

Preservation of Disaster Monuments for Tourism and Education in Mount Unzen

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Abstract: The territory of the Shimabara Peninsula could recover steadily from volcanic disasters associated with the eruption at Unzen during 1991-1995. The disasters and the recovery brought various lessons, related to responses to volcanic eruptions and hazards, support system for people impacted by the disasters and the method for socioeconomic recovery.

After the eruption, education facilities to learn volcanic eruptions and disasters, such as the Mount Unzen Disaster Memorial Hall, were prepared, as well as scientific projects to clarify eruption mechanisms were carried out. Under these circumstances, holding two international conferences were invited. The 5th Cities on Volcanoes Conference and the 5th International UNESCO Conference on Geoparks were held in Shimabara in 2007 and 2012, respectively. Under these circumstances, holding two international conferences were invited.

On the process that local people recovered from the disasters, the communities carried out disaster-prevention education and volcano tourism, utilizing the Mount Unzen Disaster Memorial Hall and the park of houses buried by mudflow deposits. The memorial hall archives valuable materials of the disasters and provides simulations of volcanic eruptions with the newest technology, by which visitors can learn about volcanic eruptions. Disaster remains, such as the memorial hall and park, are effective for visitors who did not experience volcanic disasters and are difficult to imagine the real volcanic hazard.

Key words: Unzen volcanoes, disaster monuments, geo-tourism, disaster education.

1. Introduction

Unzen volcano, which is located in Nagasaki, Kyushu Island, erupted during 1990 to 1995. Though this eruption brought relatively large disaster to the areas around this volcano, the revival from the devastation has advanced smoothly. During this eruption, countermeasures against this volcanic disaster were taken, by reconsideration by the central and local governments. After the eruption ended, scientific researches for clarifying the eruption mechanisms with drilling were carried out, and volcanic museums where people can learn the volcanic disaster on the experience-basis were built. These progresses made us possible to invite the international conferences of “5th Cities on Volcanoes” in 2007 and

“5th International UNESCO Conference of Geoparks” in 2012, as summarized by Prof. Takahashi (2014) [1].

In the areas have been affected by this volcanic disaster stunning example or disaster-prevention activities, they promote the disaster-prevention educational program and tourism, utilizing the process of the revival from the disaster and the volcanic museum and the preserved 11 houses park which destroyed by lahar (mud flow). I introduce about the disaster recovery and my experience and the lessons through the last volcanic disaster of Unzen.

2. Outlines of Volcanic Disaster at Unzen

The eruption at Unzen volcano that had started on November 17, 1990, it had continued until February 1995. This eruption was characterized by continuous growing of lava dome and generation of pyroclastic flows due to partial collapses of the lava dome. Although the scale of the pyroclastic flows was much

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smaller than that in Pinatubo volcano in 1991 almost the same time. The eruption site was closer to the residential area at Unzen. As a result, evacuation was issued for the residents after the eruption started. However, some local people entered within into the off-limit zone for the agricultural job and taking out household belongings. In addition, volunteer firemen, the media and researchers also entered there.

On June 3, 1991, the largest pyroclastic flow which has ever had for the first time occurred. There were forty-three casualties including volunteer firemen, the media and the public became of the event. A few friends of the present author were also involved it. At that time, I felt strongly that I could rescued them, if I had more understood on volcanic phenomena.

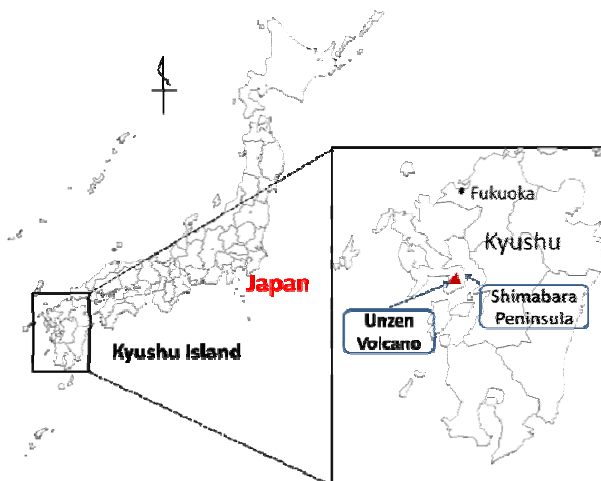


Fig. 1 Index map of the Shimabara Volcano Area Global Geopark (Shimabara Peninsula) and Unzen Volcano.



Fig. 2 Ash cloud of pyroclastic flow, which occurred in the Shimabara City on Annaka area, Nagasaki Prefecture 1991. Photo was taken by Shin'ichi Sugimoto.

3. Disaster Recovery and Preserving the Disaster Monuments

3.1 Action Plan for Revival of the Shimabara District

The volcanic disaster at Unzen volcano is characterized by attacking of pyroclastic flows and lahar a built-up area. The damage was not only limited to the Shimabara City and the Fukae Town which were directly attached by pyroclastic flow and lahar repeatedly, but also expanded to the entire of the Shimabara Peninsula. Especially, the economical stagnation was serious due to falling down, population and the tourist decrease during or after the eruption.

In March 1997, an action plan for revival of the Shimabara district project was issued for reforming and activating the entire area of the Shimabara Peninsula. As the main project of this plan, the concept of volcano tourism was promoted by utilizing the Heisei-Shinzan, which is the new mountain (lava dome) formed in the last eruption (Policy Committee for Action Plan for Revival of the Shimabara District, 1997). As well, the Shimabara City and Fukae Town promoted the volcano tourism, based on the consideration from disaster to reconstruction for life restoration for constructing disaster-prevention city, and activation of the regions, and they performed preservation of the disaster monuments.

3.2 Mt. Unzen Disaster Memorial Hall (Volcano Museum)

This Memorial Hall was positioned as the major business of the regional revival plan. It was prepared by the Nagasaki Prefectural Government as the core center of volcano tourism and education to continuing for the next generations what volcanic disasters were, how local people faced to them, and the gratitude for the everyone who supported residents.

This is the experience-based museum, designed to be able to learn about the volcanic system and the revival processes from the disaster by experiencing eruptions and disasters through archives related to volcano

disasters and movies and models with the latest technology.

Visitors can experience simulation of pyroclastic flows and lahars which occurred in the last eruption by seeing, hearing and feeling through the movie show on a 14 m high screen in the dome theater. Over two million of visitors were counted after the opening in 2002, though the entrance fee is 1,000 yen (about USD 90). This may reflect high public interests on volcanoes and their disasters. The number of visitors goes down, however, a renewal of the exhibitions is scheduled in 2015.

3.3 Park for Preserving Houses Destroyed by Lahar

Eleven houses which were buried with sands and gravels from lahar in the last eruption are preserved in this park. To avoid damage from wind and rain, three houses were located in a large tent.



Fig. 3 Inside the dome theater of the Mount Unzen Disaster Memorial Hall.



Fig. 4 Park of houses buried by mudflow deposits during the Unzen eruption.

This park was built as one of major businesses in the region revival plan, beside the government-designed rest area along the main road, for contributing to job creation and restoration/development in the disaster-affected area. This park was designed to let to know for visitors how strong destroying power of lahar and the importance of prevention of natural disasters. The entrance fee is free, and annually 450,000 visitors come to this park.

3.4 Burnt Ohnokoba Elementary School Building

This building was burnt by ash cloud associated with pyroclastic flows on September 15, 1991, and the building is preserved as the monument of the disaster. Since this was established in 1882 and had become a symbol of the local people, they were strongly shocked by this burning. The local residents and the group of victims voluntarily considered preservation of this building as the monument for utilizing as one of resources of volcano tourism. This action was not forced from outside. They wanted to convey to visitors the fact of the disaster they met together with their thoughts on them.

Though it is important to preserve disaster remains as monuments for conveying the disasters to visitors and letting them consider on the disasters, more important are intentions of bereaved families and local



Fig. 5 Ohnokoba Elementary School building burned by pyroclastic flows on 15 September 1991. Back is the Heisei-Shinzan (lava dome formed in the 1991-1995 eruption). Courtesy of the Shimabara City.

residents on preserving them. The monuments that they cannot accept are meaningless. About 60,000 visitors come this site annually.

3.5 Heisei-Shinzan Field Museum Plan

The concept of the field museum raised in parallel to the above hard preparation. Here, the new lava dome (Heisei-Shinzan), the disaster monuments and facilities of volcanoes and disaster-prevention together with the Mt. Unzen Disaster Memorial Hall of the center are treated as a single large outdoor museum.

In this concept, valuable volcano education resources in the Mizunashi and Nakao rivers and other areas are divided into the following five fields linking to each other. This provides visitors the spaces which visitors can be involved through experiencing and learning the resources [2].

(1) Lesson from eruption disaster (terrific and frightfulness of pyroclastic flow and lahar)

(2) Eruption history (natural scenery, change in plants, geology and the landslide and tsunami disaster in 1792)

(3) Protection of disasters (function of protecting disasters beforehand and erosion control facilities, etc.)

(4) Beat of the Earth (eruption mechanisms, volcano history, etc.)

(5) Coexistence with volcano blessings (volcano scenery, springs, mechanism and utilization of hot spas, etc.)

3.6 Shimabara Meeting of Cities on Volcanoes Conference

In November 2007, the Shimabara City held an international meeting, 5th Conference of Cities on Volcano, which is the international forum of volcanologists and non-volcanologists including city planners, local community leaders, local residents and so on, and organized every two years by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI). About 600 people including volcanologists, engineers related to

disaster prevention and sediment control, and volunteers joined in this meeting from 30 countries and areas. This became a big event by gathering about 2,700 attendees as a total including citizens and participants into various forums [3].

To keep the local people's rise of emotion, the city set its next target to get recognition as the first Global Geoparks member in Japan.

3.7 Global Geoparks Network

It was natural for local communities around Unzen volcano to desire becoming a Global Geopark. They submitted the application to the UNESCO in December 2008, upon the recommendation of Japanese Geopark Committee. In the site-evaluation of Global Geoparks Network in August 2009, the Unzen Volcanic Area was evaluated that this is an internationally valuable territory introducing the lessons from volcanic eruptions and ideas on living near volcano which may become nature hazards and that the geological and engineering frontier works has developed here since 1990's.

This was considered as the world-wide recognition for the Unzen's business which targeted on education to protect natural disasters and to transfer lessons from the disasters to the next generations, and the volcano tourism. That is, by utilizing disaster remains and sediment work facilities, the disaster-prevention education aimed at elevating the human minds on



Fig. 6 Opening ceremony of 5th cities on Volcanoes conference in the city hall of Shimabara. Taken 19 November 2007.

disaster prevention and growing the people's wisdoms to coexist with volcanoes. Not only negative side as volcanic disaster but also positive sides as volcanic blessings were introduced in the volcano tourism.

3.8 5th International UNESCO Conference on Geoparks

An international geopark conference was held in the Shimabara City in May 2012. About 600 people from 31 countries and areas attended the meeting and the number of attendees was largest in the geopark international meetings ever held. In addition to them, many local citizens attended the citizen's forums. The resultant total number increased to about 5,300 [4].

The statement adopted in this meeting as the Shimabara Declaration told that, relating to the Tohoku Earthquake-Tsunami Disaster in March 2011, "the experience of local communities and the destruction generated by the disasters shall be utilized by the geopark community as a tool for the education of people living in geohazard-prone areas of the Earth for minimizing disasters caused by geohazards", and insisted that "education about our dynamic planet in geoparks is a most effective way to help our local communities understand how to coexist with nature which occasionally generates geohazards". The meeting concluded that enthusiastic discussion in this meeting promises the future development of the Global Geopark community and will be utilized to make counties sustainable against nature hazards.

Although it may bring us disasters, a volcano brings us its blessings when ordinary situation. Therefore, we are promoting the activities for visitors to understand both disasters and blessings from the volcano, and history-cultures of this area. However, geoparks do not exist only for tourism. As Japan locates in dynamically moving region on the globe, the people living in Japan cannot avoid natural disasters. We are confident that geopark can be utilized as the tool to minimize the disasters.

3.9 Utilization of Disaster Remains

In the area which received volcanic disasters, promoted is the activity of disaster-prevention education using the equipment of Mount Unzen Disaster Memorial Hall and the 11 buried houses which got by mud-flow deposits and also the proceeding the areas affected by the disaster. The Unzen Memorial Hall is the museum where visitors can learn about the volcanic system easily to understand about the volcanic activity process through the significant things or archives on volcanic disasters and the newest equipment or various devices and models. I think that it is difficult for visitors who are not familiar to volcanic disaster to imagine the reality of the eruption in 1990-1995, so we provide to show preserved the disaster remains the original places to help their understandings.

4. Concluding Remarks

As a conclusion of this paper, purposes for preserving disaster remains can be summarized as below.

- (1) Reality of fears from nature disasters can be transferred correctly.
- (2) Disaster remains have the function to let visitors to think of victims' souls of the volcanic disasters.
- (3) Disaster remains become the symbol of the recovery from the devastation volcanic disasters damages.
- (4) Disaster remains can be used to pass on local people's memories on disasters story to generation to generations.
- (5) Visiting to disaster remains will develop directly or indirectly into the activities to reactivate their hometowns and communities more, because most of visitors and school students come to disaster remains for learning about the disasters.

In order to avoid wasting the sacrifice by local people, we will preserve disaster remains and utilize them for disaster-prevention education and geotourism.

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