

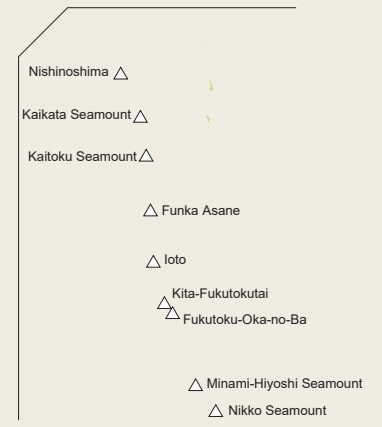
Preparations for Climbing Volcanoes

Volcanoes benefit us in many ways.

Hot springs (onsen), scenery, spring water, fertile soil...

However, a volcano will cause a major disaster if it erupts.

When preparing for a climb, it is vital to have good knowledge of volcanoes.



The term "active volcanoes" refers to those which have erupted in roughly the last 10,000 years, or which are currently exhibiting a high level of activity. In Japan, there are 111 active volcanoes (▲). Of these, 34 have been selected for inclusion in the list of 100 Famous Japanese Mountains (▲).

Risk of Volcanic Disaster While Climbing

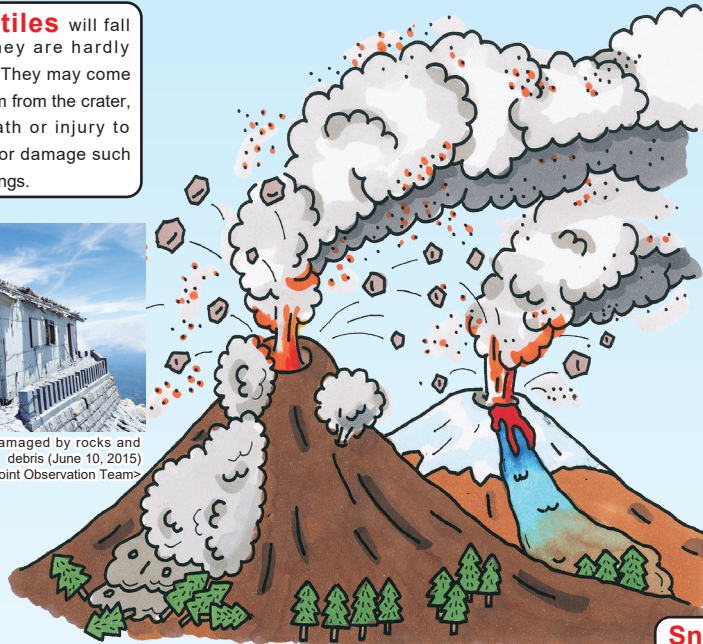
Some of the mountains popular among climbers are active volcanoes. Phenomena like the following may suddenly occur when a volcano erupts.

Volcanic phenomena which occur during eruption

Large Projectiles will fall quickly because they are hardly affected by the wind. They may come flying within about 4 km from the crater, resulting in the death or injury to climbers and others, or damage such as destruction of buildings.



▲ Ontakesan: Building damaged by rocks and debris (June 10, 2015)
<Photo by Ontakesan Joint Observation Team>



Lapilli may be carried by the wind to distances of over 10 km from the crater. If you get hit on a vital part of your body, particularly near the crater, it can be life-threatening.

Volcanic ash itself does not pose a very high risk to human life, but there is a danger of harming the eyes, or causing problems such as impaired vision or inability of vehicles to travel.



▲ Mt. Unzen: Volcanic ash stirred up in the air <Photo provided by Shimabara City>

Pyroclastic flows are a phenomenon where high-temperature volcanic ash, volcanic blocks, and other pyroclastic material join with volcanic gases and flow downward at high speed. The downward speed can range from a few tens of km per hour to a hundred and a few tens of km per hour, and temperatures can reach a few hundred ° C. These flows can incinerate and bury passable areas.



▲ Pyroclastic flows on Mt. Unzen (June 24, 1994)

Volcanic gases released from the crater or fumaroles contain substances such as hydrogen sulfide and sulfur dioxide, and fatalities may occur if these are inhaled. These gases are heavier than air, so they may accumulate in sunken areas, valleys, etc.



▲ Miyakejima Island: Trees withered due to the effects of volcanic gases (May 22, 2003)

Snowmelt-type mudflow

is a phenomenon where snow on a slope is melted by the heat of pyroclastic flows or other volcanic activity during snow season, and the resulting water flows down at high speed while pulling in surrounding earth and rocks. The downward speed may exceed 60 km per hour, causing a large-scale disaster over a wide range.



▲ Snowmelt-type mudflow on Tokachidake (May 24, 1926)
Photo provided by Kamifurano Town

Cases of harm to mountain climbers

Eruption of Ontakesan (September 27, 2014)

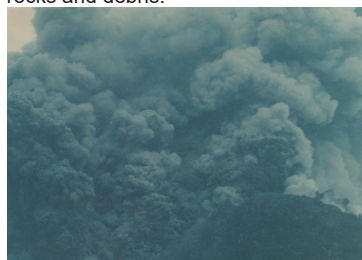
At 11:52 AM on September 27, 2014, there was a sudden eruption of Ontakesan on the border of Nagano Prefecture and Gifu Prefecture. This eruption left 63 people dead or missing.



▲ Eruption of Ontakesan
(Photo taken on September 29, 2014)

Eruption of Niigata-Yakeyama (July 28, 1974)

At 2:50 AM on July 28, 1974, there was an eruption of Niigata-Yakeyama in Niigata Prefecture. Three climbers camped near the summit were killed by rocks and debris.



▲ Eruption of Niigata-Yakeyama
(Photo taken on July 28, 1974)

Adatarayama volcanic gas disaster (September 15, 1997)

Four climbers died due to poisoning by accumulated hydrogen sulfide in the Numano-taira crater of Adatarayama in Fukushima Prefecture.



▲ Numano-taira crater of Adatarayama
(Photo taken on October 23, 2004)

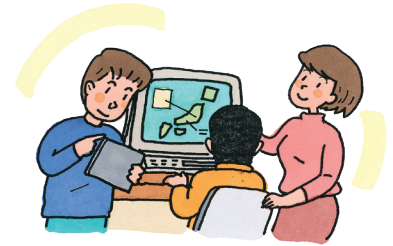
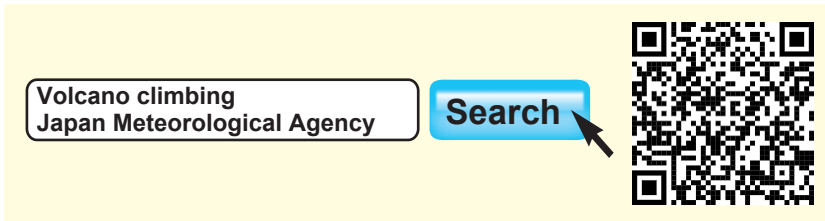
This section describes how to obtain correct information and submit a 登山届 (TOZAN-TODOKE) for climbing a volcano. Be sure to confirm all of this information before climbing any volcano.

Gather information on the volcano

First, ascertain whether the volcano you will be climbing is an active volcano. It is vital to have accurate information on any volcano you climb.

You can obtain the necessary information from the Japan Meteorological Agency's (JMA) page providing information for volcano climbers.

(https://www.jma.go.jp/jma/en/mountaineers/mountaineers_index.html)



If you click the banner on the right side of the JMA's top page, you can go to the page providing information for volcano climbers.



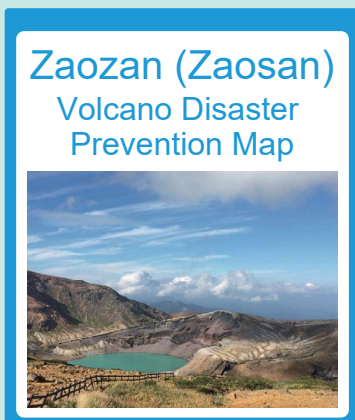
Check two types of information at the JMA's page for volcano climbers.



- (1) Information on volcano activity
- (2) Volcano disaster prevention map

Volcano disaster prevention map

- The **volcano disaster prevention map** shows eruption phenomena that may occur at each level of a volcano, and what kind of volcanic phenomena occur over which range.
- There are also maps indicating locations where you can evacuate during an eruption.



Taking precautions to protect yourself is part of proper etiquette among people who enjoy mountain climbing, and this involves




Understand the information correctly

Volcanic Alert Levels

Volcanic Alert Levels are issued by the Japan Meteorological Agency (JMA) together with volcanic warnings. The indicator is graded into 5 levels, each with associated keywords: Evacuation, Evacuation of the elderly, etc., Restriction on proximity to the volcano, Restriction on proximity to the crater, and Potential for increased activity. These levels express the area over which warning is needed and the disaster prevention steps to be taken by residents, etc.

Before climbing a volcano, be sure to check the volcanic alert level for that volcano.

The standards for raising and lowering the volcanic alert level for each volcano are specified and announced beforehand. Check these standards regularly, and find out how active the volcano must be for the volcanic alert level to rise.

Warning/Forecast	Target area	Level and keyword	
Volcanic warning (residential areas) Or "Volcanic warning"	Residential areas and areas nearer the crater	5	Evacuation
		4	Evacuation of the elderly, etc.
Volcanic warning (near the crater) or "Near-crater warning"	From the crater to near residential areas	3	Restriction on proximity to the volcano 
	Near the crater	2	Restriction on proximity to the crater 
Volcanic forecast	Inside the crater, etc.	1	Potential for increased activity 

Details of Volcanic Activity (extra)

When changes in volcanic activity are observed which do not meet the standard for raising the volcanic alert level, Details of Volcanic Activity (extra) clearly labeled as "extra" are issued by the JMA to inform local stakeholders and ordinary people about the increased risk of volcanic activity.

Before climbing a volcano, be sure to check whether details of volcanic activity (extra) have been issued for the volcano on the JMA website, etc.

If extra details have been issued, there is a possibility that the volcano is becoming active, so you need to check information such as restrictions on proximity to the volcano imposed by local municipalities, and be aware of information issued by the JMA.

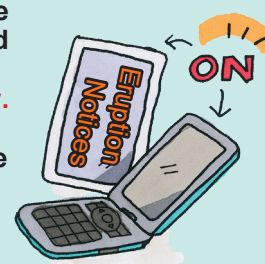
Eruption Notices

Eruption Notices are information that speedily communicates the fact that a volcanic eruption has occurred. These notices quickly and concisely communicate the fact that a volcano has erupted to climbers and residents, and they are issued by the JMA so that affected people can take action to protect themselves.

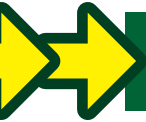
If Eruption Notices are issued, you must immediately act to preserve your safety. There is no time to hesitate.

Eruption Notices can be accessed even while climbing with a radio or mobile terminal, etc.

*Eruption Notices are issued for all volcanoes under constant observation by the JMA, but no notice is issued if an eruption on the same scale as normal occurs at a volcano that is normally erupting, or if the scale of the eruption is small and it cannot be immediately confirmed that an eruption occurred.



gathering information on volcanic activity, as well as confirming means of communication, including submission of a 登山届 (TOZAN-TODOKE).



<Final check before climbing>

Preparing and submitting a 登山届 (TOZAN-TODOKE)

TOZAN-TODOKE is the first step before going hiking (trekking, climbing, or backcountry travel)

TOZAN-TODOKE/登山届 Your Lifeline in the Japanese Mountains

【What is it?】"登山届" (TOZAN-TODOKE) is a mountain activity registration form. It is a vital action plan submitted before you enter the mountains. In Japan, this is one of the most important steps for a safe adventure.

【Why do you need it?】Japan's mountains are beautiful but unpredictable. If you have an accident or go missing, your 登山届 (TOZAN-TODOKE) acts as a "map" for rescue teams. It helps ensure they can find you as quickly as possible.

【How to submit?】The easiest way is online! A 登山届 (TOZAN-TODOKE) can be submitted via Compass (Mt-Compass), the standard digital platform used by the Japanese police and mountain rescue teams.



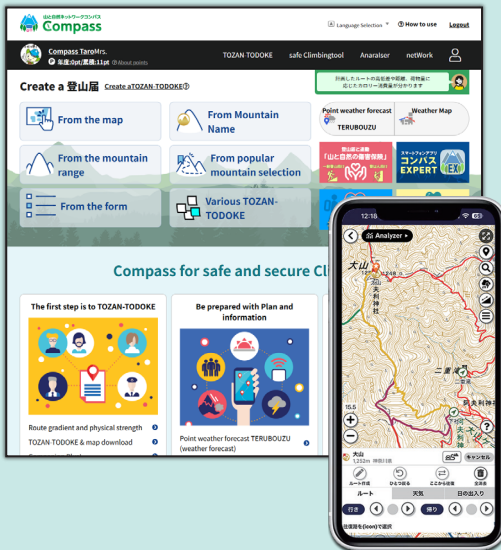
All phases, including descent, are part of a climb.

Expending the body's energy on the ascent frequently leads to accidents and emergencies, such as delayed climbing time due to issues like muscle fatigue, or problems like difficulty walking, falling, or slipping during descent.

Please make a reasonable, unstrained plan for enjoying the mountains and nature.



You can submit 登山届 (TOZAN-TODOKE) for mountains all over Japan from the Compass website or EX app.



- You can prepare a 登山届 (TOZAN-TODOKE) from the web or the app screen.
- The submitted climbing notification can be shared with family and friends, who serve as emergency contacts.
- If your scheduled descent time is greatly delayed, and you don't provide descent notification, an email confirming that you haven't descended is sent to your emergency contacts.
- Agreements have been made with almost all local governments and police throughout Japan, and your 登山届 (TOZAN-TODOKE) is shared in case of an emergency.
- The EX app allows checking of maps, current location, grade of the climbing route, weather information, and other useful information while climbing.



Web page



EX app



SOS while climbing

The Compass 登山届 (TOZAN-TODOKE) Submission system is operated by the Mountain Safety Measures Network Council
In an emergency, this is useful for coordinating with police and local authorities in rescue and search for accident victims

Mountain Safety Measures Network Council



The Japanese Alpine Club



Japan Mountaineering & Sport Climbing Association



Mountain and Nature Network: Compass



JAPAN WORKERS ALPINE FEDERATION



Japan Mountain Guides Association

Submit your 登山届 (TOZAN-TODOKE) with Compass!



Guidelines for Climbing

When climbing a volcano, reduce your risk by keeping the following points in mind

- Eruption may occur without any warning. Always be careful of the situation near the crater!
- If you notice any abnormal phenomena, such as fumes, evacuate to a safe place or descend, and report the situation to the local municipality, police, meteorological observatory, etc.
- Volcanic gases are heavier than air, so they may accumulate in sunken areas, valleys, etc. Never enter such areas.



- While climbing, keep the power of your mobile phone ON, and monitor information that comes in from emergency alert emails and the government emergency radio system for disaster prevention. There are locations where communication devices have poor signal reception, so it's important to check whether your reception is functioning.
- Countless rocks and pieces of debris, large and small, may be blown out near the crater due to an eruption, and these may directly threaten your life or body. If you encounter an eruption, immediately move away from the crater, and evacuate to a nearby place where you can shield your body, such as a hut, shelter, or the shade of a rock. Also, put on your helmet and goggles, and cover your mouth with a mask or damp towel, etc.



<Check areas where communication is available before climbing>

Some mobile phone companies provide area maps showing where communication is available on mountain trails. Or you may be able to use services offering direct smartphone communication with satellites. Before departing, you should check websites, etc.



Prepared by NTT Docomo



(https://www.docomo.ne.jp/area/service_area/mountains/index.html)



Supplies/Equipment	How to use when climbing a volcano	Check column
Volcano disaster prevention map, Volcano hazard map	Used to understand the scope of effects of volcanic phenomena, evacuation points, etc.	<input type="checkbox"/>
Helmet	Useful for protecting the head against rocks, debris, and volcanic ash	<input type="checkbox"/>
Goggles	Keep volcanic ash from getting into eyes	<input type="checkbox"/>
Towel	For covering your mouth to prevent inhalation of volcanic ash, or to bind a broken bone	<input type="checkbox"/>
Rain gear	Useful for protection from rain or falling volcanic ash	<input type="checkbox"/>
Headlamp	Useful in case of poor visibility due to volcanic ash	<input type="checkbox"/>
Mobile phone or other communication device, spare batteries	Used for acquiring information, reporting, and requesting rescue	<input type="checkbox"/>
Emergency food, drinking water	Food and drinks to consume while waiting for rescue	<input type="checkbox"/>
Climbing map, compass	To provide help descending if you lose sight of the trail or lose your bearings	<input type="checkbox"/>

*The supplies and equipment listed here only include items necessary when climbing a volcano.

For inquiries, contact:

Research and Strategic Planning, Cabinet Office (Disaster Management)
2-4-6 Akasaka, Minato City, Tokyo 107-0052 TEL. 03-5253-2111 (main) (ext. 51671)

Volcanic Observation Division, Seismology and Volcanology Department, Japan Meteorological Agency (JMA)
3-6-9 Toranomon, Minato City, Tokyo 105-8431 TEL. 03-6758-3900 (main) (ext. 5207)