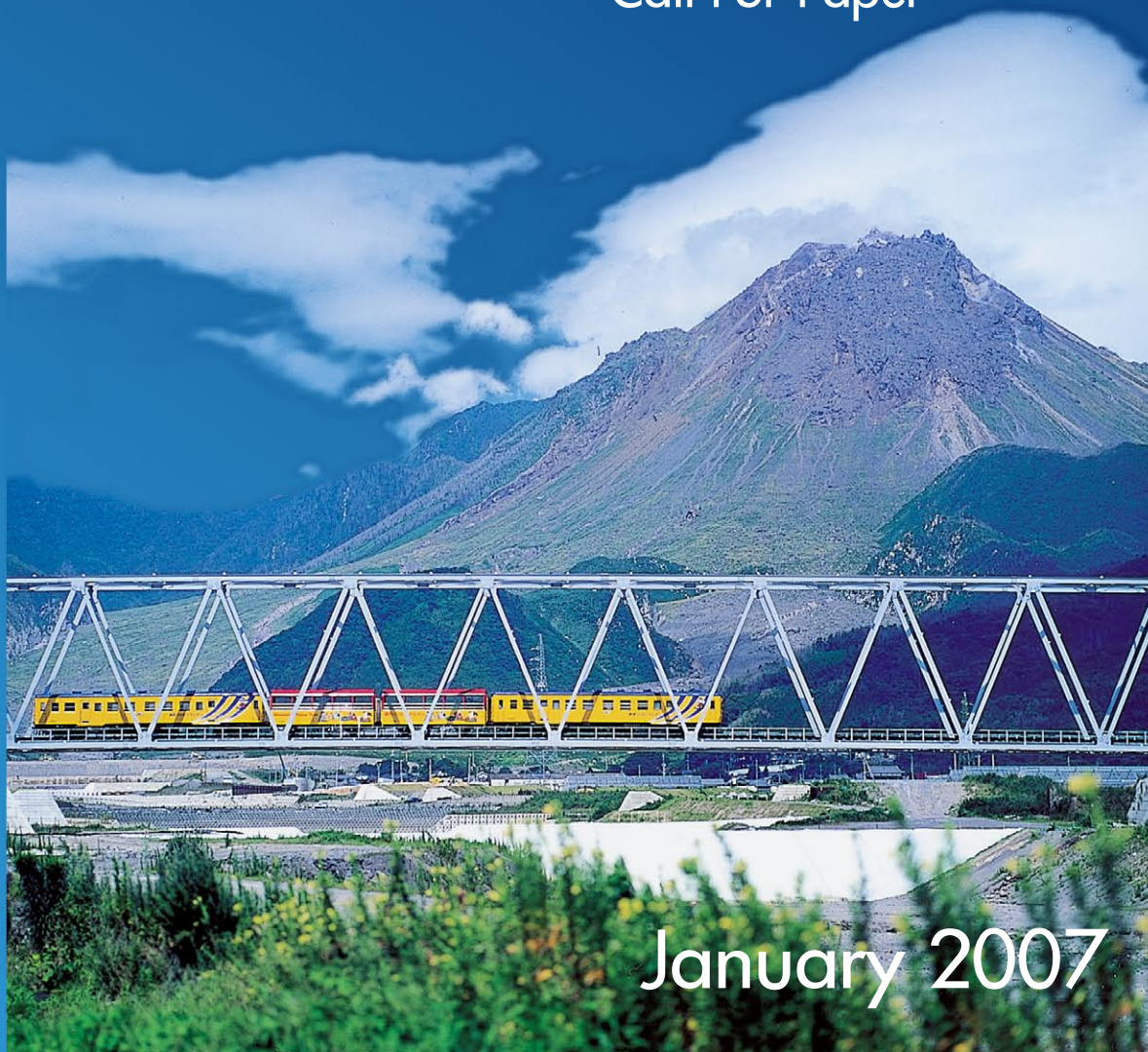
CITIES ON VOLCANOES 5

Shimabara 2007
CITIES ON VOLCANOES 5

in Shimabara, JAPAN
November 19-23, 2007

SECOND CIRCULAR
- Call For Paper



January 2007

www.citiesonvolcanoes5.com
convention@citiesonvolcanoes5.com

CITIES ON VOLCANOES 5 CONFERENCE

TABLE OF CONTENTS

SECOND CIRCULAR

- Call For Paper

January 2007

Cities on Volcanoes 5 Organizing committee

convention@citiesonvolcanoes5.com

Organizer

日本火山学会
Volcanological Society of JAPAN (VSJ)

島原市
The city of Shimabara

Co-organizers

九州大学大学院理学研究院
Faculty of Sciences, Kyushu University

国際火山学地球内部化学協会 (IAVCEI)
International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)

東京大学地震研究所
Earthquake Research Institute, University of Tokyo

長崎県
Nagasaki Prefecture

INVITATION

GREETINGS

Dear Future Participant,

I am pleased to introduce the second circular for the forthcoming Cities on Volcanoes conference, to be held in Shimabara, Japan in November 2007. This is the fifth meeting of COV, which is now the most important forum for volcanologists, city planners, authorities and businesses to meet and discuss the effects of volcanic eruptions on society, infrastructure and human and economic development, and ways to mitigate these effects.

In 1792 the city of Shimabara suffered a major disaster initiated by volcanic activity. It claimed more than 15,000 lives. A set of pictures prepared by the local authorities provide us with a detailed review of both the volcanology and the response of the local government. The city suffered a more recent volcanic crisis during the eruption of Unzen Volcano between 1990 and 1995. Such events illustrate how important it is to be well-informed and well-prepared before nature strikes. This is the main mission of COV and I am sure that the 2007 Shimabara meeting will be instrumental in reaching these goals.

I hope that all of you will take advantage of the beautiful location and the interesting volcanic setting. There is much to learn from the rich experience of the Japanese people and, of course, from one another at this forthcoming meeting.

Prof. Oded Navon
President, IAVCEI

Dear All:

It is a great pleasure for the Volcanological Society of Japan to host the Cities on Volcanoes 5 conference in Shimabara City. In Japan, we recently experienced several volcanic crises that forced people to evacuate from their residences for a period of a few months to more than four years. Through the experience we realized that communications between volcanologists, city authorities, emergency managers, sociologists and people living near volcanoes are quite important. COV5 will blend the above communities together and discuss volcanic crisis preparedness and management in densely populated areas in addition to volcanological research. On behalf of the Volcanological Society of Japan, I would like to encourage many people from different communities and different countries to attend the conference and discuss broad aspects of hazards and research related to volcanic eruption.

Toshitsugu Fujii
President, Volcanological Society of Japan

Dear COV5 Participant:

It is our great honor to hold the Cities on Volcanoes 5 international conference in Shimabara City for the first time in Asia.

Unzen Volcano, towering west of our city, began its eruption in 1990. On June 3rd of the following year, a major pyroclastic flow deprived 43 people of their lives. The area in and around Shimabara City suffered four and a half years of devastation as a result of the eruption.

Recovery from the disaster was successfully achieved through the steady and patient cooperative efforts of officials, volcanologists and citizens. For example, we established several disaster prevention facilities, a volcanic information system, institutions supporting the victims and so on. It will be our pleasure to introduce the disaster prevention and mitigation experiences of not only Shimabara but also of Japan and worldwide.

Shimabara is a place of scenic beauty, with the sea to the east and volcano to the west. There are fresh springs all over the city where one can enjoy hot baths. Shimabara Castle in the middle of the city is the symbol of our city. I am also proud of the warmhearted people living in this city. They are preparing for the coming international conference and looking forward to seeing you. We sincerely welcome you from all over the world. We promise you will be able to enjoy Shimabara and Japan.

Sincerely,

Teijiro Yoshioka
Mayor, Shimabara

The Aim of COV5

The main goal of this conference is to bring together volcanologists, city planners, social scientists, disaster managers, the medical community, engineers, mass media, local people and so on to exchange and understand their experiences and knowledge in order to evaluate and improve prevention/mitigation measures, land-use planning, emergency management, and all required to successfully confront volcanic crises in densely populated area and to recover from any devastation. The conference venue, Shimabara, is a city that has developed at the foot of the beautiful but hazardous Unzen Volcano. We believe that it provides an excellent stage for discussion on the coexistence of volcanoes and cities.

Japan's islands have more than 100 active volcanoes with an average 5 volcanoes erupting every year. Mount Fuji, which has not erupted for about 300 years, poses great danger to the mega city of Tokyo and the surrounding area, down wind of this volcano, with a population of about 30 million. Furthermore, active volcanoes with geologic records of caldera-forming eruptions exist in both southern and northern Japan.

Among recent eruptions, an eruption at Unzen Volcano between 1990 and 1995 and eruptions at Usu and Miyakejima volcanoes in 2000 are prominent. Pyroclastic flows cascaded from the summit dome of Unzen, killing 44 people including Katia and Maurice Krafft and Harry Glicken, members of the mass media, and local residents. This tragic event ignited the current effort in volcanic disaster mitigation in Japan.

Unzen is a volcano whose sector-collapse generated a debris avalanche and resulting tsunami, causing 15,000 casualties

in 1792. Shimabara recovered from this catastrophic damage, though it suffered disasters from many pyroclastic and debris flows that occurred during 1990 –1995. The city recovered from this second wave of volcanic devastation as well. Unzen is also one of the most thoroughly studied volcanoes in the world, with geophysical and geochemical monitoring during the last eruption and recent scientific drilling.

Pyroclastic-flows attacked Shimabara and around between 1990 and 1995.

COMMITTEES

Organizing Committee

Chairman: **Setsuya Nakada** (Earthquake Research Institute, Univ. of Tokyo)

Members: **Nobuo Anyoji** (Japan Society of Civil Engineering; Sabo Technical Center)
Eisuke Fujita (Nat'l Research Institute for Earth Science and Disaster Prevention (NIED))
Koji Hata (Unzen Restoration Work Office)
Junichi Hirabayashi (Volcanic Fluid Research Center, Tokyo Institute of Technology)
Hideo Hoshizumi (Nat'l Inst. of Advanced Industrial Science and Technology (AIST))
Kazuhiro Ishihara (Disaster Prevention Research Institute, Kyoto Univ.)
Kazuaki Ito (Information Institute of Disaster Prevention)
Takuro Kimura (Research Institute for Social Safety)
Masaya Matsushima (Fukuoka District Meteorological Observatory)
Yasuyuki Miyake (Faculty of Sciences, Shinshu Univ.)
Hiromu Okada (Faculty of Sciences, Hokkaido Univ.)
Susumu Ono (Officer for Nature Conservation of Unzen, Ministry of Environment)
Hiroshi Shimizu (Faculty of Sciences, Kyushu Univ.)
Kazuo Takahashi (Faculty of Engineering, Nagasaki Univ.)
Hideo Taniguchi (Deputy Mayor, Shimabara City)
Tadahide Ui (Crisis & Environment Management Policy Institute (CeMI))

International Science Committee

Chairman: **Setsuya Nakada** (Japan)

Members: **Willy Aspinall** (Aspinall & Associates, UK)
Peter Baxter (University of Cambridge, UK)
Carolyn Driedger (US Geological Survey, USA)
David Johnston (Institute of Geological and Nuclear Science, NZ)
Warner Marzocchi (Istituto Nazionale di Geofisica e Vulcanologia, Italy)
Yasuyuki Miyake (Japan)
Chris Newhall (US Geological Survey *emeritus*, Philippines)
Steve Sparks (University of Bristol, UK)
Tadahide Ui (Japan)

MEETING ARRANGEMENT AND REGISTRATION

Important Dates

Start of registration and abstract submission:	***March 1, 2007***
Deadline for application for travel grant:	***April 30, 2007***
Deadline for abstract submission:	***May 31, 2007***
Deadline for registration for field excursions:	***June 14, 2007***
Deadline for early registration:	***June 14, 2007***

Note: Registration should be accompanied by payment.

Venue

The conference will be held in Shimabara's memorial halls, Shimabara Fukko Arena and Mt. Unzen Disaster Memorial Hall (Gamadas Dome), which were built on the devastated area of the last eruption. The area stands near the mouth of the Mizunashi River and has an excellent view of Mount Unzen in front. The conference halls are situated about 6 kilometers south of the city center of Shimabara, taking about 10 minutes by car. Shuttle bus service will be provided for the participants every morning, noon and evening from November 18 to 23.

Shimabara Fukko Arena
- Primary conference site of COV5

During the last eruption, the upper and middle course of the Mizunashi River was filled by deposits of pyroclastic flows generated by the collapse of dome lava. The lower course including the site of the conference halls was damaged badly by debris flows triggered by heavy rains. Presently the area has been reclaimed by both piling up recycled debris and the retaining walls of the new river.

Mt. Unzen Disaster Memorial Hall
(GAMADAS DOME)

Shimabara is a castle town located on the east coast of the Shimabara Peninsula. The castle was constructed in the early 17th century, though the current building was rebuilt in 1964. The name of Shimabara is known to historians for the Christian peasant uprising soon after the construction of the castle. Tragically, 37,000 peasants, including women and children, were decimated by the shogun's troops. The castle played an important role in the Christian rebellion, which led to the suppression of Christianity and a seclusion policy in Japan that lasted two and half centuries. Samurai houses have survived since the feudal times just northwest of the castle. The city has many old temples and a large reclining Buddha, called Nehan-zou in Japanese.

Mt. Mayuyama, an old lava dome just behind the city, collapsed in a strong earthquake just after the eruption of Mount Unzen in 1792. The debris avalanche rushed into the Ariake Sea, destroying most of the ancient city as a result of both the debris avalanche and a tsunami generated by the former. The tsunami also attacked the opposite shore of the Ariake Sea, present Kumamoto city and the surrounding areas. Fifteen thousand lives were lost. Many small islets near the coast

of Shimabara are the remnants of the avalanche deposits. It is said that the pond in the city center, Shirachi-ko, formed from the crack opened during the earthquake and that many springs in the city started gushing after the event.

Shimabara is located near a number of sightseeing spots, including the cities of Nagasaki, Kumamoto and Fukuoka, and the volcanoes Aso and Kuju. Among them, the most famous historically and most interesting is the city of Nagasaki; one and a half hours drive from Shimabara. This is the place the first Europeans arrived in the 16th century and is the only port that remained opened to foreign trade during Japan's period of seclusion. It is also known around the world as the site of the dropping of a second atomic bomb on August 9, 1945, 3 days after the first dropping on Hiroshima, 6 days before World War II ended.

Access

It is recommended to arrange an air ticket to Nagasaki which is the nearest airport to the venue. Most participants will arrive at one of the following airports in Japan and, except for 3), transfer to a domestic airline will be necessary. From Seoul, Korea and Shanghai, China, there are some direct flights to Nagasaki Airport, however, these flights are on very limited schedule. We surely recommend you to ask your travel agent more detail information.

Access to Nagasaki from major airports in Japan

1) ***Narita:*** There are no direct flights between the Narita and Nagasaki airports. You will have to proceed to Tokyo-Haneda Airport (domestic): 75 minutes by limousine bus and about two hours by train. Taking limousine bus to Haneda (3,000 yen) is easy, but sometimes risky due to traffic jams. The alternatives are taking the Keisei-Toei-Keikyu or JR (Japan Railway)-Keikyu lines from Narita to Haneda; 1,560 and about 2,000 yen, respectively. The former is direct to Haneda or needs one change at Aoto Station, while the latter needs one or two changes at Tokyo and Shinagawa stations. Nagasaki Airport is a 2-hour flight from Haneda.
2) ***Nagoya and Osaka:*** Nagasaki Airport is about 70 minutes flight from Chubu Central International Airport (Nagoya). COV5 participants who arrive at Kansai International Airport (KIX) should move to the Osaka (Itami, ITM) airport and change to a flight for Nagasaki. It takes about 70 minutes by limousine bus (1,700 yen), which departs from the ground floor of the arrival building every 30 minutes.
3) ***Fukuoka:*** Participants from Asian and Oceanian countries may arrive at Fukuoka Airport and proceed to Shimabara by train (5,930 yen). A subway connects Fukuoka Airport and JR Hakata Station (5 minutes). A JR express train (called Kamome) for Nagasaki departs every half or one hour from Hakata Station (Fukuoka) to Isahaya Station (100 minutes), where you must change to the Shimabara railway (Shimatetsu, not JR) or to the shuttle bus service offered by COV5 for Shimabara (about 1 hour).
4) ***Hakodate:*** Participants in excursion A1 will have to change planes at Tokyo-Haneda because there are no direct flights to Nagasaki.
5) ***Other airports:*** Refer to the following websites:

Airports and air route network of MLIT:	http://www.mlit.go.jp/koku/visit_japan/index.html
Japan Air Lines (JAL):	http://www.jal.com/en/
All Nippon Airways (ANA):	http://www.ana.co.jp/eng/index.html

Transportation from Nagasaki Airport

Participants will be able to make use of a shuttle bus service from Nagasaki Airport to the city center of Shimabara on Saturday (Nov. 17) and Sunday (Nov. 18) before the conference, and from Shimabara to Nagasaki Airport on Friday (Nov. 23) and Saturday (Nov. 24) after the conference. It takes about 90 minutes by bus from the airport to Shimabara

via Isahaya JR Station. A timetable is available on the web site: http://www.citiesonvolcanoes5.com. Please check it before arranging your airway ticket to Nagasaki.

Participants can also catch a regular bus for Shimabara at the airport, especially on other weekdays, but service is limited. The price is around 1,700 yen and the latest bus departs at 6:30 p.m. from Nagasaki Airport.

Accommodation

Shimabara has many hotels and ryokan (Japanese-style inn) and the organizing committee has blocked several of these for COV5 participants. All are comfortable and located in central Shimabara. It takes approximately 30 to 60 minutes by foot and 5 to 15 minutes by bus from these hotels and ryokan to the conference venue. Shuttle buses will be available daily between key bus stops and the venue during the conference. All hotel bookings must be made through on-line registration or by registration form. The hotels/ryokan have both Japanese style and Western style rooms. Western-style rooms are furnished with single beds and Japanese-style rooms with single futon on tatami mat floors.

Reasonably priced dormitory-style accommodation is also available. The dormitories are located more than 30 minutes from the venue by bus. Although slightly inconvenient for access to the city center and to the venue, the dormitory promises a good view. Of course, shuttle buses will be available during the conference. There are 8 beds per room and all guests share a large Japanese-style bath. All rooms are air-conditioned and come with bedclothes.

Because it is always possible that accommodations may be limited, the secretariat will allocate rooms in consideration of each applicant's preferences. Applicants should indicate their first, second and third choices out of the 7 types of rooms on the registration form: Japanese room A, B, C, Western rooms A, B, C and dormitory. Applicants will be informed of their rooms after June 14 by e-mail.

Registration

On-line registration is strongly recommended, as it will save considerable time at the conference site. On-line registration starts on the COV5 website, http://www.citiesonvolcanoes5.com, on ***March 1, 2007***. Be sure your registration includes accommodations and any field excursion(s) in which you plan to participate. Once registration has been accepted on the website and completed, you will receive a registration number by e-mail.

You may also complete registration using the *Registration Form* at the end of this circular, which must be sent to the address below by fax:

COV5 Secretariat Office
c/o The Convention (official COV5 agency) Fax: +81-3-3423-4108

Important Dates

Registration for attendance, accommodation and field excursions: Begins on ***March 1, 2007***

Deadline for early registration: ***June 14***

Note: Registration after ***June 14*** will be processed normally but at the higher rate and accommodation after this date cannot be guaranteed.

Conference Registration Fee

Discount registration fee is applied to the IAVCEI or VSJ (Volcanological Society of Japan) members. The conference registration fee includes:

	Full	Student	Accompanying Person
Conference program / abstract	○	○	
Conference materials	○	○	
Icebreaker party	○	○	○
Lunches	○	○	○
Coffee break drinks	○	○	○
Farewell party	○	○	○
One day intra-meeting field trip with box lunch.	○	○	○
Daily bus service between venue and accommodation sites	○	○	○

	On or before June 14, 2007	**After June 14, 2007**
IAVCEI or VSJ member	40,000 yen	45,000 yen
non-member	42,000 yen	47,000 yen
Student*/IAVCEI or VSJ member	25,000 yen	30,000 yen
Student*/non-member	27,000 yen	32,000 yen
Accompanying person	27,000 yen	32,000 yen

* A photocopy of a student ID is required for student participants. Please submit it to the *COV5 Secretariat Office*:
c/o The Convention (official COV5 agency)
E-mail: cov5-regi@the-convention.co.jp Fax: +81-3-3423-4108

Hotel Accommodation Category

Category		Occupancy			
		Single	**Double**	**Triple**	**Four**
1	Japanese room A	—	12,000 yen	9,500 yen	8,000 yen
2	Japanese room B	—	9,500 yen	8,500 yen	7,500 yen
3	Japanese room C	5,500 yen	5,500 yen	5,500 yen	5,500 yen
4	Western room A	10,000 yen	9,000 yen	—	—
5	Western room B	8,000 yen	7,000 yen	—	—
6	Western room C	5,500 yen	5,500 yen	—	—
7	Dormitory	2,000 yen			

** The rates are for one night's stay per person including tax, service charge and breakfast.*

** The size of Japanese room C and Western room C may vary depending on the number of persons sharing the room.*

** Japanese rooms A and B are equipped with hot spring facilities.*

Payment

All payments for registration fees, accommodations and field trips must be made in Japanese yen (¥). No registration will be completed until payment is confirmed. Payment may be made by credit card (Visa, MasterCard, American Express, Diners Club and JCB Card) or bank transfer. The secretariat will confirm your payment and send you a confirmation letter by e-mail at the beginning of July.

By credit card: Please fill in the card details on the registration form.

By bank transfer: Please transfer to the following conference bank account

Name of Bank:	MIZUHO BANK, LTD.
Branch:	GAIENMAE BRANCH
Swift/BIC code :	MHBKJPJT
Savings Account Number:	1575317
Name of Account:	COV5 Registration

In case of bank transfer, you must e-mail or fax proof of payment with the registration forms to the

COV5 Secretariat Office
c/o The Convention (official COV5 agency)
E-mail: cov5-regi@the-convention.co.jp Fax: +81-3-3423-4108

Cancellation Policy

Cancellation of registration should be provided in writing to the COV5 Secretariat Office by e-mail or fax. All refunds will be processed after the conference.

Cancellation on or before 1st September 2007: Complete refund minus a 25% administrative charge (per participant)

Cancellation on after 1st September 2007: No refund

Language

The official language of the conference is English. In symposia other than sessions 1-1 and 1-2, simultaneous translation will be provided from English into Japanese and vice-versa.

Icebreaker Party

A welcome reception, icebreaker party, will be held at Shimabara Fukko Arena between 6:00 and 8:00 p.m. on Sunday, November 18. It will be held jointly with a party of the 2007 Annual Meeting of the Volcanological Society of Japan (VSJ). The cost of the ice-breaker is included in the registration fee.

Farewell Party

The official farewell party for the COV5 will provide enjoyable traditional Japanese dinner with some entertainment at Tsukumo Hotel in the evening of Friday, November 23. The cost is included in the registration fee. Participants will move by shuttle bus from the venue to the hotel.

Social Events

The city of Shimabara is preparing some social events for participants during the conference. A schedule will be provided on the COV5 website and in the program.

Accompanying Persons' Program

There is no set program for accompanying persons; however, there will be a tourist desk set up in the conference venue.

Travel Grants for Overseas Participants

Deadline April 30, 2007

The organizing committee has obtained grants from the Japan Society for the Promotion of Science (JSPS), the Volcanological Society of Japan (VSJ) and IAVCEI to assist the travel of overseas students, young scientists and participants from developing countries to COV5. However, the total number of recipients will be limited. The amounts will also vary depending on geographic location and a recipient's other funding. For details, refer to the information on how to apply and the application form at the back of this circular.

Exhibition

The organizing committee invites commercial and educational exhibitors to display their products during the conference. Commercial exhibit space will be in the main hall of Shimabara Fukko Arena, adjacent to the poster presentation area. More information on exhibit opportunities, including details of pricing and availability, can be obtained from the organizing committee. (convention@citiesonvolcanoes5.com)

GENERAL INFORMATION ABOUT JAPAN

Passport and Visa

Every foreign visitor entering Japan must have a valid passport. Visitors from countries whose citizens require visas should apply to the Japanese consulate or diplomatic mission in their own country. For further information, please visit http://www.mofa.go.jp/j_info/visit/visa/index.html.

Requests for official invitations in support of visa applications should be sent to cov5-regi@the-convention.co.jp.

Participants of CEV workshop (field excursion AX at Jeju Island) should ask the leader (Dr. Young Kwan Sohn, yksohn@gnu.ac.kr) about the visa to enter Korea.

Climate

The weather in Shimabara in November is normally fine and relatively dry; the temperatures is about 15 to 20° C in the daytime, and about 10° C or less at night.

Currency, Bank and Post Office

Japanese yen (¥ , JPY) is the currency in Japan. Some shops can accept credit cards, but the major payment method in Shimabara is cash. Obtaining cash beforehand is recommended. Japan has one of the lowest crime rates in the world, so carrying cash is not a real problem. Bank hours are 9:00 a.m. to 3:00 p.m., Monday to Friday (arriving by 2:30 p.m. is recommended). Foreign exchange facilities are available at international airports as well as bank in the city. Post offices

are open during business hours. An extra post office branch will be opened during the conference. Also, some 24-hour convenience stores have ATMs (automatic teller machine). They are open everyday and withdrawals using major credit cards (American Express, Visa, Diners, and so on) are possible.

Notice! November 23 (Friday) is a national holiday (*Labor/Thanksgiving Day*) in Japan. Banks and post offices and some shops will be closed the same as Saturday and Sunday.

Business Hours

	Weekdays	Saturday, Sunday and National Holidays (Fri., November 23, *Labor/Thanksgiving Day*)
Banks	9:00 a.m.–3:00 p.m.	Closed
Post offices	9:00 a.m.–5:00 p.m.	Closed
Offices	9:00 a.m.–5:00 p.m.	Closed

Tax

A consumption tax (VAT) of five percent is included on all goods purchased in Japan.

Insurance

Medical systems and facilities in Japan are well established so that you can expect to receive a high standard of medical treatment. However, medical services are not free for overseas visitors. All participants are *strongly* advised to take out their own private medical coverage and personal insurance for the duration of the conference and accompanying field excursions.

SCIENTIFIC PROGRAM

I. Preliminary Program

	Sunday 18th November	*Monday* 19th	*Tuesday* 20th	*Wednesday* 21st	*Thursday* 22nd	*Friday* 23rd
AM	Registration From 2:00 p.m. to 8:00 p.m. at Shimabara Fukko Arena	Opening ceremony Plenary lecture	Plenary lecture Parallel symposia	Intra-meeting field excursion to Unzen Volcano	Plenary lecture Parallel symposia	Plenary lecture Parallel symposia
PM		Parallel symposia Poster sessions	Parallel symposia Poster sessions		Parallel symposia Poster sessions	Parallel symposia Poster sessions
Night	Icebreaker party	Workshops	Workshops	Party hosted by mayor	Workshops	Farewell party

II. Proposed Sessions

(* Session leaders, ** subleaders)

SYMPOSIUM 1. KNOWING VOLCANOES

Session 1-1. Recent developments in volcano research

Keywords: *Basic research, eruption mechanisms, structure and development of volcanoes, volcanic products, hazards assessment*

Co-conveners: H. Hoshizumi, J. Major*(jjmajor@usgs.gov), Y. Miyake, A. Neri, S. Takarada**(s-takarada@aist.go.jp)

Volcanic eruptions present increasingly significant threats to lives and infrastructure as populations expand into high-risk terrain and global air-traffic density intensifies. To mitigate these threats, accurate and increasingly quantitative assessments of hazardous events are needed. This symposium highlights recent developments in volcano research that elucidate the mechanics of volcanic eruptions and processes, and help to identify and assess hazardous events on all scales. It will focus particular attention on quantitative assessments based on modeling and field reconstructions.

Session 1-2. Volcano observation research and eruption forecast and alert programs

Keywords: *Volcano monitoring, eruption forecast and prediction*

Co-conveners: J. Ewert*(jwewert@usgs.gov), E. Fujita**(fujita@bosai.go.jp), M. Garces, K. Ishihara, M. Martini, C. Newhall**(cnewhall@u.washington.edu)

Volcano monitoring through observation is the basis for most eruption forecasts and other measures for volcanic disaster mitigation. This session will have two subsessions on advances in the observational and analytical methods for (1) eruption forecasting, and (2) eruption detection and alerting. For the first subsession, eruption forecasting, there

are new geophysical, geochemical, petrological, and geological advances that help us to understand the changing states of volcanoes, and thus changes in the probability of an eruption. Equally, understanding of the state of the volcano can suggest alternate scenarios, e.g., stalling of an intrusion before it erupts. For the second subsession on eruption detection and alerting, there are other valuable geophysical and geochemical technologies including many remote sensing techniques. Users of eruption alerts (e.g., air traffic) need rapid notification of the type and magnitude of eruptions, and other pertinent information such as observed ash concentrations, trajectories, etc. For both of our subsessions the emphasis will be on observations, particularly real-time observations, and interpretations of those observations. This will complement the emphasis of Session 1-1 on modeling.

Session 1-3. Health hazards of coexisting with active volcanoes

Keywords: *Human health, medical care, geologic pollution*

Co-conveners: P. Baxter*(pjb21@medschl.cam.ac.uk), C. Horwell**(chor05@esc.cam.ac.uk), Y. Ishimine**(ishimine@bosai.go.jp)

Twenty years ago, a landmark conference was held in Kagoshima, Japan, on coexistence with volcanoes, which was the first major international multi-disciplinary conference to address problems of cities on volcanoes. COV5 offers an important opportunity to review what progress has been made on the theme of coexistence and human health and sustainability near volcanoes in Japan and around the world over the last two decades. This session is open to all multi-disciplinary research that addresses or relates to the theme with special emphasis on the future range for evaluating human health risk. In addition to direct impacts on human physical and mental health and well being from eruptions, other impacts on human health and sustainability in volcanic areas in the fields of air and water pollution, geochemistry, medical geology, animal health and global security (humanitarian crises and complex emergencies) will be included, with the intention of debating new and wide-ranging topics on health and earth processes, as well as health sector involvement in disaster management.

SYMPOSIUM 2. VOLCANOES AND CITIES

Session 2-1a. Responding to Natural Disasters: Case Histories with Lessons for Volcano Crises

Keywords: *Emergency response, alert notification, evacuation, role of media*

Co-conveners: S. Bailey*(SBAILEY@co.pierce.wa.us), C. Gardner*(cgardner@usgs.gov), T.Nakahashi, R. Solidum, T. Yamamoto, H.Yamasato**(yamasato@mri-jma.go.jp), T. Yokota

Although there are some aspects of volcanic crises that are somewhat unique to volcanoes (long lead times before and duration of volcanic events), many volcano hazard mitigation and response issues are common to all large-scale natural disasters—for example, alert notification, communication, evacuation, and public education. This symposium seeks to draw upon the broader scientific and emergency management community that has dealt with, or is planning for, large-scale natural disasters to share their insights about what works and what doesn't. The session will focus on practical lessons and invite scientists, emergency responders and managers, public officials, and the media to share case histories of actual events, or of large-scale simulated events, to motivate discussions on how to prepare for, and respond to, volcano crises that affect communities. Case history topics of interest include, but are not restricted to: alert-level notification systems; new technologies for warning populations; interagency structures for crisis response; the media's role in public warnings; how to or not handle large relief efforts; living with long-term volcanic activity; building an educated emergency response community; and evaluation of forecasting volcanic ash hazard and alerting.

Session 2-1b. Assessing long term volcanic hazards and risks

Keywords: *Infrequent volcanic eruptions, development of new volcanoes, large magnitude eruptions*

Co-conveners: C. Connor*(chuck.connor@gmail.com), S. Sparks**(Steve.Sparks@bristol.ac.uk), T. Ui**(tadui@attglobal.net)

Increasingly societies are becoming interested in long-term volcanic hazards and risks on timescales of hundreds to hundreds of thousands of years. This interest has come about because of the siting of critical facilities, some of which might be affected by hazardous events far into the future and because of the long-term threat from very large magnitude but infrequent volcanic eruptions. This symposium will consider the scientific assessment of future volcanism and the attendant hazards and risks, including the development of new volcanoes and occurrence of large magnitude eruptions.

Session 2-2. Impacts of volcanic activity on infrastructure and effective risk reduction strategies

Keywords: *Hazard assessment and mapping, risk analysis, sabo, cost-benefit analysis*

Co-conveners: N. Anyoji*(nobanyoji@stc.or.jp), R. Imura, J. Kurihara, Y. Nakamura**(ynakamu@cc.utsunomiya-u.ac.jp), C. Neal**(tneal@usgs.gov), T. Pierson, G. Zuccaro

Volcanic activity can profoundly affect buildings, power, water, transportation, communication, and other lifelines in cities and smaller communities. Strategies to reduce risk to critical infrastructure include comprehensive hazard assessment and mapping, vulnerability and risk analysis, land-use planning, development of mitigation and response plans, education, training, and engineering solutions. This symposium seeks to share recommendations and lessons learned from private industry, government agencies, utilities, elected officials, scientists, engineers, educators and others. Specific topics will include: eruption impact studies; response plans, effective warning systems and evacuation criteria for utilities; role of infrastructure in large-scale evacuations; managing sediment discharge following tephra accumulation; monitoring of hydrologic processes and topographic changes; engineering approaches to directly control volcanic risk (e.g. Sabo dams, drainage tunnels, degassing pipes); economic consequences of volcanic eruptions; and cost-benefit analyses of mitigation measures.

Session 2-3. Long-term land-use planning that mitigates volcanic risk

Keywords: *Land use planning, hazard-resilient communities, reconstruction planning*

Co-conveners: J. Becker, Á. Höskuldsson, D. Johnston, T. Kimura, W. Saunders*(W.Saunders@gns.cri.nz), K. Takahashi**(t-kazuo@net.nagasaki-u.ac.jp), T. Tanabe

Land-use planning can be used to effectively reduce volcanic risk to life and property. Planning should be used pro-actively, and seek to avoid or mitigate the effects of volcanic hazards at the earliest stage of development. In cases where development has already taken place, there may still be measures that can be employed to mitigate further risk. This session will: 1) introduce the role of land-use planning in building sustainable, hazard-resilient communities (including key concepts, challenges and opportunities); 2) consider the requirements of land-use planning for volcanic hazards in various countries, operating under different legislative frameworks; and 3) provide examples of good practice land-use planning for volcanic hazards.

SYMPOSIUM 3. LIVING WITH VOLCANOES

Session 3-1. Linkage for reducing volcanic risks: Cooperation and mutual support amongst researchers, administrators, mass media, inhabitants, local organization and volunteers.

Keywords: *Linkage, cooperation, information exchange, crisis communication*

Co-conveners: J. Clavero, G. Leonard*(G.Leonard@gns.cri.nz), K. Nakagawa, H. Okada**(okada@uvo.sci.hokudai.ac.jp), S. Shozawa, D. Thompson, T. Tsuchida**(tsuchida@ktn.co.jp)

Volcanic crises require efficient teamwork among scientists, public officials, news media and citizens at risk to mitigate disasters. There are a range of examples of a lack of, or poor, relationships and communication during volcano crises. Establishing good teamwork is a time-consuming task, and thus, direct communication and planning during non-crisis times is essential. For example, crisis management during the eruption at Usu volcano in 2000 was successfully conducted because all key parties made a concerted effort for five years prior to the eruption, resulting in no casualties. This session will discuss the linkage of concerned parties to reduce volcanic risks and intends to include: lessons from a range of case studies; strategies for engagement of the community as a partner; preparing for effective response to warning systems; communication with the public, including discussion of "best practice" and available guidelines; public reactions to extreme threats; lessons from other "high stakes" hazard environments; teamwork in varied cultural settings; and the effective use of communication mediums, especially mass media and the Internet.

Session 3-2. Education and Outreach—Strategies that Improve Community Awareness about Volcanoes

Keywords: *Education and risk communication*

Co-conveners: C. Driedger*(driedger@usgs.gov), S. Hayashi**(hayashi@ipc.akita-u.ac.jp), S. Ikebe, H. Itoh, K. Ronan, J. Woodcock

Population growth and tourism are bringing increasing numbers of people and infrastructure to volcanic regions of the world. The trend offers opportunities and challenges for volcanologists and officials who seek to reduce volcanic risk. This symposium considers effective strategies for communication and enhancing risk awareness. We will examine studies of risk perception, components necessary for effective awareness programs, examples of successes and challenges in volcano education and risk communication (includes parks and museums, community awareness programs, Internet, school education, and others), media interactions, use of folklore and local knowledge to improve awareness, and economic benefits that volcanoes bring to communities.

Session 3-3. Communities and volcanism - archaeology, tradition and recovery

Keywords: *Historical disasters, recovery processes, cultural tradition*

Co-conveners: R. Blong, S. Cronin**(s.j.cronin@massey.ac.nz), I. Kitahara*(itoko@kk.iij4u.or.jp), S. Mimatsu, S. Nakada, I. Nakamura, M. Rosi

Crossovers between the sciences of archaeology, anthropology and volcanology have typically been made to either identify, or disprove the catastrophic impacts of eruptions on communities and cultures. Little emphasis has been placed on elucidating how communities adapted to, or, recovered from "normal" scales of volcanic activity. Oral and written accounts range from the apocalyptic to the development of ceremonies designed to encourage volcanic repetition. Do these hold evidence for community recovery, are they reliable records of volcanic impacts and can they aid in future hazard mitigation? We invite papers in this symposium that consider the aftermath and community recovery from eruptions, and long-term coexistence with sporadically violent volcanism using evidence from archaeology, the social sciences and community or individual psychology.

III. Abstract Submission

Deadline May 31, 2007

Abstracts must be submitted to the COV5 International Science Committee no later than May 31, 2007 (online submission will be possible from March 1, 2007 at http://www.citiesonvolcanoes5.com). All abstracts must be written in English. Although notification of receipt of a submitted abstract will be automatically sent by e-mail, its final acceptance for the meeting as well as session number and style of presentation (oral/poster) will be decided by the session co-conveners and science committee, with consideration given to a contributor's preference. All relevant information will be sent to contributors by e-mail, while the program will be available on the website from two months prior to the conference. Please note that the accuracy of abstracts remains the responsibility of authors.

Oral Presentations

Oral presentations will be given in the main hall and three meeting rooms. Plenary talks related to the scientific sessions of the day are scheduled for the main hall in the morning or afternoon. Immediately following plenary talks, scientific sessions will begin separately in the three meeting rooms. Except for plenary and keynote talks (the latter is dependent on the session), each oral presentation is be 20 minutes long (15 minutes for presentation and 5 for discussion). Only projector and personal computer (Windows/Macintosh) systems prepared by the organizing committee will be available in the main hall and meeting rooms.

Contributors are requested to prepare their own presentation in an MS PowerPoint 2003 or older version and bring it on a CD or memory stick to the conference venue. Installation of files into the main computer should be done in the preparation room on the day before the presentation.

Poster Presentations

All posters will be on display in the main hall of Shimabara Fukko Arena for two days in the first or second half of the conference and core times of about 90 minutes (authors' explanations in front of posters) will be scheduled for the days' sessions in the evening (or Friday afternoon). No oral explanations of posters will be scheduled in the meeting rooms. Poster size is restricted to 90 cm wide by 180 cm high. Space will not be available for horizontally-oriented posters. Presenters are encouraged to prepare "poster copies" as handouts.

Abstract Format

All contributions to symposiums (all science sessions) should be made by submission of the abstracts. All abstracts must be written in accordance with the guidelines given below. Fill out the abstract submission form directly on the website to upload. Abstract submission starts on March 1, 2007 and ends on May 31, 2007.

In special circumstances where submission over the website is impossible, a contributor may submit an abstract and all information shown below to the COV5 secretariat at cov5-regi@the-convention.co.jp by e-mail. Plain text or MS-word file attached in the e-mail is acceptable.

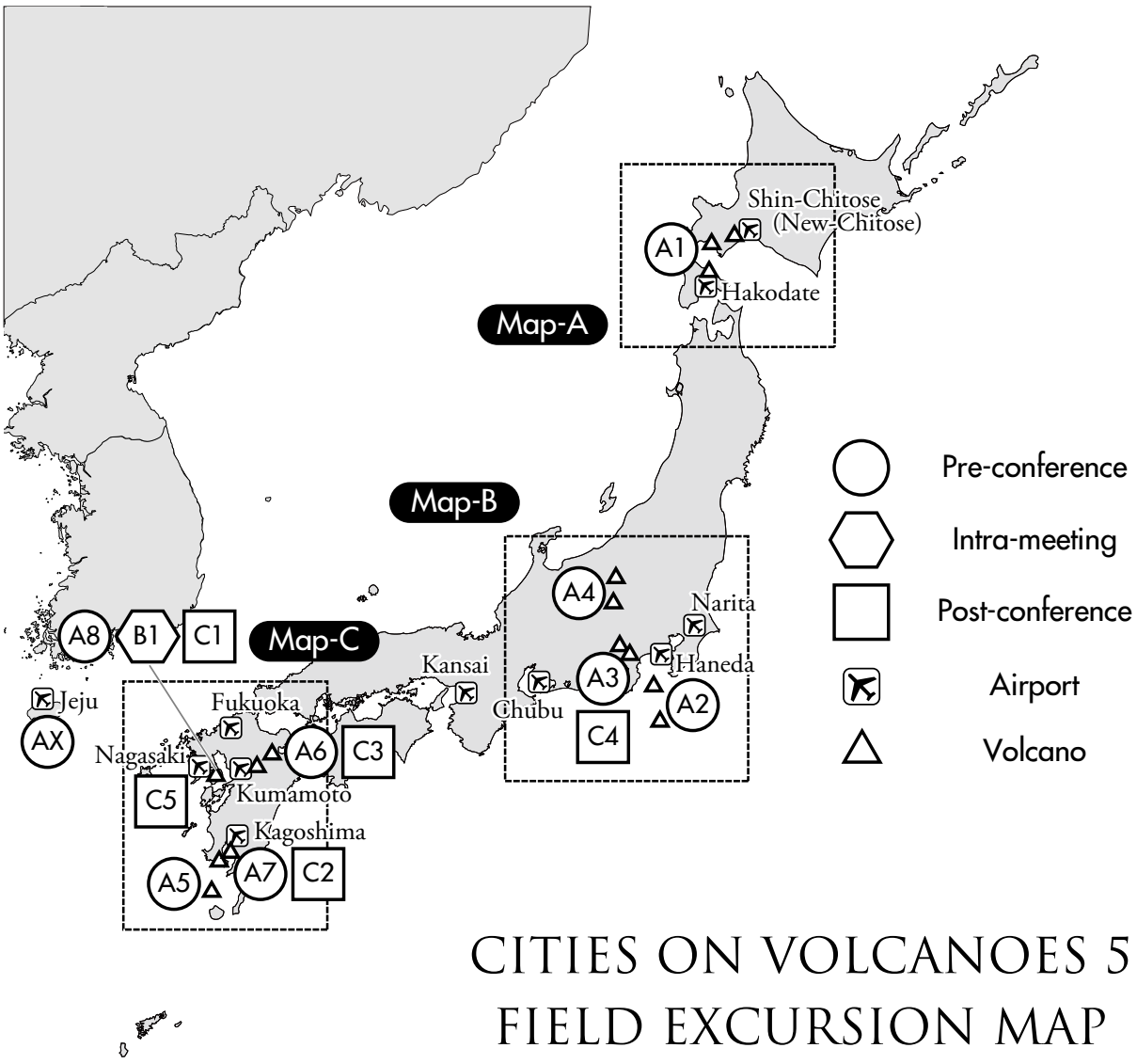
Abstract submission requires the following items:

1. *Title of paper*: First letter in each word should be Capitalized (not all)
2. *Author names*: FAMILY NAME (capitalized), first and second names (including affiliations numbers)
3. *Affiliations of authors and country*
4. *Name of presenter*
5. *Presentation preference*: Oral or poster
6. *Information of contact person* (e-mail, fax number and phone number)
7. *Session number of the contribution*
8. *Text* (less than 300 words)

Abstract Example:

1. Volcanic Disasters in These Decades in Japan and Crisis Management
2. NAKADA, Setsuya.(1), SHIMIZU, Hiroshi.(2)
3.
   (1) Earthq. Res. Inst., Univ. of Tokyo, Japan
   (2) Inst. Seism. Volcanol., Kyushu Univ., Japan
4. Setsuya Nakada
5. Poster
6. nakada@eri.u-tokyo.ac.jp, fax +81-3-3812-6979, tel +81-3-5841-5695
7. Session 2-1a
8.

Major eruptions in Japan occurred at Izu-Oshima in 1986, Unzen from 1990 to 1995, and Usu and Miyakejima in 2000. The worst event among these eruptions was that pyroclastic flows took forty-four lives at Unzen. The number of refugees during eruptions reached 15,000 and 13,000 in Unzen and Usu, respectively. All islanders of Izu-Oshima and Miyakejima (about 12,000 and 3,000) were ordered evacuation in 1986 and 2000, respectively. The evacuation lasted for 4 years and 5 months in the latter case. Crisis management during volcanic eruptions in Japan largely changed after the big damage from the Kobe Earthquake in 1995; that is, the government has begun to put in serious effort to tackle crisis management during natural disasters. Although only the heads of municipalities in Japan can still issue an order or advice on evacuation, government management has strongly influenced municipalities. During eruptions at Usu and Miyake in 2000, volcanologists had a very hard time observing on-going phenomena near the volcano. This has been seen as the result of crisis over-management, which emphasized not only saving lives but also protecting and maintaining infrastructure within the evacuated area, rather than observation and investigation of on-going volcanic phenomena. Another example is the hazard map of Mount Fuji that was prepared first by the government soon after the first observation of swarms of low-frequency earthquakes at the end of 2000 and in the next year. It is well known that tephra from the eruption at Mount Fuji in 1707 (Volcano Explosivity Index 5), covered the ancient metropolitan city of Tokyo as thick as several centimeters. Hazard maps of volcanic eruptions were started by municipalities after the tragic event at Unzen in 1991.



CITIES ON VOLCANOES 5 FIELD EXCURSION MAP

(AX) Jeju island belongs to the Republic of Korea. Participants may need another visa to enter Korea. See P.9 for visa.

IV. Field Excursions

The following pre-, intra- and post-conference field excursions, A,B and C respectively, will be offered, including CEV (commission of explosive volcanism) field workshop. Excursion leaders will communicate with registered participants on details of the excursions and possible modifications. The excursion fee includes accommodation plus transportation during the excursion. Concerning meals, check the descriptions blow. The excursion fee does not cover the travel cost between the starting or terminating point of the excursion and Shimabara, except for A5, A6, A7, A8, B1, C1, C2 and C5. Participants in these excursions should make their own travel arrangements, for example, through travel agencies in their own countries. Excursions leaders may suggest possible domestic flight routes and times. Also, participants having any special meal requirements should contact leaders in advance.

In addition, since the organizing committee cannot bear the responsibility for accidents that may occur during these field trips, participants should purchase travel insurance through their travel agencies.

A. Pre-conference Excursions

A1: Usu and Hokkaido-Komagatake volcanoes, southwestern Hokkaido

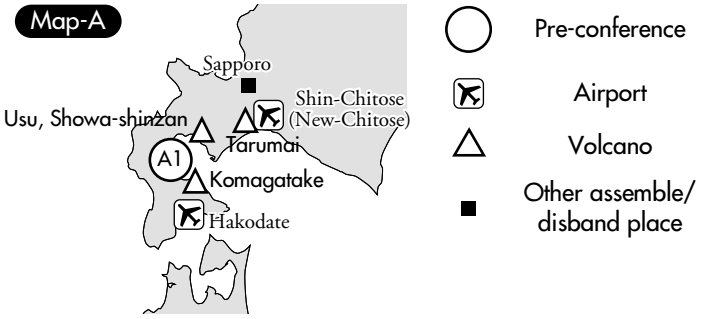
Dates: November 15 (Thu.) – 18 (Sun.) (4 days)

Leaders: M. Nakagawa, H. Oshima and M. Yoshimoto (Hokkaido Univ.)

Contact person: M. Nakagawa: mnakagawa@mail.sci.hokudai.ac.jp

Cost: 53,000 yen

Includes: Transportation from Sapporo to Hakodate, accommodation from November 15 to 17, all meals, entrance fee and guidebook



Participants: 12 (min.) – 20 (max.)

Itinerary *Nov. 15:* Sapporo Station 8:00 a.m. – Tarumai Volcano – Showa-shinzan lava dome – Mimatsu Museum – Usu Volcano Observatory – Otaki (stay)

Nov. 16: Otaki – Usu 2000 eruption – Mori (stay)

Nov. 17: Mori – Hokkaido-Komagatake historic tephra – 1640 debris avalanche – Mori town office – Mori (stay)

Nov. 18: Mori – Hakodate airport, 9:00 a.m.

Participants have to arrive at Sapporo on November 14. They can fly from Hakodate Airport to Nagasaki Airport via Tokyo-Haneda Airport and arrive at Shimabara on November 18.

Description: There are 18 active volcanoes in Hokkaido, some of which have experienced frequent eruption even in the 20th century, resulting in give us serious disaster. However, the areas around these volcanoes have traditionally taken advantage of eruption, rather than just suffering from the damage. This trip visits two active volcanoes, Usu and Hokkaido-Komagatake. We will focus on not only volcanic processes but also living with active volcanoes. We will investigate various types of historic eruptive products, lava dome, pumice fall, pyroclastic flow, debris avalanche and active craters. At Usu Volcano, we will focus on two eruptions during the 20th century, 1943–45 and 2000. We will also discuss the processes of eruption of Hokkaido-Komagatake Volcano in 1640, associated with a sector collapse of the edifice. In addition, we will learn about monitoring and the sabo system, public networks, and other facilities for mitigation of the next volcanic hazard. Please note that mid-November is the beginning of winter in Hokkaido. As temperatures will be cold (around 10° C), please prepare adequate for cold and wind.

A1:Eruption column of Hokkaido-Komagatake volcano in 1929. Courtesy of Mori town office

Note: Participants needing hotel reservations for the night of November 14 should contact M. Nakagawa.

A2: Active volcanoes on the Izu arc: Izu-Oshima and Miyakejima *(See Map-B)*

Dates: November 15 (Thu.) – 17 (Sat.) (3 days)

Leaders: M. Tsukui (Chiba Univ.), T. Yamamoto and K. Kazahaya (Geol. Surv. Japan), H. Yamasato (Japan Meteorological Agency), K. Niihori (Univ. Tokyo).

Contact person: M. Tsukui: tsukui@faculty.chiba-u.jp

Cost: 70,000 yen

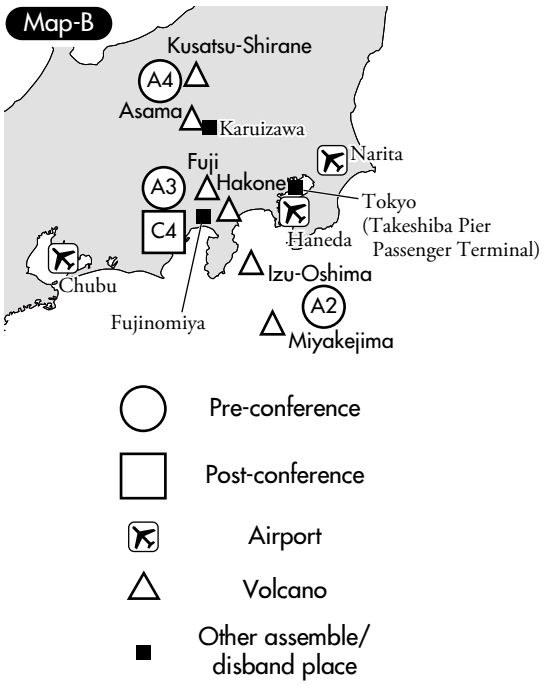
Includes: Transportation by jet boat, helicopter and ship, accommodation, box lunch and guidebook

Participants: 7 (min.) – 16 (max.)

Itinerary *Nov. 15*: Takeshiba Pier Passenger Terminal (Tokyo), 7:00 a.m. – Rapid jet boat – (Izu Oshima) Mihara crater AD 1778 central scoria cone, AD 1986 lava flow – Crater chains from AD 1986 fissure eruption

Nov. 16: Habu maar from 9th century – "The great road cut" of Izu-Oshima tephra – Pre-Izu-Oshima basement volcano – Helicopter – (Miyakejima) volcanic ash and surge deposits of 2000 eruption – 1983 lava flow

Nov. 17: Sabo dam – SO_2 monitoring demonstration by DOAS system – Island volcanic gas alert system – Ship – Takeshiba Pier, 8:30 p.m. (Tokyo)



A2:Izu-Oshima Volcano

Description: This trip visits two active volcanoes on the Izu arc, Izu-Oshima and Miyakejima. At Izu-Oshima Volcano, where a steady inflation of volcanic edifice can be detected, we will visit central and parasitic craters, lavas formed in the latest eruption in 1986. We will also observe a maar from a 9th century eruption, and over 100 tephra deposited during the last 20,000 years at an excellent road cutting.

On Miyakejima, eruptions took place in 1940, 1962, 1983 and 2000. A 1.6-km-wide summit caldera was formed by subsidence during the course of an intrusion and eruption event started in June 2000. In September 2000, the islanders were completely evacuated. After a four-year period of volcanic gas emissions, they were allowed to return permanently on February 1, 2005. We will visit the ash fall of the eruption in 2000, a low temperature "pyroclastic flow," mudflow deposits, and lava flow from 1983. From the viewpoint of volcano monitoring and mitigation of hazards, we are planning to look at SO_2 observation by DOAS (differential optical absorption spectroscopy system) and a volcanic gas alert system on the island.

Please note that depending on weather and marine conditions, scheduled activities and observation stops may be subject to change.

Please also note that on Miyakejima, the volcanic activity that started in 2000 has continued with harmful SO_2 gas emission. On January 2007, residents and tourists are still required to carry gas masks on the island. We will prepare gas masks for participants' use upon request. Persons with respiratory concerns should participate with special caution.

Note: Takeshiba Pier (Tokyo) is about ten minutes walk from the north exit of Hamamatsu-cho Station, which is between Tokyo and Shinagawa stations on the JR (Japan Railway) Yamanote Line. The pier is nearby the Intercontinental Tokyo Bay Hotel. Hamamatsu-cho is also the terminal of the monorail for Tokyo-Haneda Airport.

A3: Fuji and Hakone volcanoes *(see Map-B on page19)*

A3:Mount Fuji

Date: November 15 (Thu.) – 18 (Sun.) (4 days)

Leaders: A. Takada (Geol. Soc. Japan), T. Chiba (Asia Air Survey), K. Mannen (Hot Spring Res. Inst.), M. Ukawa (Nat. Res. Inst. Earth Sci. Disast. Prevent.)

Contact person: A. Takada: a-takada@aist.go.jp

Cost: 34,000 yen

Includes: Transportation, meals, beverages, accommodations and guidebook

Participants: 10 (min.) – 20 (max.)

Itinerary: *Nov. 15*: Assemble at Narita International Airport by late afternoon – Move to Hakone

Nov. 16: Walk in Owakudani, last eruption site of Hakone Volcano – Drive to 5th station on south flank of Fuji Volcano – Hike to craters of AD 1707 Hoei eruption – Observe major airfall deposits at Tarobo, Southeast flank of Fuji – Move to Yamanaka-ko, Fuji

Nov. 17: Drive to 5th station of north flank to observe fissure eruption sites of last 2,000 years – Lava tunnel of Aokigahara lava flow at foot of volcano – Visit museum

Nov. 18: Leave Yamanaka-ko – Arrive Tokyo-Haneda Airport around noon

We recommend that participants book flights for Nagasaki later than 1:00 p.m. Accommodation will be at unversity dormitories.

Description: Fuji Volcano is a large basaltic stratovolcano surrounded by densely populated cities. Three hundred years have passed since the last Hoei eruption. Hakone Volcano with its caldera is famous as a hot spring resort in Japan. After we learn the characteristics of each volcano during the excursion, we will discuss their future circumstances based on the eruptive history, hazard map, and monitoring system of each volcano. Moreover, we will enjoy an outreach program at Fuji Volcano.

Note: For the 2-hour hike to the Hoei craters (2,500 m high), clothes against cold (0 - 10° C) and wind are essential.

A4: Asama and Kusatsu-Shirane volcanoes, central Japan *(see Map-B on page 19)*

A4:Asama (back) and Kusatsu-Shirane (front) Volcanoes

Dates: November 15 (Thu.)–17 (Sat.) (3 days)

Leaders: M. Yasui and M. Takahashi (Nihon Univ.), Y. Miyake (Shinshu Univ.), M. Takeo (Univ. Tokyo), K. Nogami (Tokyo Inst. Tech.)

Contact Person: M. Yasui: yasui@chs.nihon-u.ac.jp

Participants: 5 (min.) – 14 (max.)

Approx. cost: 32,000 yen

Includes: Transportation by bus, two nights' double or multiple-occupancy hotel accommodations with breakfast and dinner and guidebook

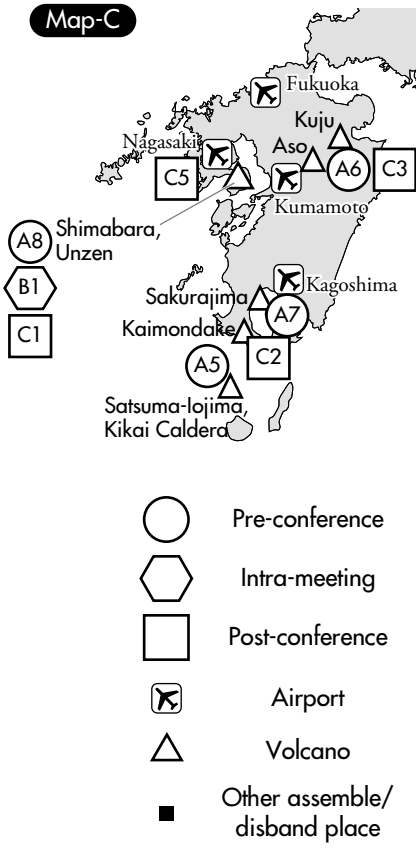
Excludes: Lunches and fare for the shinkansen (bullet train) between Tokyo and Karuizawa. A round-trip ticket is about 10,500 yen. It takes about one hour and ten minutes one way.

Itinerary: *Nov. 15*: Assemble at Karuizawa Station, around noon. Visit Katafuta River sabo construction on the east-

northeast flank of Asama Volcano. Emphasis is on risk reduction strategies including sabo plan (erosion control), hazard map and risk education. See volcano monitoring system at Karuizawa Weather Station, a branch of the Japan Meteorological Agency. Stay in Karuizawa.

Nov. 16: See volcano monitoring system, Asama Volcano Observatory (AVO), University of Tokyo. Then focus on youngest great eruption in 1783. Stops at the pumice cut at AVO, Asama-en, and Kambara excavation site. Discuss eruption sequence, stratigraphic relationship between deposits of Plinian pumice fall, pyroclastic flows and lava flows; occurrence of these deposits and eruptive styles; when if and how clastogenic lava generated; how a catastrophic disaster occurred at Kambara village in the final stage of eruption. Move and stay at Kusatsu spa.

Nov. 17: Kusatsu-Shirane Volcano is famous for volcanic gas and hot springs. Visit Sessho-gawara to see many fumaroles and installed automatic alarm system for H_2S gas. Discuss geochemistry of strongly acidic water of active crater lake at summit and rivers on flank. Visit Volcanic Fluid Research Center, Tokyo Institute of Technology, to see monitoring system. Terminates Karuizawa Station, around 5 p.m.*



Description: Asama and Kusatsu-Shirane are two of the active andesitic volcanoes in Japan. Major emphasis will be on their actual state of activity, volcano monitoring, past great eruptions, and risk reduction strategies. We may possibly stay at a Japanese-style inn with a public hot spa, without private bath in each room. Maximum daytime temperature will be 8° C. In case of chilly conditions, warm and waterproof outerwear and gloves are recommended.

***Note:** Participants are advised to reserve a hotel for the November 17 night in Tokyo and an air ticket from Tokyo-Haneda to Nagasaki on November 18.

A5: Kikai caldera and southern Kyushu *(see Map-C)*

Satsuma-Iojima Island, Ibusuki region, southeast of Satsuma Peninsula, Kokubu region (north of Kagoshima Bay) and Minami-Osumi region (southern part of Osumi Peninsula)

Dates: November 14 (Wed.) – 18 (Sun.) (5 days)

Leaders: K. Suzuki-Kamata (Kobe Univ.), H. Shinohara (Geol. Soc. Japan), F. Maeno (Univ. Tokyo)

Contact person: K. Suzuki-Kamata: kamata@kobe-u.ac.jp

Approx. cost: 63,000 yen

Includes: Transportation by van, accommodations (4 nights), ferryboat ticket and guidebook.

Participants: 10 (min.) – 18 (max.)


A5:Satsuma-Iojima Island

Itinerary: *Nov. 14*: Meet at hotel in Kagoshima in evening – Stay in Kagoshima

Nov. 15: Move to Satsuma-Iojima Island by ferryboat – Observe eruptive products of Kikai-Akahoya eruption

of 7,300 yr. BP at four localities. Observation will focus on the pre- and post- pyroclastic fall deposits, early stage welded pyroclastic surge deposits, co-ignimbrite lag breccias and ignimbrite of the caldera-forming eruption. Stay on Satsuma-Iojima Island.

Nov. 16: Move to southern Kyushu – Observe Koya low-aspect ratio ignimbrite, originated from Kikai-Akahoya eruption, Ibusuki region, Satsuma peninsula. The ignimbrite moved across the sea between the Kikai caldera and Kyushu Island. Stay in Kagoshima.

Nov. 17: Observe Koya pyroclastic flow deposit, Minamiosumi area, Osumi Peninsula – Compare with 2 ignimbrites of high-aspect ratio: Ito pyroclastic flow deposit, Kokubu area, and Ata pyroclastic flow deposit, Minamiosumi area. Stay in Kagoshima.

Nov. 18: Move to Shimabara by car.

Description: The aim of this excursion is observation of products of the Kikai-Akahoya eruption, which was the youngest and one of the largest-scale caldera-forming eruptions in Japan. Observation will be carried out at various distances, from near the source to within the caldera and the southern Kyushu. We will compare the deposits with other large-scale pyroclastic flow deposits in southern Kyushu. We will stay in a Japanese-style inn on Satsuma-Iojima Island. The excursion program is subject to change, depending on the ferryboat schedule under bad marine conditions.

A6: Living with Aso-Kuju volcanoes and geothermal field

(See Map-C on page 21)

Dates: November 16 (Fri.) – 18 (Sun.) (3 days)

Leaders: S.Ikebe and M.Yoshikawa (Aso Volcano Museum), Y. Miyabuchi (Forestry Forest Prod. Res. Inst.)

Contact person: S. Ikebe: ikebe-shinichiro@asomuse.jp

Participants: 15 (min.) – 30 (max.)

Approx. cost: 33,000 yen

Includes: Two nights' accommodation including dinner and breakfast, bus transportation, ropeway at Aso (one way), ferry boat for Shimabara, two lunches, two museums' admission fees and guidebook

A6:Kuju Volcano

Itinerary: *Nov. 16*: Kumamoto Station, 1:00 p.m. – Kumamoto airport, 1:50 p.m. – Daikanbo (view point for Aso caldera) – Hatchobaru geothermal plant – Komatsu Jigoku (geothermal field) – Stay in Kuju

Nov. 17: Kuju Volcano (Chojabaru, Makinoto pass, Senomoto plateau) – Aso Shrine – Aso Volcano (Kami-Kometsuka scoria cone, Kusasenri-ga-hama, Aso Volcano Museum, Nakadake crater, Furu-bochu archaeological site) – Shirakawa-suigen spring – Stay in Aso

Nov. 18: Tsujunkyo Bridge (stone bridge of Aso welded tuff), museum, Goro-ga-taki Fall (Aso pyroclastic flow deposits) – Reidaikyo Bridge (stone bridge of Aso welded tuff) – 2:20 p.m., Kumamoto Port – Shimabara

Description: Aso Volcano is one of the largest caldera volcanoes in the world (25 km north-south and 18 km east-west). The Aso caldera was formed by four major explosive eruptions during in 270 to 90 ka, which issued voluminous pyroclastic flows, covering extensively central Kyushu. Post-caldera activity initiated just after the last major eruption (Aso-4) and more than seventeen central cones were formed. Nakadake, presently the only active cone, includes seven craters. Only the northernmost crater (the first crater) has been active for the last 70 years; for example, 1974, 1979, 1984 –1985 and 1989–1991.

Many people have lived closely with the Aso and Kuju volcanoes from ancient times. Aso Volcano has been a target of belief. The God is Takeiwatatsu-no-mikoto, who is sacred to Aso Shrine located in the northeastern part within the Aso caldera. Aso pyroclastic flow deposits (welded tuff) were utilized for bridge construction. There are approximately 320 arched stone bridges in Kumamoto Prefecture, including the Tsujun-kyo and Reidai-kyo bridges on Midorikawa River, which are important national cultural properties.

Kuju Volcano consists of 20 lava domes and cones. The most active geothermal field around Kuju Volcano is Iwoyama, where a phreatic eruption occurred in 1995. At the Otake-Hatchobaru geothermal area in the northeastern part of Kuju Volcano, geothermal power plants, including Hatchobaru Power Plant, the largest geothermal power plant (110 MW) in Japan, exploit its heat to generate electricity.

During the excursion, it may be cold and rainy, therefore, a jacket and raincoat/umbrella are strongly recommended.

A7: Living with Sakurajima Volcano *(see Map-C on page 21)*

Dates: November 16 (Fri.) – 18 (Sun.) (3 days)

Leaders: D. Fukushima and A. Tsune (Sakurajima Museum)

Contact person: D. Fukushima: fuku@sakurajima.gr.jp

Participants: 10 (min.) – 40 (max.)

Cost: 42,000 yen

Includes: All transportation, accommodations and meals

Itinerary: *Nov. 16*: Kagoshima Airport, 2:00 p.m. – Sakurajima Port – Sakurajima Visitor Center – Lava trail – Sabo Center – Sabo dam (barrier to control of debris flow) – Stay in Sakurajima

Nov. 17: Digging beach for hot-spring – Arimura Lava Observatory – Kurokami buried gate – Komen Observation Point – Evacuation port – Hakamagoshi Observation Point – Yunohira Observatory – Debris flow disaster memorial – Stay in Kagoshima

Nov. 18: Kagoshima – Kumamoto port – Shimabara port

A7:Sakurajima Volcano and city

Description: Sakurajima is one of the most active volcanoes in Japan. Vulcanian eruptions have taken place repeatedly since 1955. This trip visits small museums, observatories, lava flow fields and disaster memorials. Participants will be able to learn the history of Sakurajima Volcano and the lives of the residents who receive blessings and curses from the volcano. The first night's hotel (Nov. 16) will be a traditional Japanese-style one with dinner and rooms shared in Sakurajima. The second night (Nov. 17) will also be in Kagoshima at a Western-style hotel without dinner. Participants will enjoy dinner downtown. It will be warm in the daytime but cool at night (16–23° C). Clothes suitable for a fieldtrip are recommended.

A8: Historic remains and archives of the AD 1792 Unzen disaster *(see Map-C on page 21)*

Date: November 18 (Sun.) (1day)

Leaders: I. Kitahara (Kanagawa University), S. Sugimoto and A. Hirao (Shimabara City)

Contact person: S. Sugimoto: convention@citiesonvolcanoes5.com

Cost: 3,200 yen

Participants: - 50 (max.)

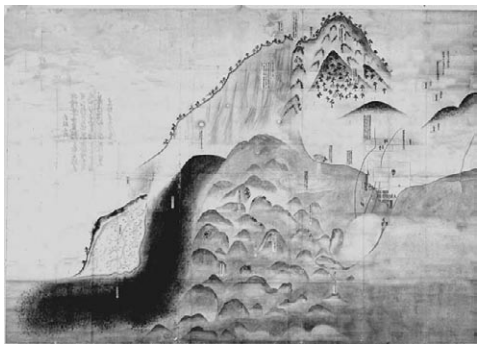
Includes: Transportation by bus, lunch and drink

Itinerary: Meet in front of Gamadas Dome, 10.00 a.m. – Honkoji Temple (collections of documents and map paintings of AD 1792 event) – City library (similar collections) – Some historical traces of disasters from the same event

in the city, including monuments and Shimabara Castle – Fukko Arena, 4:30 p.m.

Description: In 1792, Mayuyama (old lava dome), towering just behind the city of Shimabara, collapsed to the east, following the summit eruption of Mount Unzen. Debris avalanche rushed into the island sea, generating Tsunami and 15,000 resultant casualties. Precursory and associated strong shaking and the avalanche seriously damaged ancient Shimabara and the surrounding areas. This one-day excursion will visit historic places and monuments recording the disaster, and observe many historical materials including documentation. This is an excellent opportunity to sense the history of Unzen's volcanic disasters. Local volunteers will join to help participants to understand the Japanese tales and documentation of some 200 years ago.

Participants from foreign countries should arrive in Shimabara or neighboring cities (e.g., Nagasaki) by the night of November 17.



The Shimabara Catastrophe
(Shimabara-Taihen O-chizu)
（島原大変大地図）
This old drawing illustrates many hills generated by the Mayuyama Collapse in 1792 and accompanied debris flow

AX: Field Workshop: Commission on Explosive Volcanism, IAVCEI

Phreatomagmatic volcanoes on Jeju Island, South Korea: Morphology, architecture, lithofacies, and processes

Dates: November 13 (Tue.) – 17 (Sat.) (5 days)

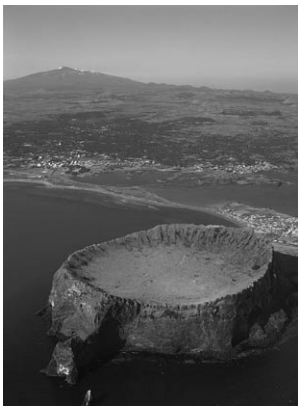
Leaders: Y. K. Sohn (Gyeongsang Nat. Univ.), K. H. Park (Korea Inst. Geosci. Mineral Res.)

Contact person: Y. K. Sohn, yksohn@gnu.ac.kr

Participants: 5 (min.) – 25 (max.)

Cost: US$600 (Note: should apply directly to Y.K. Sohn)

Includes: Transportation by mini-bus, accommodation at hotel, all meals



AX:Ilchulbong tuff cone (front) and the Mt. Hallan (back), Jeju Island, Korea

Description: About a dozen phreatomagmatic volcanoes occur along the shoreline of Jeju Island, South Korea, which is a Quaternary shield volcano built upon the continental shelf of the Yellow Sea. These volcanoes provide excellent and continuous sea cliff exposures that are probably unsurpassed by any other phreatomagmatic volcanoes outside Jeju Island. The excellent outcrop conditions make it possible to establish the relationships between various phreatomagmatic processes and their products in a clear way, including dry to wet pyroclastic surges, Surtseyan fallouts and grain flows, debris flows, slides and slumps, and post-eruption resedimentation processes. In addition, these volcanoes have a variety of morphologies, stratal architectures and lithofacies, distinguished from one another and indicating subtle to marked contrasts in eruptive conditions, depositional processes, and growth history. The field program will include a visit to more than five tuff rings and cones and several scenic places, such as a gigantic lava tube, a magnificent lava dome, and Jeju Stone Park, and a half-day symposium of presentations and free discussions. An optional program of half-sightseeing and half-geological tour will also be prepared for those who can stay a bit longer in Jeju Island.

Start and End: Start at Hotel Charmant, 8:30 a.m., Nov. 13; End at Jeju International Airport: 12:00 p.m., Nov. 17

The weather will be mostly sunny, and the degree of difficulty mostly easy, though there will be one or two rocky coastal walks.

Additional notes: Participants should arrive at Jeju Island on Monday, November 12. They will be picked up at Jeju

International Airport. A short trip to a scenic spot will be prepared for those who arrive early in the day. The optional sightseeing program is for those who depart from Jeju Island on Sunday, November 18. Direct flights from Jeju to Fukuoka, Osaka, Tokyo (Narita) and Nagoya in Japan are available. To reach Jeju Island from the other parts of the world, participants will have to go by way of Seoul (Incheon) Airport.

B. Intra-meeting Excursions

B1: Unzen eruption – Disaster and recovery *(see Map-C on page 21)*

B1:Mount Unzen - New lava dome, Heisei Shinzan, formed during 1990-1995 eruption
- *Photo by MLIT (Ministry of Land, Infrastructure, Transportation)*

Date: November 21 (Wed.) (1 day)

Leaders: H. Shimizu and T. Matsushima (Kyushu Univ.), S. Nakada and T. Fujii (Univ. Tokyo), H. Hoshizumi and S. Takarada (Geol. Surv. Japan), Y. Miyabuchi (Forestry Forest Prod. Res. Inst.), T. Ui (Crisis Environ. Manag. Policy Inst.), Y. Miyake (Shinshu Univ.), T. Sugimoto (Kyoto Univ.)

Contact: convention@citiesonvolcanoes5.com

Cost: Included in the registration fee

Participants: 600 (max)

Includes: Transportation by chartered bus, snack lunch, beverages and guidebook

Itinerary: Shimabara City – Nita Pass (lookout for Heisei Shinzan: new lava dome) – Minami Senbongi (new exposure of lahar and pyroclastic flow deposits) – Taruki-daichi Park Nature Center (revegetation after destruction) – Ruins of Onokoba Elementary School, burned by pyroclastic flow on Sept. 15, 1991 – Onokoba Sabo Mirai Museum (with sabo control center) – Mizunashi River Memorial Park (houses destroyed by debris flows) – Visit to school – Shimabara City

Description: Shimabara City and its environs were damaged by repeated pyroclastic flows and lahar during the 1990 –1995 eruption of Unzen Volcano. We will visit the devastated area and look around the ruins of the eruption. Local residents, Kataribe, who lost their houses and relatives, will relate the disaster and their experiences. We will also learn about reconstruction works following the volcanic devastation, such as the ground mounding project in the Annaka area and several other lahar control projects. Moreover, we visit an elementary school and look at an activitiy relating the experiences of the volcanic disaster to younger generations. It will be chilly to cold (5–20° C). Warm clothes, rain gear, and sneakers or light boots are recommended.

B2: Helicopter Flight over Unzen *(see Map-C on page 21 - same place as B1)*

Date: November 23 (Fri.) Afternoon (about 30min.)
Contact: convention@citiesonvolcanoes5.com
Cost: Free of charge
Participants: 100 (max)
Description: By support of Japan Ground Self-Defense Force, participants can fly over the new lava dome (Heisei Shinzan) and the surrounding area with a large helicopter. The first 100 persons are acceptable though subject to be canceled in weather condition. Also the person who participates in the poster session or other activities at the same time may not be able to board the flight. A child under six years old can not go on board.

C. Post-conference Excursions

C1:Spine of the new lava dome, Heisei Shinzan

C1: Unzen Volcano and new lava dome climb *(see Map-C on page 21)*

Dates: November 24 (Sat.) – 26 (Mon.) (3 days)
Leaders: S. Takarada and H. Hoshizumi (Geol. Surv. Japan), S. Nakada (Univ. Tokyo), H. Shimizu and T. Matsushima (Kyushu Univ.), Y. Miyabuchi (Forestry Forest Prod. Res. Inst.), M. Yoshimoto (Hokkaido Univ.), Y. Goto (Muroran Inst. Technol.), T. Sugimoto (Kyoto Univ.), D. Nagai (Nihon Univ.)
Contact Person: S. Takarada: s-takarada@aist.go.jp
Cost: 31,500 yen
Participants: 25 (min.) – 60 (max.)
Includes: Two stays in Unzen Hot Spring area, meals (breakfast, lunch, dinner), transportation by bus, beverages, insurance and guidebook
Itinerary: *Nov. 24*: Unzen 1991–95 pyroclastic flow

Shimabara Gaiko ferry terminal and Shimabara City Office, at 8:00 a.m. – 1993 pyroclastic flow deposits at northeastern (Minami-Senbongi area) viewpoint – Ruins of Onokoba Elementary School, hit by Sept. 15, 1991 surge – Lahar deposits in Mizunashi River – Pyroclastic flow deposits of 1991 –93 and surge deposits at eastern foot (Kita-Kamikoba area of Mizunashi and Oshigadani rivers) – Memorial site where 43 people were killed by June 3, 1991 surge

Nov. 25: New lava dome climb

Nita Ropeway Station – Ropeway – Myoken Station – Myoken Amphitheater – Summit of Mt. Fugen (previous summit at 1,359 m a.s.l.) – Climb new lava dome (Heisei Shinzan) – Summit of Heisei Shinzan (1,483 m a.s.l.) – No. 11 lava lobe (optional) – Summit of Mt. Fugen – Nita Ropeway Station – Museum at Unzen hot spring area

Nov. 26: Growth History of Unzen Volcano

Kureishibaru pyroclastic flow deposit (14 ka) – Shin-yake lava flow (AD 1792) – Mutsugi pyroclastic flow deposit (5 ka) – Unzen scientific drilling site (USDP-1) – Tarukidaichi debris avalanche deposit (20 ka) – Mayuyama Amphitheater (source of 1792 Mayuyama debris avalanche) – Mayuyama debris avalanche deposit (AD 1792) – Shimabara Gaiko ferry terminal* – Nagasaki Airport

Description: This field trip will focus on the dome collapse-type pyroclastic flow of 1991–95, a new lava dome (Heisei Shinzan), and the growth history of Unzen Volcano. Depositional features, the emplacement process, and disasters of the pyroclastic flow/surge and lahars will be discussed on day 1. We will climb to the top of the new lava dome and observe its growth pattern and discuss the degassing mechanism on day 2. The growth history of Unzen Volcano starting from 500 ka will be examined on day 3. The Mayuyama debris avalanche deposit of 1792 (produced the worst volcanic disaster in Japan, killing 15,000 people) will also be visited. Participants will be separated into two groups on day 1 and day 3 and separated into three groups on day 2 (lava dome climbing day). The lava dome climbing day (day 2) may switch to day 1 or day 3 due to weather conditions. The summit area will be cold (5–15° C). Warm clothes, a rain jacket, a hat, hard boots and gloves are essential.

***Note:** Participants also joining excursion C3 (Aso Volcano) can take a ferryboat from the Shimabara Gaiko ferry terminal to Kumamoto at the end of this excursion.

C2: Sakurajima and Kaimondake volcanoes, southern Kyushu *(see Map-C on page 21)*

Dates: November 24 (Sat.) – 26 (Mon.) (3 days)

Leaders: T. Kobayashi (Kagoshima Univ.), M. Iguchi (Kyoto Univ.), Y. Kawanabe (Geol. Surv. Japan)

Contact person: T. Kobayashi: koba@sci.kagoshima-u.ac.jp

Cost: 53,000 yen

Includes: Three nights' accommodation (three breakfasts and Monday dinner included), transportation by bus, lunches, beverages, snacks, bathing fee and guidebook

C2:Sakurajima Volcano

Participants: 15 (min.) – 30 (max.)

Itinerary: *Nov. 24*: Shimabara – Jomon-no-mori archeological site on the Aira caldera rim – International Sabo Center – Kagoshima

Approx. 4-hour bus ride from Shimabara to Kagoshima. Visit first Jomon-no-mori, an archeological park on the northern rim of the Aira caldera. We will learn at this site about the history of the Sakurajima eruptions and human life since about 13,000 years ago, getting a wonderful view of the Aira caldera and Sakurajima Volcano. We will also visit the International Sabo Center on the way to Kagoshima.

Nov. 25: Ikeda caldera and Kaimondake Volcano

Approx. 2-hour drive to the south of Kagoshima. We will first visit Ikeda caldera, formed about 6.5 ka, which is now filled with water. The second stop will be Kaimondake Volcano, to observe historical tephra. We will have a special noodle lunch at Tosenkyo. In the afternoon, we will visit the

outcrop of Ikeda ignimbrite along the coast, where we can observe many secondary vents penetrating the deposits. You may enjoy a sand bath on the beach. Stay in Kagoshima.

Nov. 26: Aira caldera and Sakurajima Volcano

The first stop will be the Sakurajima Volcano Research Center at Kyoto University. Observations will focus on the monitoring systems for the eruption prediction. The geology of Sakurajima will mainly focus on the historical lava flows of 1914 and 1946. We will have a farewell party in Kagoshima at night.

Description: This trip visits two active volcanoes in Kagoshima, southern Kyushu, to observe the volcanic deposits and their impacts on residents. We also experience how we use geothermal energy. Temperature will be mild to cold (10–20° C). Warm clothes and light boots are recommended.

Three nights (Nov. 24–26) will be spent at the same hotel in downtown Kagoshima. It takes about 50 minutes to Kagoshima Airport by limousine bus (1,200 yen), and 15 minutes to the Kagoshima JR Station by the city tram (160 yen).

C3: Aso Volcano: Gigantic pyroclastic-flow eruptions and post-Caldera Activity

(See Map-C in page 21)

C3:Aso Caldera

Dates: November 27 (Tue.)–28 (Wed.) (2 days)

Leaders: Y. Miyabuchi (Forestry Forest Prod. Res. Inst.), H. Hoshizumi (Geol. Surv. Japan), K. Kaneko and T. Kagiyama (Kyoto Univ.)

Contact person: Y. Miyabuchi: yasuo@affrc.go.jp

Participants: 25 (min.) – 35 (max.)

Cost: 21,500 yen

Includes: Transportation by chartered bus, meals (two lunches, one dinner and one breakfast), accommodation and guidebook

Itinerary: *Nov. 27*: Overview of Aso Volcano and its beautiful caldera

Departs from JR (train) Kumamoto Station, 9:30 a.m. and Kumamoto Bus Center, 10:00 a.m. to Aso Volcano. At first, we will visit the northern rim of Aso caldera to observe the caldera topography and post-caldera central cones. Then, we will move to the northeastern caldera wall or east of the caldera to examine gigantic pyroclastic flow deposits. We will spend the night at a small hotel located at the eastern part of the volcano.

Nov. 28: Geology of post-caldera central cones

We will visit active Nakadake crater, Kusasenrigahama crater (source of *ca.* 30 ka plinian pumice-fall deposit) and Holocene scoria cones. We will arrive at Kumamoto Airport (5:00 p.m.), Kumamoto Bus Center and JR Kumamoto Station (6:00 p.m.) in the evening.

Description: Aso Volcano, which is located about 70 km east-northeast of Unzen, is one of the most beautiful caldera volcanoes in the world. The caldera, 25 km north-south and 18 km east-west in diameter, was formed by the four gigantic pyroclastic-flow eruptions from 270 to 90 ka. Post-caldera central cones initiated their eruptive activity just after the last caldera-forming eruption and have produced large volumes of fallout tephra layers and lava flows. Nakadake Volcano, which is the only active central cone, is one of the most active volcanoes in Japan. Its recent activity is characterized by ash and strombolian eruptions and phreatic or phreatomagmatic explosions. This field trip will focus on gigantic pyroclastic flow deposits related to the caldera formation and explosive and effusive post-caldera activity of the volcano.

Note: This field trip is available for participants of excursions C1 (Unzen) and C2 (Sakurajima). Participants from C1 should move from Shimabara to Kumamoto by ferryboat and bus in the evening on November 26 and stay the night in

downtown Kumamoto. Participants from C2 should move from Kagoshima to Kumamoto by JR train (shinkansen and normal trains; about 80 minutes) in the morning on November 27. This field trip fee does not cover the transportation to Kumamoto City and accommodation on the November 26. Participants who need hotel reservations for the 26th should ask the field trip's contact person.

Weather may be a little cold (3-10° C in the summit area) and rains are always possible in Japan; therefore, warm clothes and rain gear will be required.

C4: Workshop Fuji Volcano *(see Map-B on page 19; also see V. Workshop Fuji Volcano on page 30)*

Products of large-scale historic eruptions (AD 864 and 1707), sabo engineering activities and disaster mitigation plans for future eruption

Dates: November 25 (Sun.) – 27 (Tue.) (3 days)

Leaders: Y. Ishii (Min. Land. Infrastr. Transp.), S. Aramaki (Yamanashi Inst. Environ. Sci.), N. Miyaji (Nihon Univ.), M. Koyama (Shizuoka Univ.)

Contact person: S. Aramaki: aramaki.shigeo@fine.ocn.ne.jp

Participants: 40 (max.)

Cost: 53,000 yen

Includes: Local transportation, hotel and meals. Does not include air fare from Shimabara to Tokyo-Haneda (on Nov. 24), nor Shinkansen train fare from Mishima to Tokyo (on Nov. 27).

Itinerary: *Nov. 24*: Meet at Tokyo-Haneda Airport at 4:00 p.m. Then by bus to Fujinomiya, Shizuoka Prefecture, where the workshop will be held. Overnight stay in Fujinomiya.

Nov. 25: Workshop at Fujinomiya City Hall. Scientific and technical discussion in the morning. Presentation and demonstration by local citizens, students and administration in the afternoon. Overnight stay in Fujinomiya.

Nov. 26: Visit experimental stations on sabo engineering at the western foot of Mt. Fuji. Then move to historic (AD 864) lava flow fields and visit lava tunnels. Overnight stay in Fujinomiya.

Nov. 27: Visit several outcrops of scoria fall deposits from 1707 and sites of devastation. Disband at Mishima Shinkansen Station. Participants will be able to return to Tokyo by evening.

Description: This is a special combination of one-day workshop and two-day field excursion in view of the 300th years anniversary of the 1707 great eruption of Fuji Volcano. Further details are shown on page 30.

Note: All transportation by bus. No strenuous walking expected. We will follow the same schedule in case of rain. No special field equipment needed.

C5: Nagasaki tour: Christian history *(see Map-C on page 21)*

Date: November 24 (Sat.) (1day)

Leaders: J. Garrott and T. Yamasaki (Shinsei-no-Sato Church)

Contact person: J. Garrott: christian_tour@mail.117.cx

Participants: 15 (min.) – 33 (max.)

Cost: 8,500 yen

Includes: Transportation by chartered bus, road tolls, parking fees, lunch, museum admission fees.

Itinerary: Shimabara, 8:30 a.m. – Ruins of Hara Castle (base of Christian rebellion) – Unzen Hell (gas zone at Mt. Unzen, where many Christians were martyred) –

C5: Twentiy-Six Martyrs Memorial (Nagasaki)

Lunch – 26 Martyrs Memorial – Oura Church (a famous Catholic church, designated a national architectural treasure) and the South Yamate area – Shimabara, 6:30 p.m.

Description: Shimabara City and Nagasaki Prefecture are famous for Christian history, with many martyrs. Three hundred years ago Christians around Shimabara rebelled against the shogun. We will start from Shimabara, where the shogun's forces were based, and go to the ruins of Hara Castle, where the rebellion was based, and then to Unzen Hell, where many Christians were executed. Next will be sightseeing in Nagasaki City. We'll go to the 26 Martyrs Memorial and a famous Catholic church. The South Yamate area, where the Catholic church is, is the most popular sightseeing place in Nagasaki. November weather in Shimabara is a little cold, but there is no snow. You may wear ordinary clothes for sightseeing. You might also bring an umbrella in case of rain.

Note: On the way back to Shimabara, participants can go directly to Nagasaki Airport, taking the limousine bus departing from the terminal near the 26 Martyrs Memorial (about one hour, 800 yen). The bus leaves every 5 to 15 minutes until 6:40 p.m.

V. Workshop: Fuji Volcano

Fuji Volcano: Products of large-scale historic eruptions (864 and 1707 AD) and disaster mitigation plans for future eruption

Dates: November 25 (Sun.) – 27 (Tue.) (3 days)

Sponsors: Mt. Fuji Sabo Office (MLIT), Volcanic Disaster Mitigation Council of Mt. Fuji, Volcanological Society of Japan

Contact person: S. Aramaki: aramaki.shigeo@fine.ocn.ne.jp

Participants: 40 (max.)

Cost: Shown in excursion C4 on page 29

Description: This workshop commemorates the 300th anniversary of the 1707 great eruption of Fuji Volcano. It will consist of a morning science and technical session and afternoon hazard mitigation activities by local citizens and agencies. Although Fuji has not erupted in the last 300 years, recent occurrences of long-period earthquake swarms have prompted the initiation of large-scale disaster mitigation programs, the largest ever in scale in Japan as far as volcanic disasters are concerned. These programs will be reviewed in the workshop and experts from abroad are particularly welcome to participate. Also, local activities related to volcanic disaster mitigation will be presented through drills and student performances.

The second and third days will include a visit to very large-scale experimental grounds on sabo engineering especially dedicated to debris flow damages caused by Fuji Volcano. This is a model experimental station operated by the Ministry of Land, Infrastructure and Transportation of the Japanese government. Also, a historic lava flow field of 864 AD including many lava tunnels will be visited. The third day will be spent mostly on the pyroclastic fall deposits of the 1707 eruption, one of Fuji's largest eruptive events. The damage caused by the eruption as well as reclaimed devastated area will be visited.

Persons hoping to participate in this workshop must register for post-conference excursion C4. Please also refer to the course description on page 29.

VI. Other Scientific Activities

Workshop: Eruption forecasting through the Bayesian Event Tree: Moving from theory to practice with the software package BET_EF

Date & Venue: November 18 (Sun.), afternoon, Shimabara Fukko Arena

Conveners: Warner Marzocchi and Jacopo Selva; INGV

Contact person: W. Marzocchi: marzocchi@bo.ingv.it

This workshop aims to present BET_EF, a free software package (OS Windows) that allows graphically supported computing of short- to long-term eruption forecasting by merging all the available information, such as theoretical models, a priori beliefs, monitoring measures, and any kind of past data, all of them provided by the end user. BET_EF deals with short- and long-term forecasting; therefore it can be useful in many practical aspects, such as land-use planning and during volcanic emergencies.

The workshop will be organized in three parts:

Part 1. **A short introduction to the BET model:** We show the technical details of the code and its practical utility.

Part 2. **How to install BET_EF:** The code will be distributed for free to participants. We will also assist participants with laptops.

Part 3. **How BET works:** Several tutorials will be run to show how volcanological information is uploaded and how BET_EF works in practical cases, i.e., during emergencies.

WOVO meeting

The World Organization of Volcano Observatories (WOVO) will host two meetings at Tsukumo Hotel in Shimabara on the evening on November 20 (Tue.) - a general WOVO meeting, and a meeting of the WOVOdat steering committee. If you are interested and would like to contribute to the agendas, please contact WOVO through their web site: http://www.wovo.org

IVHHN meeting

Date: November 22(Thu) Evening

Contact Person: Claire Horwell (chor05@esc.cam.ac.uk)

The International Volcanic Health Hazard Network (IVHHN) will hold its fourth annual meeting at COV5. IVHHN aims to develop understanding of the health effects of volcanic emissions, to develop international guidelines for the public and scientists on volcanic health hazards and to disseminate this information internationally. IVHHN currently has more than 30 expert members and over 150 corresponding members, with expertise from varied disciplines including volcanology, mineralogy, epidemiology, toxicology, physical chemistry, medicine, and occupational health. The workshop will review the progress of IVHHN, including recent achievements and work in progress and will involve an open discussion of future work and collaborations. There will also be short presentations on projects completed by IVHHN over the last year. The workshop is open to all conference delegates who may be interested in learning more about this rapidly emerging field of volcanic hazard assessment. We invite and encourage delegates to submit abstracts for presentations on volcanic health hazards to Session 1-3: “Health hazards of co-existing with active volcanoes”.

Additional activities with local people

Parallel with the scientific program, local people and municipal and governmental organizations are planning several

forums as activities of Cities on Volcanoes 5. These people and organizations are settled on and around volcanoes and have experienced recent volcanic disasters (for example, in Miyakejima or Hokkaido). The forums are related to the sabo (sediment control) program, traditions of volcanic disasters, educational programs for children, mass communication and so on. Participation in these forums should be seen as a kind of outreach activity for volcanologists. Exchanging our experiences, we will discuss the prevention and reduction of volcanic disasters, the importance of passing down our experiences to younger generations, the role of mass communication, what volcano education should consist of, and so on. Although these forums will be basically operated in Japanese, simultaneous translation between Japanese and English will be provided. Participants may join these forums without any extra fees.

Presently, the following activities have been fixed:

1. Forum networking people living on and around volcanoes
   Local people will exchange their experiences during the last eruption and disaster at Unzen.
2. Interaction between scientists and people who have experienced volcanic disasters
   Local people will discuss their experiences and fears of pyroclastic and debris flows during the Unzen eruption.
3. Film presentation of volcanic disasters
   Videos will be shown of volcanic eruptions and on prevention of volcanic disasters, in memory of Katia and Maurice Krafft and Harry Glicken.
4. Kid's volcano workshop
   Children will present what they have learned related to volcanoes, life and environment.
5. "Kitchen" volcanoes
   This is a program that seeks to encourage children's interest in volcanology and disaster prevention by showing easy experiments using foods and materials familiar to them.
6. Volcano forum with local people and mass media
   This forum will aim at verifying what is truly important information for local people during volcanic crises and non-crises.

Old street *Buke-yashiki-dori* near the Shimabara castle

Rev.A

COV5 Registration Form

Fields marked with an asterisk * are required.
Please send only one form per each applicant.

Shimabara 2007
CITIES ON VOLCANOES 5

Name:*

First Name&Middle Initial: Last/Surname:

☐Mr. ☐Mrs. ☐Ms. _____ _____
(ex.) John E. (ex.) Smith

Affiliation:*

Division / Department: _____

Institution / University: _____

Contact Information:* ☐ Office ☐ Home

Address:*_____
(ex.) 715 Pale St., Baltimore, Maryland

Country:*_____ Postal/Zip Code:*_____
(ex.) 012-3456

Telephone Number:*_____ Extension:_____
(ex.) +81-3-1234-5678

E-mail:*_____

Arrive at Shimabara via:

☐ Nagasaki Airport ☐ Fukuoka Airport ☐ Other _____

Arrival Date:_____/11/2007 Flight No.:_____

Depart from Shimabara via:

☐ Nagasaki Airport ☐ Fukuoka Airport ☐ Other _____

Departure Date:_____/11/2007 Flight No.:_____

Please specify any special needs:

☐ Vegetarian

☐ No seafood

☐ Other, please specify_____

Name(s) of Accompanying Person(s):

1. First Name&Middle Initial: Last/Surname:

☐Mr. ☐Mrs. ☐Ms._____ _____
(ex.) John E. (ex.) Smith

Please specify any special needs:_____

2. First Name&Middle Initial: Last/Surname:

☐Mr. ☐Mrs. ☐Ms._____ _____

Please specify any special needs:_____

3. First Name&Middle Initial: Last/Surname:

☐Mr. ☐Mrs. ☐Ms._____ _____

Please specify any special needs:_____

Rev.A

1. Registration Fee

Category	On or before June 14, 2007		After June 14, 2007	
	IAVCEI/VSJ member	non-member	IAVCEI/VSJ member	non-member
Participant	☐ 40,000 yen	☐ 42,000 yen	☐ 45,000 yen	☐ 47,000 yen
Student*1	☐ 25,000 yen	☐ 27,000 yen	☐ 30,000 yen	☐ 32,000 yen
Accompanying Person	☐ 27,000 yen × ☐ person		☐ 32,000 yen × ☐ person	
REGISTRATION TOTAL :			_____ yen (A)	

*1: A photocopy of a student ID is required for student participants. Please submit it to the secretariat

IAVCEI Membership Number (if member:)_____

VSJ (Volcanological Society of Japan) Membership Number (if member:)_____

2. Accommodations

Check-in Date:_____/11/2007 Check-out Date:_____/11/2007 Nights:_____

Category		Occupancy			
		Single	**Double**	**Triple**	**Four**
1	Japanese room A	—	☐ 12,000 yen	☐ 9,500 yen	☐ 8,000 yen
2	Japanese room B	—	☐ 9,500 yen	☐ 8,500 yen	☐ 7,500 yen
3	Japanese room C	☐ 5,500 yen	☐ 5,500 yen	☐ 5,500 yen	☐ 5,500 yen
4	Western room A	☐ 10,000 yen	☐ 9,000 yen	—	—
5	Western room B	☐ 8,000 yen	☐ 7,000 yen	—	—
6	Western room C	☐ 5,500 yen	☐ 5,500 yen	—	—
7	Dormitory	2,000 yen			
ACCOMMODATION TOTAL:		☐ yen × ☐ nights × ☐ person(s) = ☐ yen (B)			

Second Choice: Category number ☐ Occupancy: ☐ Single ☐ Double ☐ Triple ☐ Four

Third Choice: Category number ☐ Occupancy: ☐ Single ☐ Double ☐ Triple ☐ Four

I will share the room with:

1._____

2._____

3._____

3. Field Excursions

Pre-conference excursions		Cost	**No. of People**	**Subtotal**
A1	Usu and Hokkaido-Komagatake volcanoes, southwestern Hokkaido	53,000 yen		
A2	Active volcanoes on the Izu arc: Izu-Oshima and Miyakejima	70,000 yen		
A3	Fuji and Hakone volcanoes	34,000 yen		
A4	Asama and Kusatsu-Shirane volcanoes, central Japan	32,000 yen		
A5	Kikai caldera and southern Kyushu	63,000 yen		

Rev.A

A6	Living with Aso-Kuju volcanoes and geothermal field	33,000 yen		
A7	Living with Sakurajima Volcano	42,000 yen		
A8	Historic remains and archives of the AD 1792 Unzen disaster	3,200 yen		
AX	Field Workshop: Commission on Explosive Volcanism, IAVCEI (*)			
Intra-meeting excursions				
B1	Unzen eruption — Disaster and recovery	Included in the registration fee		
B2	Helicopter Flight over Unzen	Free(max. 100 persons)		
Post-conference excursions				
C1	Unzen Volcano and new lava dome climb	31,500 yen		
C2	Sakurajima and Kaimondake volcanoes, southern Kyushu	53,000 yen		
C3	Aso Volcano: Gigantic pyroclastic flow eruptions and post-caldera activity	21,500 yen		
C4	Workshop: Fuji Volcano	53,000 yen		
C5	Nagasaki tour: Christian history	8,500 yen		
FIELD EXCURSION TOTAL: _____ **yen** (C)				

(*) Application for Field Excursion AX: Field Workshop: Commission on Explosive Volcanism, IAVCEI must be made directly to Dr. Y.K. Sohn. See page 24 for details.

4. Payment:*

Registration Fees: (A) _____ **yen**

Accommodation Fees: (B) _____ **yen**

Field excursion Fees: (C) _____ **yen**

TOTAL: _____ **yen**

☐ Charge my credit card: ☐ Visa ☐ MasterCard ☐ American Express ☐ Diners Club ☐ JCB Card

Card Number: ☐☐☐☐ - ☐☐☐☐ - ☐☐☐☐ - ☐☐☐☐

Name of Cardholder:_____

Expiration (M/Y) Date:_____

Authorized Signature:_____

Home Phone:_____

☐ Bank Transfer: Please transfer to the following conference bank account

Name of Bank: MIZUHO BANK, LTD.
Branch: GAIENMAE BRANCH
Swift/BIC code : MHBKJPJT
Savings Account Number: 1575317
Name of Account: COV5 Registration

Date:_____ Signature:_____

In case of bank transfer, you must fax proof of payment with the registration forms to the COV5 Secretariat Office:
c/o The Convention (official COV5 agency) Fax: +81-3-3423-4108

Travel Grants

Travel grants for overseas participants (also see page 9)

1. The applicant should fulfill one of the following conditions.
   - He/She should have been born after December 31, 1972.
   - He/She should have received a. Ph.D. within the last 4 years.
   - He/She shoud be residing in a developing country.
2. The applicant must submit an abstract on which he/she is the first author and the presenter. A copy of that abstract must accompany his/her application.
3. This application and a copy of the abstract may be sent by mail, fax or e-mail. All items must reach the COV5 secretariat by April 30 (one month prior to the normal deadline). If using mail or fax, return the application and abstract copy to:

   --------- COV5 Secretariat Office

   c/o The Convention (official COV5 agency)
   E-mail: cov5-regi@the-convention.co.jp Fax: +81-3-3423-4108

APPLICATION FORM

(All the items below should be filled in. Insufficient information will make the application invalid)

Title (Dr., Ms., etc):_____ **Name** (Family/middle/first):_____

Age:_____ **Country of birth:**_____ **Citizenship:**_____

Contacting information: ☐ Office ☐ Home

Address:_____

Phone:_____ **Fax :**_____

E-mail:_____

If currently a graduate student, **name of university:**_____

If postdoctoral, **date of Ph.D:**_____

If employed, **name of engaged organization and status:**_____

Financial requirements

Have you requested assistance for this travel from your own institution or any governmental agency?: ☐ Yes ☐ No

(if yes, explain):_____

Estimated economy round trip air fare (in US$):_____USD

Abstract submitted must be attached to this form


0
500m
1km
To Nagasaki, Isahaya
251
Shimabara sta.
Shimabara Castle
Shimabara City Office
Shimatetsu-
Honsha-mae sta.
Shimabara
City
251
Minami-Shimabara
sta.
Sector Collapse in 1792
Mayuyama
Shimabara-gaiko sta.
To Fukuoka
Shimabara Port
Shimatetsu Line (Railway)
To Kumamoto
Chuo-koko-mae sta.
Mounds in the sea left
after debris avalanche
in 1792
57
Shimabara Fukae expressway
Major descent of
pyroclastic and debris flows
during 1991-1995
251
Antoku sta.
Shimabara Fukko Arena
Area reconstructed by
ground mounting project
Venue
Mount Unzen Disaster Memorial Hall (UDMH)
GAMADAS DOME
To Minami-Shimabara
To Unzen

Cities on Volcanoes 5 Secretariat Office
1-1 Heisei-machi, Shimabara city,
Nagasaki 855-0879 JAPAN
convention@citiesonvolcanoes5.com

c/o The convention (official COV5 agency)
TEL. : +81-3-3423-4180
FAX : +81-3-3423-4108
cov5-regi@the-convention.co.jp

Shimabara 2007
CITIES ON VOLCANOES 5

www.citiesonvolcanoes5.com