and use as a teaching material, 2011 Japan Geoscience Union, Makuhari, Chiba, MIS036-P176.

Keywords: 2011 Tohoku earthquake, soil liquefaction, grade-school, study program, stricken area

## Prototype model of Geological diorama (GEORAMA)

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Considering the problems in the geological outreach activity, I made an analog model, named The GEORAMA (geological diorama), 1/150 in scale. The three fundamental subjects, i.e. unconformity, normal fault, and intrusion of igneous rock, are intended in the model. The geological units are exposed only along the river cliff, mountain streams, sunken roads, and a quarry to represent the reality in the model. The observer can easily understand the geology of the model, because cross-sections are indicated on four sides of the model. The topographic map, the geological description map of each route, the geological map, and the cross sections are also prepared, which will help to grasp how the geological map is made.

Keywords: outreach, earth science, geology, educational promotion