

View the Dynamics of Destruction and Formation in an Orogenic Belt in the Earth

The citizens and government of Kurihara City have come together and nurtured a tourism industry brimming with life by utilizing local resources. In the Iwate-Miyagi Nairiku Earthquake which occurred at the base of Kurikoma Volcano on the 14th of June, 2008, a maximum seismic intensity of 6 upper was observed, and an unprecedented mountain disaster occurred starting with one of the largest landslides in Japan in the upstream part of the Aratozawa Dam, causing massive damage to the local region.

However, as the investigation into the disaster itself progressed, it was found that the volcanic activity, earthquakes, and landslide activity that occur over time scales of tens of millions of years to tens of thousands of years are the driving force that nurtures the local nature, and from which we are beneficiaries. At the base of the Kurikoma Volcano, which could be called the nucleus of the Ou Mountains, there is a need for strong everyday preparations for disaster, and it was felt that there is a need to cleverly use the variety and abundance of nature produced by this kind of geological event.

Existing with the constant possibility of natural disasters, Kurihara City is promoting "Building People and Local Regions Resilient to Disasters" as a Geopark where people can feel the very story of our fertile earth.

Kurihara City, Miyagi Prefecture

From the past, the abundant streams of clean water that split like strands from the water source of the Kurikoma Volcano have brought prosperity to the livelihoods of the people who live in Kurihara. Incidentally, the name "Kurikoma" comes from the shape of the bare snow on the mountain which forms the shape of a "koma" (chess piece) which signals the approach of the rice-planting season.

The history of Kurihara, which is filled with repeated flooding, earthquakes, and mountain disasters, could also be said to be a history of building good relationships by people cleverly utilizing the acts of nature.

Kurihara City was formed on April 1st, 2005, when the 10 towns and villages of Kurihara division merged. It is located in the center of the Ou Mountains, which border the 4 prefectures of Miyagi, Yamagata, Iwate, and Akita, and has an area of 804.97 square kilometers, making it the largest in Miyagi Prefecture. There are 72,000 people living in the diverse abundance of nature from Mount Kurikoma to the plains.

We are developing a wide variety of activities with the goal of "city residents building Kurihara into a place they want to live"—the ideal lifestyle space for sharing and an environment that human society should build.

Towards Sustainable Development of the Geopark

In July 2013, the city residents, government, citizen organizations, and educational officers came together to truly begin the work of promoting the Geopark, and formed the "Mt. Kurikoma Base Geopark Promotion Committee". This committee is promoting the following actions with the aim of creating a sustainable area with the Geopark.

- Continuous surveys of geosites and geopoints
- Selecting viewpoints and preparing visitor centers, etc.
- Installing guide signs and explanation signs
- Training geoguides and promoting geotourism in cooperation with tourism companies
- Promoting dissemination, enlightenment, and cooperation with city residents and businesses
- Providing a place for elementary and middle school students to learn about their hometown and receive disaster prevention education
- Assisting with local foods, special products, and local industries, etc.

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Mt. Kurikoma Base Geopark Promotion Committee

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Website



Facebook



- Aiming for a geopark for recovering and building from an earthquake disasters -

Concept of Mt. Kurikoma Area geopark

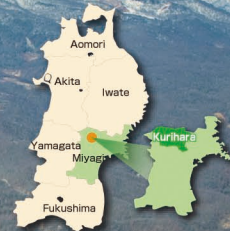
Utilizing the landform and scenery of the landslide disaster area at the foot slope of Mt. Kurikoma which was struck by the 2008 Iwate-Miyagi Nairiku Earthquake for a wide variety of purposes including disaster prevention education, academic research, and tourism, and developing a variety of projects aimed at geopark certification while connecting to the existing tourism resources.

What is a geopark?

Geoparks are a place which are close to geo (the earth) where people can enjoy geotourism, which is taking trips studying geo. They are places for taking a good look at mountains and rivers, noticing the mechanisms by which they formed, and thinking about their relationship with the ecosystem and human activity. Geoparks are a place for thinking about the mountains, rivers, oceans, and atmosphere and the things that live in them from the rocks under the earth surface where we walk to outer space and from billions of years in the past to the future, that is, a place for thinking about the earth as a whole.



Geopark that allows you to feel drawn by history



Kurihara City, Miyagi Prefecture
Mt. Kurikoma Area Geopark Promotion Committee

Natural disasters and the efforts of humans that create the landform and geological features of Kurihara City.

8:43 am,
14th June,
2008.

At that moment, the earth shook at an unprecedented scale. The mountains that changed shape, the forests that were destroyed, and above all else, precious life. All of the foundations of life, including houses and roads, changed shape in an instant...

Iwate-Miyagi Nairiku Earthquake and terrain and geological features

Landform and Geology

The Ou Mountains which form the main axis of the Tohoku region are part of the youngest generation of orogenic belt in the world. As a result, they have formed a wide diversity of natural environment including spring ephemeral plants, wetlands, and gorges while located in an extremely corrosive environment featuring heavy snow and heavy rainfall as characteristic of humid cool temperate zones that incorporate various topographic and geological elements in an extremely narrow (over 500 km north-south, with an east-west width of only around 10 km at the narrowest part) region.



Virtually no granite from the pre-tertiary geological strata has been exposed. The neritic sedimentary rock from the Neogene strata that forms the main part of the Ou Mountains uplifted to create the backbone of the mountain range. Volcanic sedimentary rock accumulated on top of this, to create an extremely diverse range of scales, degrees of consolidation, composition, specific gravity, etc. including lava, pyroclastic flow, and mud flows. At the base of the mountain, there are several caldera structures which formed from the end of the tertiary period through into the quaternary period, and a thick lacustrine deposit accumulated in parts. Rivers cut deeply into this sloping surface, creating a ubiquitously unstable slope. Massive landslides and large-scale slope failures occur ubiquitously in this kind of geological structure. The Aratozawa landslide also occurred under these kinds of conditions.

The volcano itself



Autumn leaves on Mt. Kurikoma formed of land and vegetation

Mt. Kurikoma, Ou Mountains

Volcano itself

Region where the structure of the mountain range is covered in volcanic product
Volcanic area of Mt. Kurikoma
 Boasts volcanic scenery and wetlands, and Kurikoma Five hot spas



Alpine plants flowering in the bog of the peat layer known as Sekaiyachi swamp



Large-scale hillside collapse which causes mudslides to occur



Kurikoma Five Hot Spas are a splendid hot spring formed by volcanic activity



Hillside collapse that occurred in virtually all of the Hiyashizawa valley side slope

Middle stretches of Ichihasama, Nihasama, and Sanhasamagawa Rivers

Volcano base part

Region where the structure of the mountain range is covered in volcanic materials, which has been deeply eroded
Region where the mountain disaster was focused
 Boasts the beauty of gorge and reclaimed world in spite of the giant landslide

Hills and terraces

Region formed from a new era of sediment
 Boasts a mixture of city streets and rural culture

Plains of Izunuma and Uchinuma

Plains

Region where soil has deposited such as by inundation of floodings
Region with a history of flood disasters
 Boasts inundation and water control measures from the Edo period, lotus flowers in the summer and the ballet of migrating birds in the winter

Footslope of the volcano



Rapid understanding of the state of the disaster leads to secondary disaster prevention and rehabilitation and reconstruction

Hills and terraces



Hosokura mine which has a history of over 1200 years [Designated Heritage of Industrial Modernization]



The symbol of the affluent farmer. Even now, the approximately 500 Nagayamon project an idyllic agricultural landscape

Alluvial plains



Rice with a uniquely different flavor grown in fertile soil (rural culture [Nejirihonnyo])



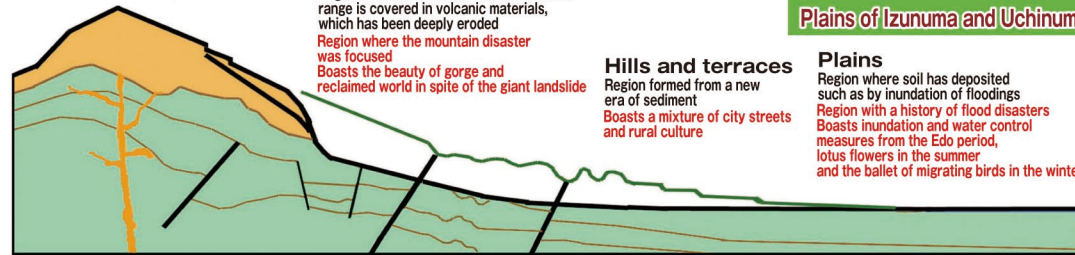
Tourism project using a mine [Designated Heritage of Industrial Modernization]



Izunuma and Uchinuma: A diverse ecosystem of flora and fauna cultivated since the Edo era as a measure for water control (Ramsar Convention registered wetland)



The 'Kurihara Den'en Railway Line', which is now closed, supported the activities of the people and the mines



Volcanic mountain collapse, rock debris flows, volcanic mud flows, mudslides

Hillside collapse, landslide dam destruction, landslides, large-scale landslides, mudslides

Small-scale slope failure, rare inundation

Flooding

Kurihara City: Characterized by a zone of nature from Mt. Kurikoma to the alluvial plains and disasters

Hiyashizawa slope failure site



Immediately after disaster

Kogawara slope failure site



Restored state

Sakashita slope failure site



Azabu slope failure site



Disaster state and disaster recovery state at the volcanic base

Disasters and disaster-prevention and disaster-reduction education

In the plains of provincial Kurihara, rich cultivated soil has been cultivated through controlling floodwaters using a large number of mechanisms

including flood control basin structures such as Izunuma and river gates for the past several hundred years. It has therefore been registered as a Ramsar wetland as one of the best places for migrating birds in Japan. Even after the recent mountain disaster, it is envisioned to be the starting point for regeneration of the abundant nature through various efforts in the future. Our disaster prevention and disaster mitigation education considers the creation and practice of mechanisms where "a deep understanding of natural changes themselves leads to nurturing knowledge of mitigating and avoiding the disasters that occur".

Facing the mountain disasters of the future

Japan is one of the major earthquake-afflicted countries in the world. It is also known to have many instability factors

such as variations in the earth's crust with geological weaknesses and volcanic activity. This shows that the same kind of mountain disaster could happen anywhere in Japan in the future. Since this earthquake disaster occurred in an extremely complex terrain and geological environment, a variety of mountain disaster modes were able to be confirmed. How to proceed with the individual restorations and recovery of forests needs to be observed and discussed in terms of a long-term view. The attitude of taking this experience and changing it into knowledge is expected to greatly contribute to mitigating similar disasters that occur in the future.