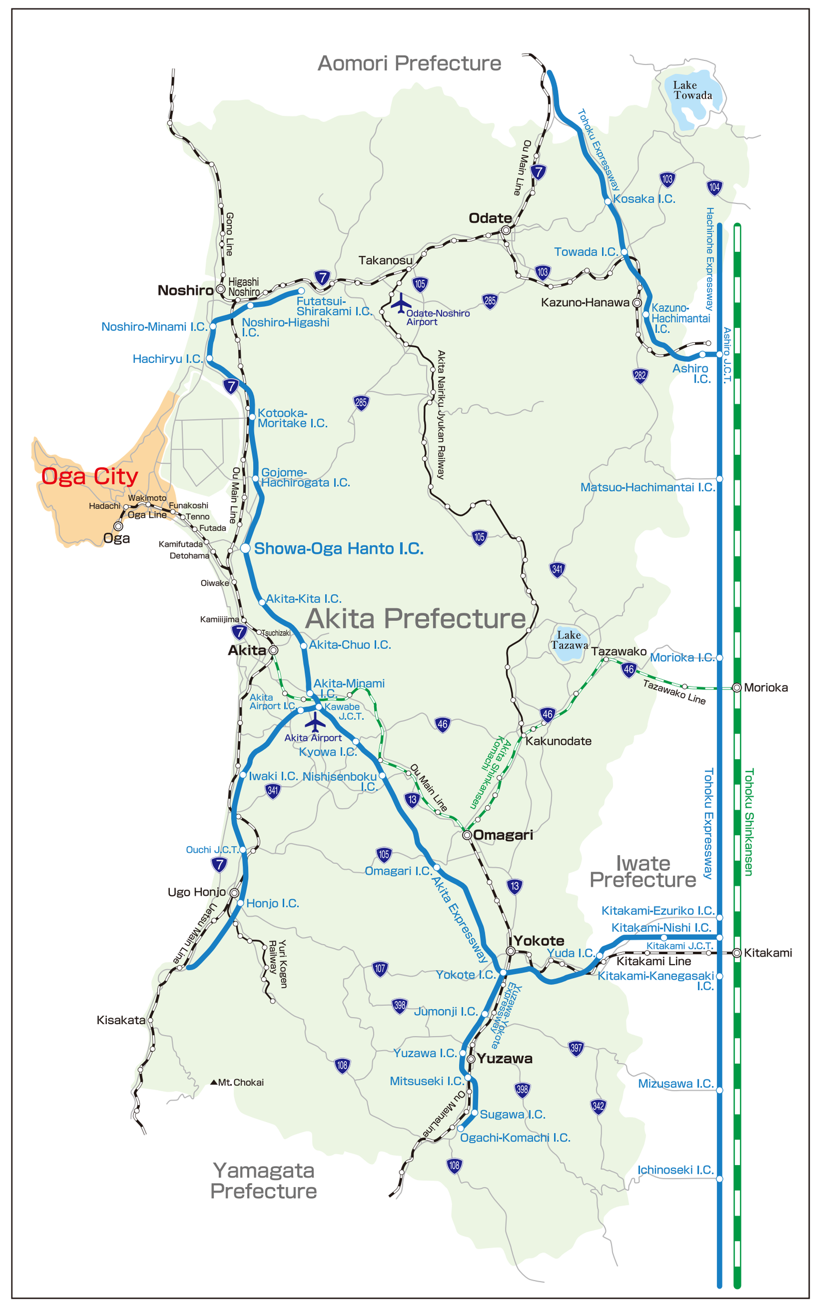
Oga Peninsula-Ogata Geopark GEOPARKS JAPAN

Oga Peninsula Geosite Map vol.1

Place to meet "The Story between the earth and pepole"



For observation:

- ●Please wear comfortable clothes.
- ●Please watch your step and falling rock.
- ●Take your litter home with you.
- ●Respect nature and preserve geological heritage.

For more detail:

Tourism and Commerce Department, Industry and Construction Division, Oga City
66-1 Izumidai,Funagawa,Funakawaminato,Oga,Akita,010-0595
TEL.0185-24-9220 geopark@city.oga.akita.jp

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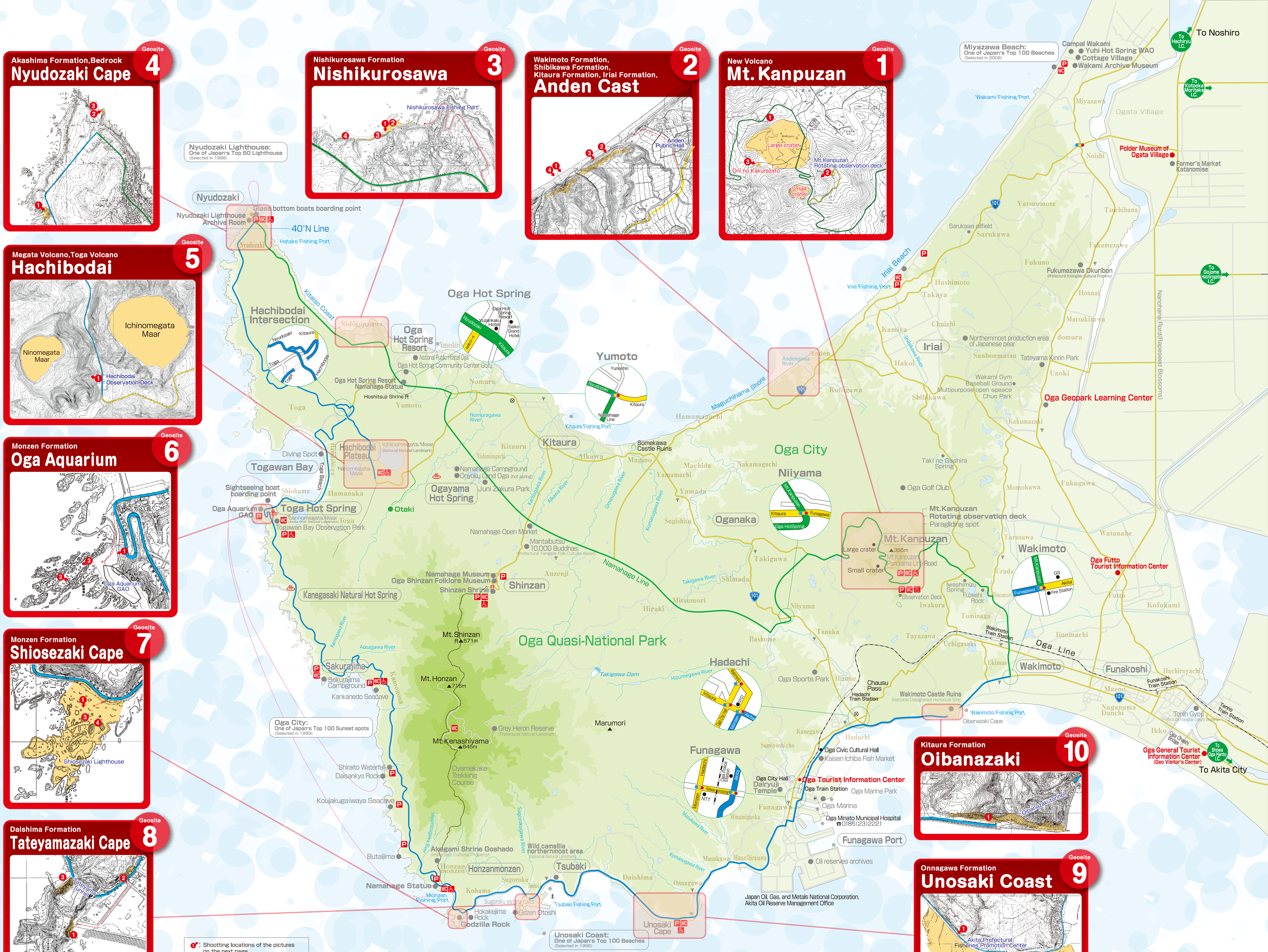

- ①: Shootting locations of the pictures on the next page.
- →: The arrow indicates the shooting direction. Routes to the observation sites.

*Roads that have the same color in detailed map and larger map (Oga peninsula over-view) are indentical.

Facility	Address	TEL	Admission Fee for Adults (Group)	Opening Hours
Oga Geopark Learning Center	452 Ienoshita, Kakumazaki, Oga, Akita	TEL.0185-46-4110	Free	Close on Mondays (Open when National Holiday falls on Monday, and close on the next day)
Oga General Tourist Information Center	207-219 Ikko, Funakoshi, Oga, Akita	TEL.0185-35-5300	Free	9:00～18:00
Oga Tourist Information Center	1-1 Niihamacho,Funagawa,Funakawaminato,Oga,Akita	TEL.0185-24-4700	Free	8:30～17:15
Oga Futto Information Center	127 Otsutsumi, Futto, Oga, Akita	TEL.0185-46-3012	Free	9:00～18:00
Polder Museum of Ogata Village	5-2 Nishi, ogatamura, Minamiakitagun, Akita	TEL.0185-22-4113	Adults & College Students ¥300 (¥250)	9:00～17:00(march to November) 9:00～16:30(December to February)

Oga Peninsula-Ogata Geopark

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◎What is Geopark?

Geopark is "Park of the earth" where we can learn and enjoy the earth.

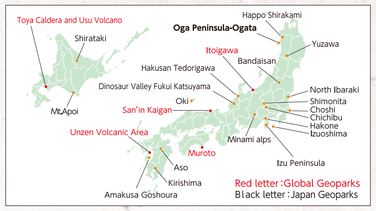
"The earth" here means not only geographical features and strata, but also living and cultures of people who receive the blessing of nature, animals, plants and the earth.

◎What is Geosite?

Geosite is a suitable place for observing geographical features and strata, etc., in geopark.

◎Where is Geopark?

There are 25 geoparks in Japan. Oga Peninsula-Ogata Geopark is one of them. Five out of them - Toya Caldera and Usu Volcano, Itoigawa, Unzen Volcanic Area, San'in Kaigan, Muroto are supported by UNESCO as the Global Geopark. There are 90 geoparks in 27 countries in the world (as of January, 2013).



Strata & History in Oga Peninsula

Geologic age			Main strata	Oga Peninsula		Geosites	ten thousand years ago
Cenozoic	Quaternary	Holocene	Alluvium (Hachirogata Formation .etc)	Peninsula			
				Island			1.2
		Pleistocene	Kanpuzan Volcano	Part of Japan mainland	Ice Age: Sea surface elevation	1	
			Volcanic ejecta of Megata			5	2
			Iriai Formation	Island ↑ Emergence ↑ Shallow sea ↑ Upheaval		2	8
			Katanishi Formation			2	10
			Shibikawa Formation Volcanic ejecta of Toga			2・5	30
			Wakimoto Formation			2	50
			Kitaura Formation			10	100
	Neogene	Pliocene	Nishimizuguchi Formation	Deep sea			250
			Minamihirasawa Formation				450
		Miocene	Funakawa Formation	Formation of the Sea of Japan		9	600
			Onnagawa Formation				1000
			Nishikurosawa Formation	Shallow sea		3	1500
			Daishima Formation/ Nomuragawa Formation	Active volcanoes Land		8	2100
		Eocene	Monzen Formation			6・7	3500
	Paleogene		Akashima Formation			4	7000
Mesozoic	Cretaceous		Bedrock (Granite)	The east edge of Asian continent		4	9000

*In "Main strata", solid line indicates "Conformity" while wavy line indicates "Uncorformity".

■History of Oga Peninsula

To know the history of the earth in a certain region, it' s necessary to examine the rocks composing the stratum, the order of the layers and fossils in the rocks.

By such investigations over many years, it has been revealed that the earth in Oga has 70 million years history. After volcanic activities chiefly done on land, it became a shallow sea, and became a very deep sea, and shallow sea again, and finally a land.

Mt. Kanpuzan and Megata are volcanoes which started to be active after Oga emerged above the sea. It is most recently (several thousand years ago) that Oga became a peninsula like present.

Geosite 1 Mt.Kanpuzan

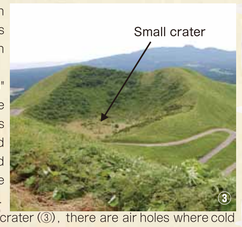
New Volcano

A volcano that started to be active 20,000 years ago, and the best place as the starting point for the stratum observation in Oga Peninsula.
Close to people's life because there are many Oga stone (stone material) mines and abundant spring water.

Mt.Kanpuzan, 355m in height, is a small volcano. Andesite lava has been piled at each eruption, and it grew gradually high, and became the current shape.

Geographical features (①) of lava surface, which was made when lava with less stickiness flowed, and crater can be observed.

"Oni no Kakurezato" (②) is presumed to be made of lava that was broken and crumbled after getting hard and being pushed up like the pillar from underground.



In the bottom of small crater (③), there are air holes where cold winds spout from. There are also a lot of springs around the mountain. "Taki no Gashira Spring" is one of them and important water source for Oga City.

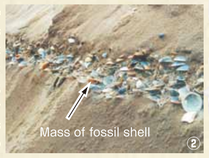
Geosite 2 Anden Coast

Wakimoto Formation, Shibikawa Formation, Katanishi Formation, Iriai Formation

There are various kinds of fossil, mud layer, sand layer, gravel layer and volcanic ash layer there, and is like a stratum museum. It's a must-see site for everyone from schoolchildren to specialists.

Strata from 500,000 to 80,000 years ago appears almost without any break in the cliff that runs about 500m long or more along the sea. There are many fossils. Plant layer which was becoming coals (lignite④) as well as animals such as shellfishes(②), foraminifers (protozoans), crustaceans, sea urchins and fishes can be seen.

Thin volcanic ash layers (③) which was flown from Toya caldera in Hokkaido, Mt. Aso in Kyushu, Mt. Baekdu that stands on the border between North Korea and China, etc, lie between some strata in some places. Typical angular unconformity (①) and a phenomenon that lower (older) layer dips sharper than upper layer can be seen.



Geosite 3 Nishikurosawa Coast

Nishikurosawa Formation

The stratum newly generated in the Sea of Japan can be seen.
Not only land dwelling creature fossils, but also various kinds of marine life fossils are found.

The oldest stratum piled in the sea (about 15 million years ago) in Oga Peninsula can be observed. The flat surface of stratum (former sea bottom) widely appears along the beach.(①) There are abundant marine life fossils such as scallops(②), shellfishes including oysters, sea urchins(③), sponges and larger foraminifers. Pinecones (④), wood eaten by bivalve shipworms, and the jaw bone of Paleoparadoxia (mammal whose body shape is similar to hippopotamus) are also found. It is presumed that this area was shallow sea and the climate was warm like subtropics according to the kind of the fossils.

Geosite 4 Nyudozaki Cape

Akashima Formation, Bedrock

A region that consists of the oldest rocks in Oga Peninsula. Volcanic ejecta of 70 million years ago and granite older than those can be seen. The rocks were made in the era when dinosaur existed.

Welded tuff (②③) made of high temperature volcanic ash and lapilli ejected from volcano and piled on the land can be seen in the cliff around Nyudozaki Cape. The color is dark green and contains many pink gravel (③).The pink gravel is granite which was in the passage of magma, broken and taken up in it when magma came up from the underground. This granite is the oldest rock (90 million years ago) in Oga Peninsula, and can be seen on the cliff in "Oni no Takko coast"(①).

Pieces of welded tuff collapsed and roundly polished in the sea are used for "Ishiyaki-Ryori", a local specialty in Oga.

Geosite 5 Hachibodai

Megata Volcano, Toga Volcano

Three Megatas (lagoon) and Togawan Bay are volcanoes. Ejecta of Megata contain valuable rocks which exist in 10 km underground. In the bottom of Ichinomegata lagoon, there is a stradum that have been piled for ten thousand years every year.

All of three Megatas (①) are volcanoes called "maar". After the eruption, groundwater filled the craters and they became lakes. Each lake is made by almost one respective activity during the period of 80,000 years - several tens of thousands of years. The ejecta of Ichinomegata contains many rocks (peridotite(③)) which exists in deep underground where even boring machine can not reach, and is a valuable information source of the bosom of the earth.

Togawan bay (①) is a western half of crater which was made by an activity 420,000 years ago. It became a bay after the crater formation. The pumice from this volcano remains around the bay, also in Anden Coast stratum and Wakimoto stratum (Shibikawa Formation).

Geosite 6 Oga Aquarium

Monzen Formation

Some of magma came up along rock crevices from the deep underground got cold and hard on the way to the surface. It is called dike. Numerous dikes can be seen in Oga Peninsula.

Dark-red rocks are distributed on the surface of a flat area near the aquarium(①). They are lava spurted from the crater and got hard on land. Sharp and high rock on the right of aquarium (②) is gray, which is different kind from the dark red one. The width is only a few meters, but it runs long from northeast to southwest, and it is a dike. Yellow green rock (③) with thin surface and dike consists of black rock also can be seen around here, which line up almost in the same direction.

Geosite 7 Shiosezaki Cape

Monzen formation

Godzilla rock consists of volcanic ejecta of 30 million years ago. Mudstone and sandstone beneath it are presumed to be produced in the sea according to the fossils contained within them.

Shiosezaki cape area has a flat surface where various rocks with different sizes stand. Godzilla rock is one of them. The rocks mainly consist of lapilli tuff that ejected from volcano. There is a white mudstone layer beneath the lapilli tuff layer. The boundary of layers usually flat, but it curves here and mudstone in the lower layer makes inroads into the upper layer in some places (③). Magma which flowed almost horizontally and got cold and hard (sheet④) also can be seen. Several dikes run on the sheet.

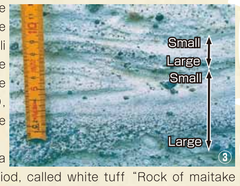
Geosite 8 Tateyamazaki Cape

Daishima Formation

The volcanic ejecta of about 20 million years ago can be observed. A part of rock (lapilli tuff) that is an accumulation of a large amount of volcanic ash and lapilli turned green due to the change in quality.

Thick accumulated lapilli tuff appears on the rugged cliff. When you see it up close, you can see lapilli in various sizes enter in fine volcanic ash, and in one place, they are smaller as the attitude is higher (③). It's because there was water where lapilli accumulated. Lapilli tuff around here are originally white, but some parts turned green (①), and it's the origin of the name of "Green Tuff".

Masumi Sugae, a scholar in the Edo period, called white tuff "Rock of maitake mashroom" (②).



Geosite 9 Unosaki Coast

Onnagawa Formation

A stratum that consists of mud which accumulated in abyssal floor of 2000m or more depth. The mudstone in this age is thought to be the source of petroleum (petroleum source rock), and widely distributed in Akita prefecture.

Flat land extends several hundred meters to sea at almost the same level as the sea surface. Because mudstone formation there dips gently, the hard part is projecting upward, so it looks like a washboard (①). Its curve in the offing shows that the stratum itself curves (fold). Mud is a source of mudstone, and it's made from the corpse of phytoplankton called diatom which grew everywhere in the sea at that time, so mudstone is rich in silicic acid. There are fossils of fish bone and scale on the surface of mudstone crack in some places(③).

Geosite 10 Oibanazaki Cape

Kitaura Formation

A huge outcrop can be seen from Akita city, 30km away from it. Beautiful striped pattern of stratum appears. It was produced in the process of upheaval there where deep sea gradually became shallow.

Light color layers and dark color ones lie alternately, and dip about 30 degrees to the east(①). Light color layer is mudstone, and dark color one is sandstone. Due to earthquake, etc., sand flowed from shallow sea to the deep sea bottom where mud had accumulated. It is presumed that this stratum was made due to the repetition of such activities. Therefore, fossil shell of deep sea living species (②) and shallow sea living species are both found.

Sharp fold of stratum was found around here(③).